

Reports of the Commander-in-Chief, Staff Sections and Services

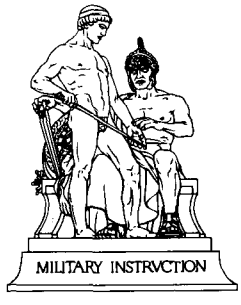


ST-NAIZAIRE, FIRST FRENCH PORT USED BY THE AMERICAN EXPEDITIONARY FORCES

UNITED STATES ARMY IN THE WORLD WAR 1917-1919

Reports of the Commander-in-Chief, Staff Sections and Services

Volume 15



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UNITED STATES ARMY IN THE WORLD WAR, 1917–1919

Volume 1	Organization of the American Expeditionary Forces
Volume 2	Policy-forming Documents of the American Expeditionary Forces
Volume 3	Training and Use of American Units With the British and French
Volume 4–9	Military Operations of the American Expeditionary Forces
Volume 10	The Armistice Agreement and Related Documents
Volume 11	American Occupation of Germany
Volume 12–15	Reports of the Commander-in-Chief, AEF, Staff Sections and Services
Volume 16	General Orders, GHQ, AEF
Volume 17	Bulletins, GHQ, AEF

FOREWORD

Military historians and scholars of operational art have tended to neglect the role played by the American Expeditionary Forces in World War I. Although the Army organized a historical office in 1918 to prepare a multivolume history of the war, budget restraints and other considerations frustrated Chief of Staff Tasker H. Bliss' intention to "record the things that were well done, for future imitation . . . , [and] the errors as shown by experience, for future avoidance." The momentous events of succeeding decades only strengthened this tendency to overlook our Army's role in the fields of France in 1918. This neglect, although understandable, is unfortunate: World War I posed unique challenges to American strategists, tacticians, and logisticians—challenges they met in ways that could provide today's military student with special insights into the profession of arms.

To encourage further research in the history of World War I and to fill a gap in the Army's historical documentation of that conflict, the Center of Military History has created a World War I series of publications consisting of new monographs and reprints. Complementing our newly published facsimile reprint *Order of Battle of the United States Land Forces in the World War*, we are reprinting this seventeen-volume compilation of selected AEF records along with a new introduction by David F. Trask. Gathered by Army historians during the interwar years, this massive collection in no way represents an exhaustive record of the Army's months in France, but it is certainly worthy of serious consideration and thoughtful review by students of military history and strategy and will serve as a useful jumping off point for any earnest scholarship on the war.

There is a certain poignancy connected with the publication of this collection in the seventieth anniversary year of "the war to end all wars." Later this summer veterans of that war will gather together, perhaps for the last time, to discuss the history of the American Expeditionary Forces and to reminisce about their service. To them especially, but to all five million Americans who served in World War I, we dedicate this scholarly undertaking.

Washington, D.C.
1 June 1988

WILLIAM A. STOFFT
Brigadier General, USA
Chief of Military History

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Illustration

Port of St-Nazaire ..... *Frontispiece*

Note: Documents herein are reproduced as found without editorial correction of spellings or other grammatical errors in text.

Reports of the Commander-in-Chief, Staff Sections and Services

Activities of Services of Supply

SERVICES OF SUPPLY,
Tours, May 25, 1919.

From: Commanding General, S. O. S.

To: Commander-in-Chief, A. E. F.

PART I

[Extract]

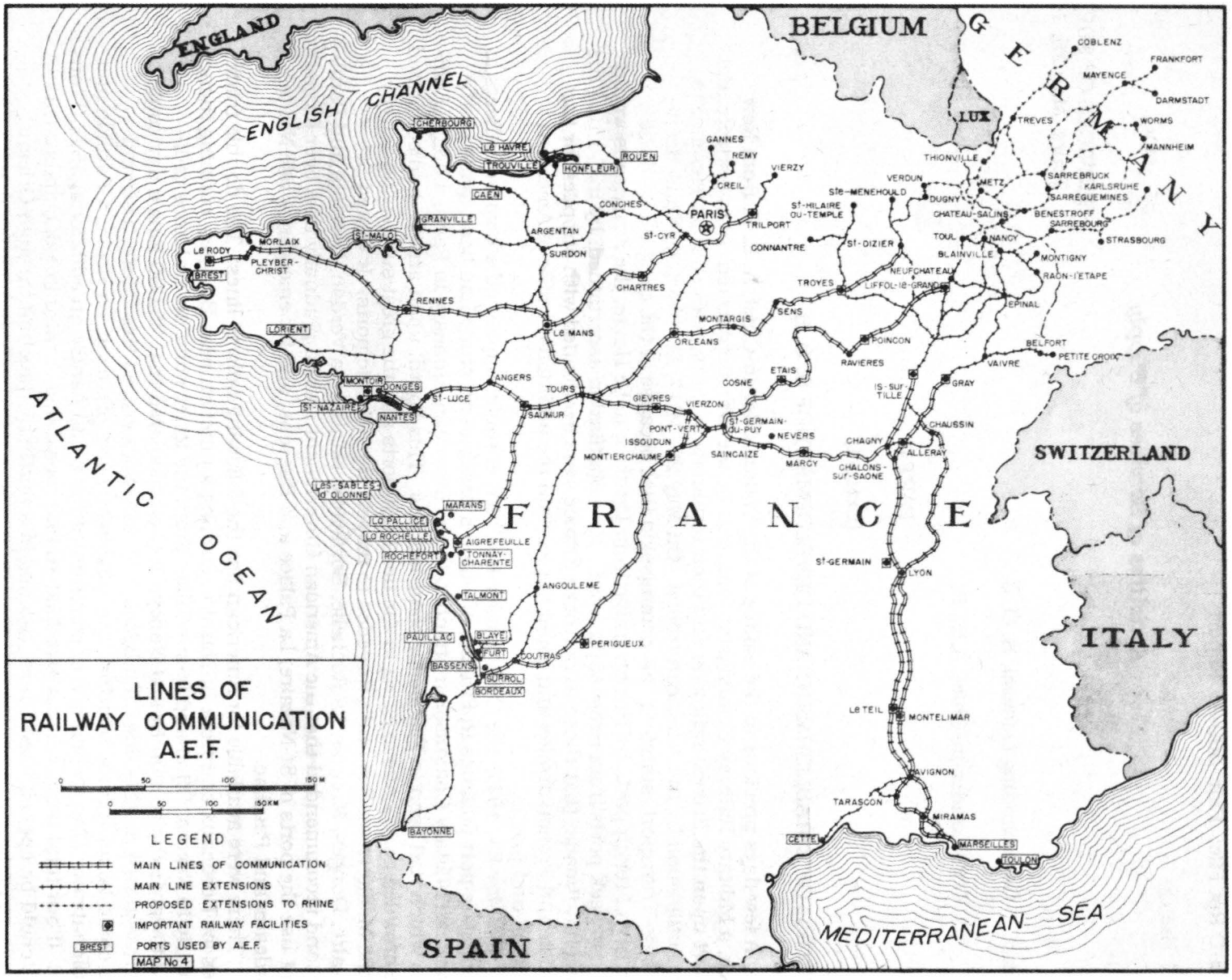
RECORD OF ESTABLISHMENT AND DEVELOPMENT OF S. O. S.

A few days previous to the sailing of the Commander-in-Chief, A. E. F. from New York, a Military Railway Commission was sent by the War Department to investigate and report upon the French railroads and their terminals at ports, with special reference to their utilization by the American troops. On May 29, 1917, M. Claveille, Sous-Secretaire-de-Transport, stated to this commission that because of the congestion of the northern French ports by British traffic from Dunkirk to Le Havre, the Americans would have to seek ports from Brest southward. The commission ascertained, by inspecting the French railroads, that those in northern France were overloaded with supplies for the British and French armies and could not sustain the additional traffic of American material and troops.

On May 31, 1917, the Commander-in-Chief, enroute, appointed a board of officers to investigate port facilities in France, of which a preliminary study had been made by the American Military Commission attached to the American Embassy in Paris, a body of officers which had been in France for some months. This board, upon arrival, had confirmed the crowded conditions existing in the northern ports and the great submarine activity in the Mediterrean Sea and proceeded to inspect the Atlantic ports. It visited St-Nazaire, Donges, Montoir, La Rochelle, Bordeaux, Nantes, La Verdon, Bassens and Pauillac, and recommended that the American Government should gradually take over for permanent use the ports of St-Nazaire, La Pallice and Bassens, and for emergency use Nantes, Bordeaux and Pauillac.

There were available for American use the following railway lines: The double track lines for Bordeaux and from St-Nazaire, forming a junction near Bourges, running thence easterly to Nevers, Dijon and Is-sur-Tille. From the latter point several lines radiated towards the section Epinal-Nancy. It was calculated that 25,000 tons a day could be transported on this line. If it became necessary to exceed this figure, a second line could be used from near Bourges, passing by way of Cosne, La Roche, Chatillon and Neufchateau. This second line of communication could handle an additional 15,000 tons a day. If our total requirements exceeded 40,000 tons a day, a third line of communication could be opened from Tours, running in a northerly direction through Orleans, Troyes, Neufchateau and beyond. This third line could handle an additional 10,000 tons a day. The line of communication available for an American army in France was thus, through necessity, based upon Atlantic ports and limited to certain railway lines connecting these ports with the front in eastern France.

In order, however, to care for American tonnage in addition to French, there were many requirements to be fulfilled. The ports had to be developed by the construction of


ENGLAND
ENGLISH CHANNEL
BELGIUM
GERMANY
LUX
SWITZERLAND
ITALY
SPAIN
ATLANTIC OCEAN
MEDITERRANEAN SEA
FRANCE
COBLENZ
FRANKFORT
MAYENCE
DARMSTADT
TREVES
WORMS
MANNHEIM
THIONVILLE
METZ
SARREBRUCK
KARLSRUHE
SARREGUEMINES
BENESTROFF
SARREBOURG
STRASBOURG
CHATEAU-SALINS
DUGNY
VERDUN
Ste-MENEHOULD
St-HILAIRE OU-TEMPLE
VIERZY
REMY
GANNES
CREIL
PARIS
TRILPORT
St-CYR
CONNANTRE
St-DIZIER
TOUL
NANCY
BLAINVILLE
MONTIGNY
RAON-l'ETAPE
NEUFCHATEAU
LIFFOL-le-GRAND
EPINAL
TROYES
SENS
MONTARGIS
ORLEANS
POINCON
RAVIERES
BELFORT
PETITE CROIX
VAIVRE
GRAY
IS-SUR-TILLE
ETAIS
COSNE
GIEVRES
VIERZON
ST-GERMAIN-DU-PUY
NEVERS
CHAGNY
ALLERAY
CHAUSSIN
SAINCAIZE
MARCY
CHALONS-SUR-SAONE
PONT-VERT
ISSOUDUN
MONTIERCHAUME
CHERBOURG
Le HAVRE
TROUVILLE
HONFLEUR
ROUEN
CAEN
GRANVILLE
ST-MALO
MORLAIX
Le RODY
PLEYBER-CHRIST
BREST
ARGENTAN
CONCHES
SURDON
CHARTRES
RENNES
LORIENT
Le MANS
ANGERS
TOURS
SAUMUR
MONTOIR
DONGES
St-NAZAIRE
NANTES
St-LUCE
LES SABLES D'OLONNE
MARANS
La PALLICE
La ROCHELLE
ROCHEFORT
AIGREFEUILLE
TONNAY-CHARENTE
ANGOULEME
TALMONT
PAULLAC
BLAYE
FURT
COUTRAS
PERIGUEUX
BASSENS
SURROL
BORDEAUX
BAYONNE
St-GERMAIN
LYON
Le TEIL
MONTELIMAR
AVIGNON
TARASCON
MIRAMAS
CETTE
MARSEILLES
TOULON
LINES OF RAILWAY COMMUNICATION A.E.F.
0 50 100 150 M
0 50 100 150 KM
LEGEND
MAIN LINES OF COMMUNICATION
MAIN LINE EXTENSIONS
PROPOSED EXTENSIONS TO RHINE
IMPORTANT RAILWAY FACILITIES
BREST PORTS USED BY A.E.F.
MAP No 4

wharves, storehouses, camps, and railroad terminal facilities, laborers and trained railroad men had to be obtained, etc., etc.

The Commander-in-Chief very soon determined, as a measure of safety against submarine and other losses, that there would be maintained in France a 90-day reserve of supplies for the A. E. F., which in August, 1918, he reduced by fifty percent. This reserve was to be distributed as follows:

1/2 near base ports, 1/3 in an intermediate section and 1/6 in an advance section.

On June 21, 1917 St-Nazaire was designated by verbal orders of the C-in-C as Base Port No. 1. The first American convoy was on the water at this time and expected at this port, and the immediate duty at hand for the port commander was to prepare facilities for the reception of this convoy. On June 26 the Steamship *Tenadores*, the first American transport to arrive in France, entered the port of St-Nazaire, followed by four other vessels. On June 27 the second group of the first convoy arrived, consisting of four vessels, and on June 28 the third group of four vessels arrived. The first convoy carried 346 officers, 11,607 men and 46,700 tons of freight.

On July 5, General Order No. 8, G. H. Q., A. E. F. was issued. This created a Line of Communications, placed under a Commanding General having territorial command, and charged with supply, sanitary and telegraph services, and the facilities relating thereto. He was also charged with all construction work in the L. of C. A Transportation Department was also created, charged with the operation, maintenance and construction of all railways and canals under American control, as well as with the construction and maintenance of roads and wharves, of shops and other buildings for railroad purposes. As previously stated, however, all construction work, until further orders, was under the Commanding General, L. of C., as the Transportation Department, at that time, had no labor. G. O. 8 placed the Commanding General, L. of C. in a direct line of control from the General Staff, G. H. Q., and on administrative equality with all Chiefs of Service represented on the Staff of the A. E. F.

On July 25, Brigadier General R. M. Bletchford was assigned to duty as Commanding General, L. of C. At this time the Line of Communications had no definite boundaries. It consisted of the port of St-Nazaire and the city of Nevers, the latter place being the headquarters of the Advance Section.

On August 13, 1917, General Order No. 20, G. H. Q., defined the geographical limits of the Line of Communications as extending from the sea to points where delivery of supplies is made to the field transportation of the combat field force, less such area as might from time to time be excepted. Paris was designated as headquarters of the Line of Communications, and Base Section No. 3 established, with headquarters of Le Havre.

This order also defined Base Sections Nos. 1 and 2 and the Intermediate Section. Base Section No. 1 included the authorized facilities in the River Loire, the Port of Brest and the towns of Les Sables-D'Olonne, Poitiers, Tours, and Neuille-Mazillac, with headquarters at St-Nazaire. Roughly, this would be the territory comprising several Departments contained in a quadrangle formed by the sea and lines drawn from Brest to Tours to Poitiers to Les SABLES-d'OLONNE.

Base Section No. 2 included the authorized facilities in the ports of the River GIRONDE and the Port of La PALLICE and the territory in a quadrangle formed by the sea and lines drawn through Les SABLES-d'OLONNE, POITIERS, GUERET, and ARACHON, but not including the first three towns.

The Intermediate Section comprised the authorized facilities of supply, sanitary and telegraphic service included in the zone between the limits of Base Sections Nos. 1 and 2 and the French Zone des Armees, bounded on the north by the line NEUILLE---MARCILLY---Le HARVE and on the south by the line GUERET to the junction of the French Zone des Armees and the Swiss frontier.

The following railroad lines were designated for American use:

(a) The line St-NAZAIRE---NANTES---ANGERS---TOURS---BOURGES---NEVERS---DIJON IS-sur-TILLE (Regulating Station), and points to the front.

(b) The line BORDEAUX---PERIGUEX---LIMOGES---BOURGES---NEVERS---DIJON---IS-sur-TILLE (Regulating Station) and points to the front.

(c) The railroad lines connected with the lines a and b from any ports at which our troops or materials may be landed, and all railway connections with the various depots and camps established in the vicinity of the same lines of railroad.

A Service of Military Railways was also created, charged with the operation, maintenance and construction of such railways as might be turned over to our forces by the French and the supervision of all movements of troops and supplies over lines operated by the French authorities. It included all railways both permanent and temporary, except those in the Zone des Armees. (See also G. O. 8 and 37, G. H. Q., 1917).

A general Purchasing Board was now established at PARIS, with a General Purchasing Agent at its head. The General Purchasing Agent was designated a representative of the C-in-C., in liaison with the various Allied Purchasing Agents, and was directed, by G. O. 23. G. H. Q., August 20, 1917, to coordinate and supervise all Purchasing Agents of the A. E. F. The Chief of each Supply Department was directed to designate a Purchasing and Disbursing Officer to report to the G. P. A. On February 14, 1918, G. O. 29, G. H. Q., added a board of Contracts and Adjustments, to function under the General Purchasing Agent.

The commanding officers of the Sections of the Line of Communications were severally charged with the duties of Assistant Chiefs of Staff, as given in F. S. R. (G. O. 26, G. H. Q., August 28).

G. O. 37, G. H. Q., September 14, 1917, established a Transportation Department as one of the technical services of the A. E. F. This order provided for a Director General of Transportation and gave a general outline of organization. (See also G. O. 8 and 20, G. H. Q., 1917).

On September 17, G. O. 3, L. of C., modified the boundaries of Base Sections, placed the Intermediate Section Headquarters at Nevers, and outlined the Advance Section, with Headquarters at Is-sur-Tille.

The Remount Service was organized by G. O. 39, G. H. Q., September 18, 1917, and was attached to the Quartermaster Corps. G. O. 122, G. H. Q., July 26, 1918, reorganized this Service and created a Chief of the Veterinary Service, who operated under the Remount Service. On August 24, however, G. O. 139, G. H. Q. placed the Veterinary Service under the Chief Surgeon.

Major General Blatchford was relieved of command of the Line of Communication by Brigadier General Mason M. Patrick, November 1, 1917.

Base Section No. 3 was created November 27, 1917, which included all of England, with Headquarters at London. Base Section No. 4, with Headquarters at Le Havre, (which had previously been designed Base Section No. 3), was now created for the purpose of receiving troops and supplies arriving from England. Base Section No. 5 was established, with Headquarters at Brest. These changes were made by G. O. 66, G. H. Q., which also announced Major General Francis J. Kernan as Commanding General, Lines of Communication.

G. O. 70, G. H. Q., December 8, 1917, created the Motor Transport Service as a branch of the Quartermaster Corps.

The territorial limits of the different sections of the L. of C. were changed December 14, 1917 by G. O. 75, G. H. Q. The Headquarters of the Advance Section was placed at Neufchateau; that of Base Section 1, at St-Nazaire; Base Section 2, at Bordeaux; Base Section 3, at London; Base Section 4, at Le Havre; and Base Section 5, at Brest. The Intermediate Section was defined as all Departments in France, less those contained in the Zone of Advance and Base Sections 1, 2, 4 and 5. The Headquarters of

the Intermediate Section was left at Nevers. This territorial division continued in effect until General Order No. 26, S. O. S., June 28, 1918 was issued, which clearly defined the boundaries of all Base Sections and created Base Sections 6 and 7, with Headquarters at Marseille and La Pallice, respectively. The Headquarters of Base Section 7 were later moved to La Rochelle. General Order 50, S. O. S., November 4, 1918, established Base Section 8, which included all of Italy, with Headquarters at Padova.

The Army Transport Service was transferred from the Quartermaster Corps to the Transportation Department on December 18, 1917. (G. O. 78, G. H. Q.)

On January 13, 1918, Headquarters Lines of Communication was moved from Paris to Tours.

On January 22 a circular letter was sent by G. H. Q. to the C. G., L. of C., and to the heads of the different services, which contemplated reorganizing the staff of the A. E. F., and asked for suggestions. A board was appointed at G. H. Q. to study this subject, and during such study visited the principal stations of the L. of C. The recommendations of this board resulted in General Order 31, G. H. Q., February 16, 1918, which radically changed the staff organization of the A. E. F. The Lines of Communication became the Service of the Rear, but this designation was, on March 13, 1918, changed to that of Service of Supply. The Commanding General, S. O. S. was left directly under Headquarters A. E. F., but placed over all of the various Services and Departments, with the exception of the Adjutant General, Inspector General and the Judge Advocate. All Services and Departments, excepting the three enumerated above, were moved to Tours, Headquarters, S. O. S.

The order grouped the Transportation Department, Motor Transport Service, Construction and Forestry Service, and Division of Light Railways and Roads, in a Service of Utilities. The General Staff, S. O. S was organized to consist of a C. of S., D. C. of S., Sec'y G. S. and an A. C. of S. at the head of the following Sections: G-1, G-2, G-3, and G-4. Their duties corresponded, where practicable, to the corresponding Sections of the General Staff at G. H. Q. On July 12, the Section G-3, concerned principally with troop movements and billeting, was absorbed by G-4.

The conditions under which French labor would be employed by American authorities were stated on February 13, by Bulletin No. 14, Hqs. L. of C. On March 4, 1918, General Order 5, S. O. R. charged the General Purchasing Agent with procuring civilian labor in Europe. He was directed to organize a labor bureau, which was later transferred to the Army Service Corps, created by G. O. 38, S. O. S. 1918. The city of Paris and the Arrondissement of Tours were exempted from the jurisdiction of the Intermediate Section on March 20, per G. O. 2, S. O. S., later amended by General Order 14, dated May 6, Hqs. S. O. S., both of 1918.

The functions and responsibilities of the C. G., S. O. S. under the requirements of G. O. 31, were set forth at length in General Order 44, G. H. Q., March 23, 1918.

The General Purchasing Agent was charged with the organization of a bureau for the purposes of keeping a consolidated record of the accounts of the United States in Europe. This was known as the Bureau of Accounts. (G.O. 4, Hqs. S. O. S., March 23, 1918).

A Renting, Requisitions and Claims Service, functioning under the Commanding General, S. O. S., was created by G. O. 50, G. H. Q., March 30, 1918. This Service was charged with the renting and requisitioning of land and facilities in France and with billeting and the settlement of certain claims.

A Technical Board, operating under the G. P. A. was created on April 8. (General Order 8, Hqs. S. O. S., 1918). The primary purpose of this Board was to effect economy in the use of fuel and of power derived therefrom. G. O. 63, S. O. S., December 7, 1918, placed this Board under the Chief Engineer, A. E. F.

The Service of Utilities was abolished on July 11 by General Order 114, G. H. Q., 1918 . The D. C. & F. was placed under the Chief of Engineers and the Motor Transport

Corps created a separate service.

On July 29, 1918, Major General J. G. Harbord relieved General Kernan as in command of the S. O. S.

A new policy was promulgated by G. H. Q. on August 6, 1918. G. O. 130, G. H. Q. of that date, charged the C. G., S. O. S., with all questions of supply under approved policies. On August 8, it was directed that all cables to the War Department relating to supply matters (not involving policy) would be sent direct by the C. G., S. O. S. This charged the C. G., S. O. S. with many details relating to supply previously handled by G. H. Q.

The Army Service Corps was created August 22, 1918, by G. O. 38, S. O. S.

On September 10, 1918, General Order 152, G. H. Q. established the Bureau of Reciprocal Supplies under the General Purchasing Agent. This Bureau was directed to centralize and arrange for the importation of raw material into Europe from the United States, for the use of Allied Governments or private industries.

The Transportation Corps was reorganized by G. O. 52, S. O. S., November 12, 1918.

On November 14, three days after the armistice, General Order 54, S. O. S. was issued. This order designated all projects which, in view of the armistice, should be closed. It limited future shipments from the United States and directed the cancellation of contracts, involving an estimated money saving of some $1,222,000,000.

The construction and repair of all normal gauge railways was transferred to the Transportation Corps by G. O. 56, S. O. S., November 19, 1918.

G. O. 199, G. H. Q., November 8, 1918, directed that a Finance Bureau be established at these Headquarters under the charge of a Finance Officer, who would be responsible for the standardization and harmonization of accounts and the standardization of costs throughout the various bureaus and departments.

General Order No. 217, G. H. Q., November 27, 1918, transferred the Provost Marshal General from Headquarters, S. O. S., to G. H. Q.

On the same date G. O. 59, S. O. S. was issued, creating an Advisory Liquidation Board, to recommend policies connected with the disposition of War Supplies, material and equipment pertaining to the A. E. F. This Board was dissolved April 1, 1919. (G. O. 18, S. O. S.)

A General Sales Agent and a General Sales Board were created for the purpose of supervising sales. (G. O. 66, S. O. S., December 17, 1918).

The United States Liquidation Commission, announced in G. O. 24, W. D., February 11, 1919, was charged with all matters pertaining to liquidation and claims growing out of the cancellation of contracts, sales of surplus supplies, property, etc. of the A. E. F. The duties of this Commission in relation to the services were more fully defined in G. O. 18, Headquarters, S. O. S., April 1, 1919.

On April 8, 1919, an additional subdivision of the Services of Supply was announced by G. O. 19, S. O. S., which created Base Section No. 9, to include the occupied portions of Holland, and Kingdom of Belgium, exclusive of the Department of Luxemburg. The headquarters were placed at Rotterdam and Antwerp. Previous to this, February 4, 1919, Rotterdam had been designated as the American Military Supply Depot, and had been forwarding supplies to the American Army of Occupation in Germany.

PART II

Synopsis of G. O. 31 and G. O. 44, G. H. Q., 1918.
Organization of Headquarters, S. O. S. (Chart).
Table Showing Commanding Generals / Chiefs of Staff / Deputy Chiefs of Staff / Assistant Chiefs of Staff of the S. O. S.

The S. O. S. General Staff
Remarks on duties, etc.
Tonnage
Replacements
Leave Areas
Y. M. C. A.
K. of C.
G-1 Welfare S. A.
R. C.
J. W. B.
Athletics
Entertainment Section
Prisoners of War
G-2 Remarks on duties, etc.
Remarks on duties, etc.
G-4 Troop Movements
Fire Prevention Bureau
Reclassification
Adjutant General
Inspector General
Provost Marshal General
Judge Advocate
Allied Military Missions, Hqs. S. O. S.

SYNOPSIS OF GENERAL ORDER NO. 31, G. H. Q., FEBRUARY 16, 1918, AND GENERAL ORDER NO. 44, G. H. Q., MARCH 23, 1918.

The volume of work imposed upon G. H. Q. by General Order 8, G. H. Q., 1917, in time made it necessary to effect a reorganization. Under this order General Headquarters was required to coordinate all services, and the C. G., L. of C. On February 16, 1918, G. O. No. 31, G. H. Q., was issued. The important changes this brought about were as follows:

All supply services and departments (except the A. G., I. G., and J. A.,) were grouped under one coordinating head, the C. G., S. O. S.

A Chief of Utilities was created, who, under the C. G., S. O. S., coordinated the Transportation Department, the Motor Transport Service and the D. C. & F.

G. O. 44, G. H. Q., March 23, 1918, enunciated very fully the duties under G. O. 31 of the Commanding General, S. O. S., and those of the Chiefs of Services. Under the new General Order 31, G. H. Q., the Commanding General, S. O. S., was responsible for the procurement of all supplies, whether brought from the United States or secured from European sources through the General Purchasing Agent. He was charged with the proper distribution of these supplies to the various depots; with the unloading of troops and freight and their transportation; and with the construction, maintenance, and operation of railroad lines. In these duties the Commanding General, S. O. S., was assisted by a technical staff, consisting of the chiefs of the various supply departments. These duties of the Commanding General, S. O. S., did not abridge the functions of the chiefs of services. Each chief of service was directed to exercise a close personal control and supervision over all establishments of his department throughout the theater of operations. He was responsible that the necessary supplies were delivered and maintained in the proper depots; also that supplies pertaining to his service, were replaced either from the United States by requisition or from Europe. To enable the latter to be carried into effect, a General Purchasing Board had been established under the General Purchasing Agent. On this Board was a representative of each service, whose duty it was to locate supplies in the European market and obtain and deliver the same.

Commanding Officers of supply depots were responsible that supplies shipped by them were delivered either to the consignee or, if in a zone served by a regulating station, to the regulating officer. The regulating officer was responsible for the proper transportation and distribution of supplies in his zone. The responsibility of the C. G., S. O. S., in the matter of supply ceased when shipments were received at regulating stations.

* * * * * * *

LIST OF COMMANDING GENERAL, CHIEF OF STAFF, DEPUTY CHIEFS OF STAFF AND ASSISTANT CHIEFS OF STAFF WHO HAVE SERVED AT HEADQUARTERS, S. O. S.

COMMANDING GENERALS	FROM	TO	AUTHORITY
Brig. Gen. R. M. Blatchford	July 25, 17	Nov. 1, 17	G. O. 20, GHQ
Brig. Gen. Mason M. Patrick	Nov. 1, 17	Nov. 27, 17	AGO file, 201.
Maj. Gen. Francis J. Kernan	Nov. 27, 17	July 29, 18	G. L. 66, GHQ
Maj. Gen. J. G. Harbord	July 28, 18	Date	S. O. 207, GHQ
CHIEF OF STAFF			
Brig. Gen. W. C. Langfitt	Aug. 18, 18	Sept. 28, 17	G. O. 1, L of C
Maj. J. P. McAdams, Inf.	Sept. 28, 17	Nov. 27, 17	G. O. 4, L of C
Col. Johnson Hagood, CAC	Dec. 2, 17	Nov. 13, 18	G. O. 19, L of C
Brig. Gen. W. D. Connor, G. S.	Nov. 13, 18	Date	G. O. 53, S. O. S.
DEPUTY CHIEF OF STAFF			
Major J. P. McAdams, Inf.	Feb. 16, 18	Date	G. O. 1, S. O. R.
Col. John A. Hull, JA (for Finance)	Nov. 17, 18	Date	G. O. 55, S. O. S.
Brig. Gen. Hugh A. Drum	Apr. 21, 19	Date	G. O. 21, S. O. S.
FIRST SECTION GENERAL STAFF			
Lt. Col. Alvin B. Barber, C. E.	Feb. 16, 18	June 4, 18	G. O. 1, S. O. R.
Col. Chas. W. Kutz, C. E.	June 4, 18	July 22, 18	G. O. 21, S. O. S.
Col. J. B. Cavanaugh, C. E.	July 22, 18	Jan. 14, 19	G. O. 31, S. O. S.
Brig. Gen. E. E. Booth	Jan. 14, 19	Date	G. O. 3, S. O. S.
SECOND SECTION, GENERAL STAFF			
Col. J. C. Gilmore	Feb. 16, 19	Mar. 10, 18	G. O. 1, S. O. R.
Major Cabot Ward	Mar. 10, 18	Date	S. O. 22 Par. 8, S. O. S.
THIRD SECTION, GENERAL STAFF			
Col. Edwin B. Winans, Cav.	Feb. 16, 18	Mar. 30, 18	G. O. 1, S. O. R.
Lt. Col. J. W. Wright, Inf.	Mar. 30, 18	July 12, 18	S. O. 18, Par. 31, S. O. S.
	(Section absorbed by G-4, July 12, 18, GO 29, SOS)		
FOURTH SECTION, GENERAL STAFF			
Col. Henry C. Smithers, Cav.	Feb. 17, 18	Feb. 19, 19	G. O. 1, S. O. R.
Col. J. C. Rhea, Cav.	Feb. 23, 19	Date	G. O. 12, S. O. S.

THE S. O. S. GENERAL STAFF

In the S. O. S. the necessity for a general staff existed with particular force. The supply services with headquarters at Tours, each controlled large personnel and material, distributed throughout the entire A. E. F., and each rendered a particular service that was vital to the Army. The requirements of these services varied and were at times in conflict. Limited tonnage, labor, transportation and storage demanded that a priority be established, subject to constant readjustment, based upon a just and wise appreciation of the necessities of each service; but above all, meeting the most pressing demands of the Army as a whole. It was this important function that was satisfactorily performed by the General Staff, S. O. S. Through this body the Commanding General, S. O. S. directed his policy, thereby maintaining cooperation between the great supply services.

G. O. 31, G. H. Q., February 16, 1918, created five Sections of the General Staff, and in assigning their functions directed that commands subordinate to G. H. Q. conform in principle to the distribution of duties therein prescribed. This allowed sufficient elasticity in the G. S. organization of the S. O. S. to permit such changes and readjustments in duties as were suggested by experience, or required by the special character of the task imposed on the S. O. S. Such changes were frequent. Special functions and duties not foreseen at the time G. O. 31 was published, were created or arose through necessity, and were assigned to the most suitable section. No Fifth Section (G-5) was ever established, as training and instruction were supervised directly by G. H. Q. The Operations Section (G-3) was established and was concerned chiefly with troop movements and billeting, but was absorbed on July 12, 1918, by G-4. * * *

G - 1

G-1, S. O. S. was chiefly concerned with:

(a) Supervision and direction of the replacing of troops through Depot Divisions, regional replacement battalions, and other agencies designated to handle this class of personnel

(b) Disposition of casual officers and soldiers.

(c) Determining the number and kind of S. O. S. troops needed from the United States within the number alloted by higher authority, and determining the priority in which said troops should be sent.

(d) Preparation of tonnage statistics and designation of priority for all tonnage from the United States.

(e) Matters pertaining to the supplies and equipment of S. O. S. Troops.

(f) General control of leave areas, athletics and entertainment.

(g) Preparation of graphics and charts showing S. O. S. activities in operation.

In addition to the above, general supervision was maintained over all welfare activities and militarized societies.

Upon the signing of the Armistice all matters in connection with the embarkation of troops for repatriation were placed under G-1 and an Embarkation Section was formed to handle same.

Tonnage, replacements, leave areas, welfare work, entertainment, athletics, and prisoners of war were activities of this Section, the importance of which demand mention herein:

TONNAGE: The tonnage available for supplying the needs of the American E. F. was never sufficient, and after large troop shipments commenced in the Summer of 1918, was most inadequate. It thus became necessary for the Services of Supply to exercise the greatest care in making requisitions on the United States. The task of these headquarters in

this connection was to insure the maximum utilization of available tonnage and to allot cargo space to the services according to the relative urgency of their needs.

A program for the supply of the A. E. F. had been drawn up in 1917. This program, which contemplated an automatic flow of standard supplies, and the gradual accumulation of a ninety day reserve, is explained in the following cable which announced it to the War Department:

France,
Sept. 7, 1917.

No. 145-S
AGWAR
WASHINGTON

Paragraph 5

Have determined to establish in France reserves of all classes of supplies for 90 days to be maintained by monthly shipments under automatic supply system. This reserve to be based on authorized issues where such issues are regular, and on actual periodic consumption of other articles based on British and French experiences during the war.

Sub-Paragraph 1. Believe the foregoing system after some months practical experience will adjust itself on sound working basis obviating necessity frequent cables which are confusing. During preliminary trying out, there will be some quantities which will have to be readjusted. Naturally there will be also certain articles whose use is so exceptional that they cannot be included and which will therefore have to be requisitioned as needed. Supply many of these later will ultimately pass to the automatic bases as we gain experience.

Sub-paragraph 2. Have directed Chiefs of various services to prepare their estimates for cabling under foregoing system as per following plan: first, a list of four months supplies to accompany each movement of troops from the United States This will provide the 90 days reserve and in addition one month automatic supply for consumption and emergency. Second, a list showing the amounts which must be shipped monthly for each 25,000 men of the Expeditionary Forces.

Sub-paragraph 3. These last figures may be used by various War Department Bureaus for basis for their automatic shipment of supplies to France for the Expeditionary Forces.

Sub-paragraph 4. In operating under this system it will be understood that the strength of the Expeditionary Forces will be the total strength actually in Europe plus the strength of such additional forces as have already quit the United States and are enroute for European ports. The automatic monthly shipments should be based on the strength of the Expeditionary Forces at the first of each month as assumed above.

Sub-paragraph 5. Have commenced the construction of depot facilities in France based on maintenance reserve supplies for 300,000 men for 90 days. Ground at each depot large enough to permit great extensions to meet increase in forces.

Sub-paragraph 6. Cables submitted in accordance with this plan will be headed Automatic Supply and Exceptional Supply.

Sub-paragraph 7. First requisitions submitted under this automatic supply basis that for Quartermaster General number 136 paragraph 8. Other services will be sent as soon as possible.

Sub-paragraph 8. This cable should not be understood as interfering with any other requisition already submitted over my signature unless specifically requested

by me as any surplus at the time can be readily absorbed.

Sub-paragraph 9. Chiefs of service have also been directed to formulate cable report showing which articles of supply may be procured in Europe which will explain their ommission from list of supplies to be sent. General Purchasing Board will purchase everything practicable in Europe with a view of saving tonnage.

Sub-paragraph 10. Cable if this arrangement meets with approval and is thoroughly understood and will be applied.

Hq. A. E. F., Sept 9. 1917.

PERSHING.

All supplies not included by the foregoing system had to be requisitioned month by month according to the progress of production, the transportation to seaboard, the shipping available, the urgency of needs, and the actual military situation. Since tonnage was never available for the shipment of all supplies required, it was frequently necessary to curtail automatic and initial shipments. To control the complex situations that constantly arose, the following system was adapted for making requisitions and allotments:

On tentative estimates by the Services, each was allotted a portion of the total number of tons which the War Department announced as available for the coming month. Each service then submitted a cablegram calling for supplies previously reported to be at seaboard in America. Items were arranged in order of their urgency and amounted to the total tonnage allotted to the Service. G-1 checked these proposed cablegrams, eliminated supplies obtainable in Europe, made such other changes as were advisable, and consolidated all in a Priority Cable, which was sent to the War Department to govern flotations for the following month.

Each service also presented a list indicating its needs for the succeeding second and third months, arranged in order of urgency and the total based on a tentative allotment. This was checked in the same manner as the priority cables and forwarded to the War Department by courier cable for use in regulating timely procurement and transportation to the seaboard of the supplies required. Meantime the shipping program for the following month was based on the Priority Cable, which then automatically cancelled the tentative courier cable for that month. The War Department reported the tonnage expected to be available each month, and the extent to which it could fill requisitions.

When an emergency made it necessary to procure immediately supplies that had not been requisitioned in the Priority Cable for the current month, the service concerned was required to cancel by cable an equivalent tonnage of supplies requisitioned and substitute the articles needed. Every change in the troop program, every loss of a cargo ship, every unexpected delay in production or transportation in the United States meant readjustments in allotments and changes in requisitions. In August, 1918, the amount of available tonnage fell so far short of requirements that it became necessary to send the following cable:

(Extract)

> It will be impossible to limit allotments to the estimates of tonnage available as given in your paragraph 5, A. E. F., 1712, as the figures stated in our A. E. F. 1487 represent minimum requirements. HARBORD (T11 G-1).

During the month preceding the signing of the armistice, the tonnage situation became acute. Every service was obliged to cut its requisitions to a minimum. How far the amount of cargo received fell below the amount requested, is shown by the following table:

SERVICE	ALLOTMENT FOR OCT. 1918	AMOUNT SHIPPED	DEFICIENCY OR EXCESS
Quartermaster			
General Supplies	259,781	240,192	- 19,589
Forage	110,726	74,218	- 36,508
*Frozen beef			
Ordnance	153,984	81,789	- 72,195
Engineers	156,864)	164,412	- 175,941
	)		
Transportation	183,489)		
Motor Transport Corps	80,104	54,290	- 25,814
Signal Corps	12,986	3,422	- 9,474
Air Service	20,719	8,947	- 11,772
Medical	19,712	9,950	- 9,762
Chemical Warfare Service	9,660	2,461	- 7,199
Miscellaneous	14,200	3,999	- 10,201
French Replacement		78,542	78,542
Std. Gauge Locomotive	(300)	(158)	(-142)
Std. Gauge Cars	(8,200)		(-8,200)
Total	1,022,135	722,222	299,913

*No allotments made for this item, as frozen beef was transported in refrigerator space available either on troop transports or special refrigerator vessels. During October 25,622 tons of frozen beef were shipped from the United States.
(Note: Numbers in parenthesis indicate units, not tons.)

On October 28 the War Department was cabled as follows:

For Chief of Staff and Embarkation. Our requirements for supplies to be shipped during October as stated in S-271 amount to 1,022,135 short tons. Cable X 117 paragraph 1 gives estimate of shipping tonnage available for October as 850,000 short tons. Shipments for periods A and B as stated in cables X 174 paragraph a and X 197 paragraph 3, including French steel and frozen beef total 422,490 short tons or less than half of the 850,000 tons we have considered would be the minimum shipments for October. Deducting French steel and frozen beef from shipments as these items are not included in October tonnage allotments there were shipped in first 20 days of October 361,840 short tons or 35 per cent of requirements.

Sub-paragraph A. On account of failure to receive the supplies called for in past months our reserves are so depleted that the reduction in number of troops shipped during October cannot reduce our requirements for supplies to be shipped during that month.

Sub-paragraph B. The seriousness of the situation created by continued failure to ship the supplies we need has been repeatedly stated and cannot be too strongly emphasized. The shipments for October are falling so far short of what we need that prospects are extremely alarming. Weekly statistical reports numbers 58 and 59 of October 5 and 12 indicate that cargo is at ports available for shipment and state that there is still considerable ship tonnage employed in the import trade which can be withdrawn for Army service. Strongly urge that all possible measures be taken to insure our receiving the supplies which are essential for the maintenance of our forces.

The troops shipments of July and August had been so much larger than the original program that supply became a serious problem. The Armistice of November 11, 1918, however, terminated the problem.

TRANSATLANTIC CARGO UNLOADED IN FRANCE FOR THE AMERICAN E. F. FROM FIRST ARRIVAL UP TO AND INCLUDING NOVEMBER 11, 1918.

	Bordeaux	La Pallice	Rochefort	St-Nazaire	Nantes	Brest	Havre	Rouen	Marseille	Totals
1917										
June				24524						24524
July				23780						23780
Aug.				28355						28355
Sept.				33853						33853
Oct.	9742			59117						68859
Nov.	13675			74038		4415				92128
Dec.	16389			37200	10378	8187				72154
1918										
Jan.	32837	20480		60721	17398	4865				136301
Feb.	42747	27848		40948	12030	11080				134653
Mar.	59045	35843	5997	80432	26550	19560	4502			231929
April	71446	40967	19425	95588	32780	30602	10211			301019
May	99625	59656	6078	119693	36477	29799	33064			381692
June	123745	52451	19445	142914	30439	42869	37370	6894		456127
July	112072	58348	13473	122509	35017	41748	41084	5700	39314	469265
Aug.	140314	51680	15249	153533	36357	38800	30077		59221	525291
Sept.	155144	56953	9372	147089	45925	32436	38496	6815	70897	563147
Oct.	159740	67936	22712	164738	57692	30076	39482	2502	91374	636252
Up to & Incl. Nov.	75352	24253	3160	47627	13826	13420	10515		40982	229135
Totals	1111873	493715	114931	1456659	354869	307857	244801	21911	301848	4408464

Note: A small amount of transatlantic cargo first landed in England and then sent to France is not included.

THE REPLACEMENT SYSTEM OF THE A. E. F.

In the distribution of staff duties among the various Sections of the General Staff at G. H. Q., the replacement of losses in men was assigned to G-1. Based upon prospective requirements of combat and services of supply troops, replacement requirements for each arm and service and the order of priority desired were cabled monthly to the War

Department; each requisition or Priority Schedule being rendered sufficiently in advance to insure its proper accomplishment within the period for which estimated.

The first General Order on the subject (G. O. 46, G. H. Q., March 26, 1918, contained Provisional Orders Governing Replacement of Personnel, the salient features of which were:

G-1, G. H. Q. to arrange with the W. D. for automatic supply of replacement from the U. S. based on probable losses, and exceptional supply to cover unusual demands.

Each corps to consist of 4 combat, 1 depot, and 1 replacement division.

(a) Depot Divisions (under command of C. G., S. O. S.) to receive replacements from the U. S. for divisions, corps and army troops.

(b) The Replacement Divisions (under immediate command of Corps Commanders) receive replacements from the Depot Division, and furnish personnel directly to organizations, also:

(c) Casual Officers' Depot for reception and distribution of Casual Officers; Base Depots for reception and distribution of replacements for S. O. S.; Special Depots for aviation and other troops of special character.

Officers and soldiers of combat organizations to be dropped from rolls upon evacuation to S. O. S. hospitals; and upon recovery to be returned to their organization from hospital direct to Replacement Division.

Requisitions to be submitted weekly by combat, and monthly by SOS organizations, thru following channel:

Corps Hq. direct to Replacement Division. Replacement Div. thru C. G., SOS, to Depot Div. Depot. Div., thru C. G., SOS, to G. H. Q. Exhibit1).

Actually, the scheme as outlined was never operative in so far as replacement divisions were concerned. In the organization of the 1st Corps, two divisions, the 41st and 32d, were designated respectively as depot and replacement divisions, but before the latter division was prepared to function for replacement purposes it was reassigned to combat duty. At the same time the 41st Division was designated as the 1st Depot Division, and functioned both as a Depot Division and as a replacement division for all corps and combat divisions, forwarding replacements direct to organizations concerned.

By General Orders No. 111, G. H. Q., July 8, 1918, the plan was again modified and replacement battalions organized in each corps. These corps replacement battalions were to correspond to replacement divisions, and to cease to exist in any particular case upon the designation of a corps replacement division. By the same order, the 41st and 83d divisions, were assigned as Depot Divisions for all corps, and to function with others to be designated later under the Commanding General, Services of Supply, until such time as corps depot divisions were designated:

On August 29, 1918, the War Department was advised that it had been necessary to use five out of every six arriving divisions as combat divisions, and to handle replacements directly through Depot Divisions and replacement battalions without the Replacement Divisions originally contemplated. Of thirty-six divisions, comprising the first six corps, six divisions, namely, 41st, 83d, 76th, 85th, 40th and 39th were designated as Depot Divisions. In addition, Replacement Depots for auxiliary and special troops, and a Base Depot for the reception, classification, and distribution of S. O. S. replacements, and Special Depots for several Services were organized.

In October, 1918, Regional Replacement Depots were established 1 each for the First Army, Second Army and II Corps in lieu of Corps Replacement Battalions, which they then absorbed. These Regional Replacement Depots represent the evolution of the original replacement plan.

The functions of these Regional Replacement Depots were considerably broader than those of replacement battalions, as, besides forwarding replacements they were to received, uniform, arm, equip, and forward all casuals, stragglers, officers and men

evacuated from hospitals, and all personnel apprehanded as absent without leave. The operation of this system of Depot Divisions and Regional Depots was entirely satisfactory. Corps replacement battalions could not function with efficiency due to frequent changes in location and composition of corps. Casuals could not be eavcuated directly from hospitals to such battalions.

DEPOT DIVISIONS: The organization of a Depot Division arriving in France was identical with those for combat. On designation as a Depot Division, the artillery, engineers, and signal troops were detached and the balance of the division assigned to a depot area. In order to receive, classify, equip, and forward replacements in an expeditious and efficient manner, certain fixed personnel was absolutely essential.

Permanent training cadres limited for utilization as replacements were authorized for each such division as follows:

	Officers	Soldiers
Headquarters Company (including band)	3	100
Supply Company	3	50
Machine Gun Company	3	35
Rifle Company	3	50
(Total for division approximately	200	3500)

Experience demonstrated that the above represents the minimum for efficient service. These cadres changed gradually as individuals were forwarded as replacements, they being replaced in turn by others of like grades. It was found essential to adopt a scheme of gradual relief as otherwise individuals became stale with no hope of reward for duty well performed.

Certain administrative personnel was required for supply, transportation, police, sanitation, and hospitalization. This personnel differed with different divisions, depending upon location, and the facilities within the area, but the personnel required for these purposes was found to be approximately 2,500 commissioned and enlisted in each case. The necessity for such organization was recognized by G. H. Q. and the details being left to these headquarters. No attempt was made to conform to a fixed type of depot organization. Tables of Organization, considered best suited for respective needs, were adapted.

In general all police, supply, and miscellaneous duties of administration were performed by the permanent personnel exclusive of the training cadres, as it was absolutely necessary that these should devote their entire time to training replacements.

With the exception of Marines, replacements from the United States came organized in provisional companies, each company with an item number which identified the arm or service to which the replacement was destined. For Services of Supply, the item number also identified the special qualifications of the personnel. Marine Replacements arrived as provisional battalions.

The following tabulation shows the location, scope, replacements, forwarded, and period of activity of Depot Divisions, Special Depots, and Base Depots:

ORGANIZATION	LOCATION AND PERIOD OF ASSIGNMENT OF DEPOT	CLASS OF REPLACEMENT FORWARDED.
1st Depot Division (41st)	Saint Aignan-Noyers (Loir-et-Cher). Jan. 15, 1918, to date	Infantry, Cavalry, Machine Gun, Supply Train, Ammunition Train, Signal Corps (until Oct. 8, 1918), and Medical Corps (after July 15, 1918); also all vocational specialists as above.
		Total number forwarded: 295,668

ORGANIZATION	LOCATION AND PERIOD OF ASSIGNMENT AS DEPOT	CLASS OF REPLACEMENT FORWARDED.	
2d Depot Division (83d)	Le Mans (Sarthe), (July 24, 1918, to December 17, 1918).	Infantry, Machine Gun, Supply Train, and Ammunition Train. Total number forwarded:	193,221
3d Depot Division (76th)	St-Amand---Mont-Rond (Cher) (August 13, 1918 to October 28, 1918).	Infantry, Machine Gun, Supply Train, and Ammunition Train Total number forwarded:	19,971
4th Depot Division (85th)	Cosne (Nievre), (August 23, 1918, to October 24, 1918).	Infantry, Machine Gun, Supply Train, and Ammunition Train. Total number forwarded:	3,948
5th Depot Division (39th)	St-Florent (Cher), (September 1, 1918, to October 4, 1918).	Infantry, Machine Gun, Supply Train, and Ammunition Train. Total number forwarded:	10,156
6th Depot Division (40th)	La Guerche (Cher), (August 28, 1918, to October 24, 1918).	Infantry, Machine Gun, Supply Train, and Ammunition Train. Total number forwarded:	16,327
SPECIAL DEPOTS:			
Engineer Replacement Depot (116th)	Angers (Maine-et-Loire) (January 15, 1918, to January 15, 1919).	Engineer - combat and Services of Supply. Total of number forwarded:	29,126
Field Artillery Replacement Regiment.	La Courtine (Creuse), (January 15, 1918, to August 9, 1918), Le Corneau (Gironde), (August 10, 1918, to January 15, 1919).	Field Artillery, and Trench Artillery (until September 20, 1918), Field Artillery, and Trench Artillery (until September 20, 1918). Total number forwarded:	48,440
Signal Corps Replacement Depot (116th Field Signal)	Cours-Cheverny (Loir-et-Cher) (October 9, 1918, to December 21, 1918).	Signal Corps - Combat and Service of Supply Total number forwarded:	4,189
Quartermaster	Gievres (Loir-et-Cher) (May 15, 1918, to September 15, 1918), Chateau-du-Loire (Sarthe) (September 16, 1918 to February 26, 1919).	Quartermaster Personnel. Quartermaster Personnel. Total number forwarded:	3,960

ORGANIZATION	LOCATION AND PERIOD OF ASSIGNMENT AS DEPOT	CLASS OF REPLACEMENT FORWARDED.	
Air Service Replacement Depot	St-Maxient (Deux-Sevres), (June 10, 1918, to December 31, 1918).	Air Service Personnel	
		Total number forwarded:	4,017
Trench Artillery Replacement Battery	Vitrey (Haute-Soane) (September 20, 1918, to December 10, 1918).	Trench Artillery personnel. Functioned under Chief of Artillery, Requisitions submitted direct from General Headquarters.	
Coast Artillery Replacement Depot.	Mailly (Aube), (August 15, 1918, to November 15, 1918).	Coast Artillery personnel. Functioned under Chief of Artillery, Requisitions submitted direct from General Headquarters.	
BASE DEPOTS:			
Base Depot	Blois (Loir-et-Cher) (January 15, 1918, to February 15, 1919).	B and C Class personnel returned from combat organizations; replacements for all services having no special Depot, Casual Officers' Depot; Medical Corps Replacement Depot January 15, 1918, to July 15, 1918; Quartermaster Casual Depot from January 15, 1918, to May 15, 1918.	
		Total number forwarded:	52,679

The above is briefly summarized as follows:

Replacements received from the U. S.	258,478
Replacements obtained from reduction of Depot Divisions to authorized training cadres and skeletonization of combat divisions and pioneer infantry regiments (31st, 34th, 38th, 84th, 86th Divisions, and the 14th, 55th and 57th	
Pioneer Infantry Regiments).	178,453
Class A casuals from hospitals and elsewhere in France and directly from the United States, returned to their organizations as replacements.	245,069
Total Class A replacements forwarded from all depots to combat and Services of Supply organizations	682,000

While six depot divisions were organized only two, - the first and second, actually functioned as such from date of organization to November 11, 1918 - the date the Armistice was signed. These two divisions trained and forwarded practically all infantry, machine gun, and specialist replacements received for combat divisions. Practically all replacements sent from the other Depot Divisions were obtained by their reduction to authorized cadres.

The 4th and 6th were discontinued as Depot Divisions, and their permanent depot personnel utilized in the establishment of Regional Replacement Depots, the 4th functioning for the Second Army and the 6th for the First Army and the II Corps.

CASUALS: (Hospital Evacuations - Class A): The term replacement, as used herein, was often loosely applied as aynonymous with casual. This use was incorrect. A casual is an officer of soldier who is temporarily separated from his organization. All but a few of the casuals forwarded from Depot Divisions were Class A evacuees from S. O. S. hospitals.

The original plan, provided for the evacuation of Class A casuals combat from S. O. S. hospitals direct to corps replacement battalions, which was found to be impracticable owing to the frequent changes in location and composition of corps. The following procedure was followed, and subsequently confirmed on orders:

1. Hospitals in the Advance Section and immediately in rear, of Regulating Stations to forward men direct to corps replacement battalions to be there equipped, and forwarded to their organizations.

2. All other hospitals to forward their casuals to the nearest Depot Division to be fully equipped, and forwarded to the proper Corps Replacement Battalion.

This also proved unsatisfactory as it involved a retrograde movement of a portion of Class A evacuees, and involved delay in evacuations and in final movement forward. To meet this situation a Class A Casual Depot was established at NEVERS in October, 1918, for the reception, equipment and forwarding of all casuals evacuated from hospitals east of a north and south line through the 1st Depot Division, St-Aignan, and to function until regional replacement depots, already ordered, could begin operations. Meantime the Armistice intervened.

LEAVE AREAS: It was early seen that a system of leaves and furloughs was necessary which would differ from any previous practice of the American Army. Leave from military duties for the benefit of the morale as well as the health of officers and soldiers in a prolonged struggle at this distance from home was almost as much of a necessity as proper supplies.

The first leave order issued was G. O. No. 6, G. H. Q., January 8, 1918, which placed the control of the Leave Areas under the Provost Marshal's Department. The Y. M. C. A. was to furnish entertainment. The order provided that all officers and men of the A. E. F., in good standing, might be granted a leave of seven days every four months, time to travel to and from destination in France not included.

On November 27, 1918, by G. O. No. 217, G. H. Q., all matters pertaining to leave areas were separated from the Provost Marshal General's Department. By G. O. No. 65, S. O. S., December 14, 1918, a Leave Area Bureau was established under the jurisdiction of the C. G., S. O. S.

The first area selected was the town of Aix-les-Bains, with the neighboring small towns of Chambery and Challes-les-Eaux, in the Department of Savoie, France, which was given the name of the Savoie Leave Area. It was opened February 16, 1918, being the only leave area in operation until September 21, 1918, when La Bourboule, with the neighboring town of Mont Dore, in the Department of Auvergne, was added. Shortly after the opening of Aix-les-Bains as a leave area, it was found that owing to lack of funds, few men were able to take advantage of a leave, and accordingly General Order No. 38, G. H. Q., of March 9, 1918, was issued, which provided that soldiers might be ordered to a leave area

on a duty status and furnished quarters and commutation of rations at the rate of $1.00 per day. To cover this last point, contracts were made with hotels for furnishing food and lodging for permissionaries at a fixed price. The contracts provided for quarters and rations, hot water, a bath and clean towels and for the cleaning of the soldiers' shoes, the idea being to provide the soldiers with a leave without expense to themselves, in good hotels, and under such conditions of ease and comfort as would insure a complete rest and change from military duties.

The German offensive of March, 1918, caused the cancellation of leave privileges. The restriction remained in effect until May 24, 1918, when it was modified to permit leaves for troops not actually on the firing line or under orders to proceed there.

After the Armistice, the question of leaves was an active one. The C-in-C directed that a very liberal policy be adopted and that additional areas be opened.

The following table shows the areas in operation on April 1, 1919, the daily average number of men in the areas each month, and the total number received up to April 5, 1919:

NAME	DECEMBER 1918	JANUARY 1918	FEBRUARY 1918	MARCH 1918	TOTAL REC'D AT AREAS TO APRIL 5, '19
St-Malo (Ille-et-Vilaine)	2,021	2,008	2,390	1,917	50,836
Aix-les-Bains (Savoie)	3,440	4,260	876	3,274	76,685
Chambery (Savoie)			492	426	11,546
Challes-les Eaux (Savoie)		303	472	357	8,777
Grenoble (Isere)	1,242	1,449	1,923	2,308	34,017
Vals-les-Bains (Ardeche)		866	1,170	1,025	15,775
Lamalou-les-Bains (Herault)		717	711	1,175	8,388
Nimes (Gard)		256	335	297	3,605
Menton (Alpes-Maritimes)	93	783	1,327	1,823	18,743
Nice (Alpes-Maritimes)	812	1,778	2,960	2,927	32,265
Cannes (Alpes-Maritimes)		442	724	685	7,038
Luchon (Haute-Garonne)		178	901	959	8,524
Cauterets (Haute-Pyrenees)		737	1,279	1,789	18,180
Eaux Bonnes (Basses Pyrenees)		128	366	456	4,456
Biarritz (Basses-Pyrennes)				756	4,839
Annecy (Haute-Savoie)			794	779	5,825
Chamonix (Haute-Savoie)		242	1,369	2,195	16,607
Monaco (Prin. of Monaco)		296	1,125	1,672	14,228
La Bourboule (Puy-de-Dome)	2,680				2,680
	10,288	14,443	19,214	24,820	343,014

On December 14, 1918, a policy was approved of apportioning accommodations in leave areas between the troops of the S. O. S. and the Armies, on an approximate ratio basis. The allotments in force April 1, 1919, were as follows:

Base Section No. 1	890	men per week
Base Section No. 2	4,170	" " "
Base Section No. 4	30	" " "
Base Section No. 5	550	" " "
Base Section No. 6	40	" " "
Base Section No. 7	200	" " "
District of Paris	100	" " "

Intermediate Section 1,050 men per week
Advance Section 2,400 " " "
Le Mans - Enough to fill two special leave trains per week. (About 1,000 men.)

Wherever possible, men were sent to the collecting stations at Is-sur-Tille and Bordeaux, in accordance with allotment as regards number only, and from there, by special train service, to different areas according to available accommodations.

Allotments to the Armies were as follows:

	Weekly Accommodations
First Army	
Aix-les-Bains	4,000
Grenoble	1,000
La Bourboule	400
Second Army	
La Bourboule	2,600
Vals-les-Bains	1,130

Movements were by special trains to the extent that they could be furnished by the Troop Movements Bureau, and the remainder by commercial trains.

Leave facilities for colored troops were arranged for in the towns of Chambery and Challes-les-Eaux, near Aix-les-Bains, with a combined capacity of about 1,100.

On January 22, 1919, arrangements were made to increase the number of special leave trains from six to twelve, in order to provide four trains per week to each the First and Second Armies, and four trains per week to the Third Army, which theretofore had received no allotment, owing to its late organization and operations.

It was found necessary to close the Auvergne Leave Area, including La Bourboule and Mont Dore, on January 15, 1919, on account of an epidemic of influenza. A slight epidemic of influenza which occurred at Aix-les-Bains, Lamalou-les-Bains and Eaux Bonnes, made it necessary to empty the areas for a short time, except Aix-les-Bains, which was without permissionaires for about three weeks. The use of Cauterets was also interfered with by snowslides and landslides, which put the electric connecting railway out of commission, thus interrupting the flow of men to that area for about a week. When the flow of men to an area was interrupted for any reason, it took ten days to two weeks before it could be resumed again to its full extent.

In practice it was found desirable to keep about 8% to 10% of an area contract capacity reserved to take care of emergencies, and to discipline hotels that failed to live up to their contracts, and for the isolation of men in case of illness.

The matter of entertainment in the areas was undertaken by the Y. M. C. A. Wherever available, casinos were rented, with the accompanying theatre. The total number of casinos rented was 16. The plans contemplated a performance at the theatre every night and during each day a dance, the music being furnished either by a military band sent from one of the Armies, or by an orchestra procured by the Y. M. C. A.

Excursions were arranged to all points of interest in the neighborhood with Y. M. C. A. conductors, who explained the interesting and historical features. When weather permitted, baseball was played. There were moving pictures daily and the canteens afforded the soldiers an opportunity of buying coffee and sandwiches. The total number of Y. M. C. A. personnel engaged in this work on April 1, 1919, was 293 men and 406 women.

* * * * * *

PRISONERS OF WAR: Regulations governing the evacuation, supply, work and custody of prisoners of war were published in the pamphlet, Prisoners of War, Regulations and Instructions 1918, and in General Orders 106, July 1, 1918, from G. H. Q.

Prisoners of war were required to labor for the public service within the limits of time and kind of labor prescribed in regulations, under the direction of the service of the Army to which they were assigned for work. Prisoners were engaged in maintenance of roads, stevedore work at ports, in the motor shops at Verneuil, construction of camps, railroads, piers, on salvage work, and general maintenance and police. The guarding and maintenance of the prisoners was under the P. M. G. Prisoners of War Escort Companies were authorized in tables of organization dated August 9, 1918, and consisted of two officers and 84 men each. When the Army Service Corps was created by G. O. 38, S. O. S., the personnel of Prisoner of War Escort Companies became members of the Army Service Corps, though they functioned under the orders of the P. M. G. Prisoner of War Escort Companies were formed by the Commanding General, S. O. S., as needed.

The organizations were as follows: C. P. W. E. No. 1 at St-Pierre-des-Corps; Officer Prisoner of War Enclosure at Richelieu; and 92 labor companies on duty in various parts of the S. O. S. and the Advance. This included Labor Co. No. 1 or Hqs. Co. C. P. W. E., consisting of 710 men. The total number of prisoners of war captured by the A. E. F. was 885 officers and 47,000 enlisted men.

G-2

The functions of G-2 (Intelligence) in the S. O. S. were to create a system of counterespionage in order:

(a) To prevent enemy agents from entering France.
(b) To control the movements of civilians in such a manner as to prevent enemy agents from circulating along the American Army's line of communications.
(c) To detect enemy agents who might have succeeded in entering France, and
(d) To prevent the transmission of information by enemy agents across the frontier.

The methods adopted were to throw a screen around the border of France, which was accomplished by stationing personnel at the different ports receiving American troops and supplies, as well as along the borders of neutral countries. For administrative purposes G-2 divided France into sections, which in general conformed to the French military regions, and in this way the American Intelligence Service was able to cooperate with and use the machinery already established by the French.

It was very necessary to maintain liaison with the Intelligence Service of the Allied armies operating in France. Special attention was paid to localities such as large depots, training camps, prisoner of war camps, etc., which places were likely to attract enemy agents. On the establishment of important leave and convalescent areas, agents were placed at these points. The central office G-2, S. O. S., was maintained at Paris, because of greater facilities for the transaction of its business.

The following table will give idea of the activities of G-2, S. O. S., exclusive of G-2 in Base Section No. 3 (Great Britain), covering the period from January 1, 1918, to March 15, 1919:

Total number of cases handled by this section	3,706
Number of spies apprehended by G-2 S. O. S. and convicted by military courts	3
Number of enemy agents located in the S. O. S.	107
Number of suspicious persons interned	119
Undesirables expelled from France, outside the S. O. S.	18
Undesirables returned to the United States	189
Number of passport applications investigated by Passport Bureau of G-2 S. O. S.	10,388
Total number of visas refused	323

As evidence of the activity of the frontier control of G-2, S. O. S., the representative of G-2, S. O. S. at Modane (on the Italian frontier) alone examined over 3,200 travelers, during the last six months.

G-4

G-4, S. O. S. was concerned with supply, construction, hospitalization, transportation, labor, salvage, troop movements, graves registration, fire prevention, garden service and billeting. This Section maintained representatives at base ports, and when needed, sent representatives into training areas to expedite the arrival of supplies and equipment. The important matters that primarily concerned this section will be referred to under the services to which they pertain. The following details of troop movements and fire prevention warrant presentation here:

TROOP MOVEMENTS: Troops were requisitioned from the United States in a similar manner to supplies.

A program of troop shipments to France was early planned, but it was destined to be limited by delay in recruiting, equipping and training in the United States, and the scarcity of tonnage. This program was designated the Priority Schedule and provided for the priority of shipment from America of divisional, corps, army and S. O. S. troops and replacements. The necessity later became apparent for troops of special training not included in the Schedule. A system of item numbers was adopted and all organizations on the Priority Schedule were assigned definite numbers for cable identification.

Until August, 1918, these Headquarters forwarded to G. H. Q. the calls for personnel, as well as supplies, in the various services in the S. O. S. G. O. 130, G. H. Q., August 6, 1918, authorized the Commanding General, S. O. S. to requisition direct to the War Department for necessary S. O. S. personnel.

The Troop Movements Branch, from February 16, to April 11, 1918, functioned under G-1. From April 11, to July 12, 1918, it was a part of G-3. When G-3 was absorbed by G-4, troop movements was transferred to the latter section.

Between May, 1917 and April, 1919, a total of 2,084,676 American troops arrived. Of these, approximately 40% were routed through Great Britain, where the port of Liverpool was used and the men moved by rail to rest camps in the vicinity of Winchester, Romsey and Southampton. The remainder of the American troops were forwarded to France direct and debarked through Brest, St-Nazaire and Bordeaux. The following analysis of arrivals by months shows the rate at which the flow of troops was maintained. The figures include officers, enlisted men, field clerks, nurses, marines and naval personnel, but do not include civilians who accompanied the A. E. F.:

	1917	1918	1919
January		40,759	432
February		29,723	178
March		74,627	201
April		105,076	
May	1,308	233,038	
June	14,912	230,174	
July	3,900	313,410	
August	19,263	262,487	
September	22,544	310,765	
October30,338	202,663		
November	37,358	95,519	
December	54,273	1,728	
Aggregate			2,084,676

A comparison between the arrivals in Europe during the mouth of July, 1917, 3,900, and the same month of 1918, 313,410, indicates the expansion in port and transportation facilities which was demanded. The maximum number of troops debarked in any one day was on September 21, 1918, when a total of 50,124 was attained, requiring approximately 2,000 cars for transportation inland.

Information relating to expected troop arrivals was cabled by the Navy Department to the senior Navy officer in London, and by him transmitted through the Force Commander at Brest to the Navy representative at Headquarters, S. O. S. Such cables stated in substance that a certain ship had sailed on a certain date, with list of organizations, their item number, the number of officers and men, and gave some data as to cargo. These cables were in code and were sent, for reasons of safety, approximately three days after a vessel had sailed. The Navy directed the ship, while at sea, to a specific port, and the port usually favored by the Navy was Brest, for the reason that it was the nearest port to the United States, and ships entering there passed the shortest time in submarine infested waters. There was no equal distribution of incoming troops between ports. The deep draft vessels used as troop ships, could not enter any Atlantic port except Brest.

Upon receipt of the information, G-4, S. O. S. prepared a list of organizations on board the expected vessel. These sheets were distributed to the various services to suggest destinations for their special troops. The destinations of combat troops were furnished by G. H. Q. and of casuals and replacements by these Headquarters. This information was consolidated and wired to the commander of the port where the transport was expected. Notification wires were also sent to the section and station commanders of final destinations. If troops were sent directly to the front, the Regulating Officer concerned was notified.

When an organization arrived it was card-indexed by Troop Movements and thereafter each move, with the authority therefor, was recorded on the card. Thus, at any time, a unit could be located. For the information of the services and all others concerned, a daily Troop Movement sheet was published, giving arrivals and destinations.

The movement of our troops across the English Channel to French ports was handled by the British authorities in the most efficient manner. Not alone was it a problem in transportation, but it was complicated by submarines, drifting mines and bad weather. It required the closest cooperation between the British and American authorities.

When our troop arrivals were at the maximum, it required constant effort to keep the ports clear. The troops, upon being disembarked, were marched to rest camps, where they were held until transportation was available to send them to billeting areas, where their equipment was completed and they were given a course of training lasting about two months. In order to expedite the assembling of organizations newly arrived, billeting areas were prepared in the vicinity of base ports for the reception of divisions, less their artillery brigades.

The need for replacements in our First Army became so imperative in September and October, 1918, that combat divisions which were in training in the S. O. S. were broken up and sent forward as replacements for divisions on the line. One call, made without warning, required the S. O. S. to transport to the First Army approximately 28,000 men, located in five different areas. Haste was imperative. This movement required 23 trains of about 50 cars each, to be moved an average distance of 540 miles, and was accomplished and the last troops were detrained and reported to their divisions in 144 hours from receipt of the telegraphic call for the replacements.

It was the original intention of tee War Department to equip fully troops for service in France before their departure from the United States. This was attempted until July, 1918, when it was found that it was impracticable to ship unit property on the same transport with the men. Property became separated from the troops before debarka-

tion in France. In many cases this property was not shipped on the same vessel with the troops, or it was loaded on another vessel in the same convoy and this vessel directed to a port in France other than the one where the organization landed. This resulted in serious delay in promptly restoring property to troops in their respective training areas. It was finally determined to forward organizations from the United States with individual mobile equipment only. Under this system, when a division arrived at a billeting area, it was immediately equipped. To enable the services to accomplish this, unit property was sent in bulk from the United States, and for some time before the armistice, billeting areas assigned for occupancy were completely equipped with property, forage, wood and rations, awaiting issue to organizations upon arrival.

Very frequently there was a simultaneous demand for additional railroad transportation from the French and ourselves. Grave situations arose. Our country may well feel gratitude to France for the manner in which her railroad authorities met this situation and strained personnel and equipment to the limit in facilitating our participation in the common cause.

BUREAU OF FIRE PREVENTION: Previous to January, 1918, neither construction work nor the accumulation of supplies had progressed far enough to cause large fire risks. Fire prevention was left to local commanding officers, who applied the usual methods employed where troops are stationed.

In January, 1918, a fire prevention engineer was requested to be sent to France to organize fire protection throughout the A. E. F. On June 6, such an officer, who was experienced in modern methods of fire prevention, reported from the United States and was assigned to the Chief of Utilities for service with the Bureau of Fire Prevention.

In April, 1918, a board of officers, all experienced in fire prevention, visited the entire S. O. S. and submitted a report covering the question of fire and explosion hazards.

On May 9, 1918, General Order No. 15, S. O. S., organized a Bureau of Fire Prevention, as part of the Service of Utilities, but by Sec. 1, par 2, G. O. No. 34, S. O. S., this Bureau functioned directly under G-4, S. O. S.

The duties of the Bureau of Fire Prevention, in brief, were the establishing of standard rules for fire patrols, disposition of rubbish, heating, lighting, policing, alarms, etc., in their relation to fire prevention. This bureau was directed to carry out inspections and to proceed mainly along fire-prevention lines and not attempt in general to provide protection against fires beyond control by small apparatus. The personnel consisted of a maximum of nine commissioned officers and seven enlisted men.

There were in all 130 fires recorded in properties of the S. O. S., up to January 31, 1919. The losses were small in comparison with the total values of properties threatened, and the total is estimated as between $1,000,000 and $1,250,000. This does not include forest fires. There were only a few fires believed to be of incendiary origin and definite proof was not secured in any case. Most of these were attributed to German prisoners, and no fire is charged to the act of free enemy agents working on a definite plan of destruction. It was difficult to carry on any destructive work in France during the period covered. The local guarding at important stations was generally effective.

THE RECLASSIFICATION SYSTEM CASUAL OFFICERS' DEPOT AT BLOIS

The Casual Officers' Depot was established at Blois (Loir-et-Cher), early in January, 1918. The purpose of this Depot was to provide a convenient distributing point to which casual officers arriving from the United States could be automatically evacuated from the United States could be automatically evacuated from the ports. Officers found unsuited for combat duty, and officers to be discharged for inefficiency, under the pro-

visions of G. O. 62, G. H. Q., 1917, and F. P. 45, G. H. Q., 1918, were sent to this Depot for disposition, beginning with the month of March, 1918.

The Reclassification System for officers was an evolution. It was effected by the needs of the services and by various General Orders issued on the subject. The first of these, General Orders No. 62, G. H. Q., 1917, prescribed the means by which officers not holding permanent commission could be eliminated from the service, providing for Efficiency Boards, with final action thereon by the President. During the Autumn of 1917 and in the first months of 1918, a number of regular and temporary officers were found unsuited to command troops and were relieved and assigned to other duty. The demands of the service made it necessary without determination of their special fitness to immediately use them in the S. O. S. Nevertheless, this was the first step toward a Reclassification System.

General Orders No. 45, G. H. Q., dated March 25, 1918, amplified General Orders No. 62 referred to, applying its provisions to officers at the National Guard, National Army and Reserve Corps, and gave certain commanders authority to convene boards on officers of these classes with the object of elimination. This order did not change General Orders No. 62 with respect to provisional and permanent officers. Until the issue of G. O. 45, not many elimination boards had been convened, as boards convened under General Orders No. 62 provided only for the elimination of officers of the Regular Army. Both General Orders 62 and 45 were designed primarily as a means of eliminating inefficient officers from the service, the alternative being discharge or retention on present duty. Early in April 1918 about 25 officers reported at Blois under orders to be discharged from the service. The need of officers was such that it was suggested that these officers might warrant a trial on other duty. Accordingly, authority was obtained from G. H. Q. on April 10 to delay the actual discharge of such officers. This was first tried on 20 officers ordered discharged and the orders for eighteen of them were later revoked. The first officer to be saved by the inauguration of this policy was a second lieutenant of the Signal Corps, who recommissioned in the Quartermaster Department and at the date of this report is still performing satisfactory service in the A. E. F.

The Reclassification System was next extended to student officers at the service schools, who, under observation, had shown that they were unsuited for combat duty. One hundred and fifty-two officers of this class from the four service schools were recommissioned in other arms or corps as a result of reclassification. The reclassification was then further extended to include the class commonly referred to as "misfits", temporary officers whose training did not fit them for their assignments. These officers were simply reclassified and reassigned without the action of an efficiency board or other formality except in special cases.

Section II, General Orders No. 117, G. H. Q., July 16, 1918, is historically interesting, being the first order which mentions the terms Reclassification and Reassignment. This section is as follows:

> II. Authority is granted to corps commanders to order to the Casual Camp, Blois, for reclassification and reassignment, officers who prove unfit for duty with combat divisions.
>
> These Headquarters need not be consulted, but notification will be sent in every case.

The relief of officers under this order was usually initiated by the immediate commander, who forwarded a letter containing the following data through channels to the corps commander (division commander if not part of a corps) who, if the officer was relieved and sent to Blois, forwarded it direct to these Headquarters, with the remarks and recommendations of intervening commanders thereon:

(a) Name of officer concerned.
(b) Rank and branch of service commissioned in.

(c) Complete military history.
(d) Full statement as to education languages, etc.
(e) Business in civil life.
(f) Accurate estimate of his qualifications or disqualifications, good or bad.
(g) Statement of what led to his being relieved from duty with troops.
(h) Statement of any duty which he has ever performed in the military service which he has performed well, and for which he is recommended.

G. O. 131, G. H. Q. issued August 7, 1918, corrected the principal objections to G. O. 117. Divisions, Corps and Army Commanders were authorized to relieve and send to Blois officers considered unfit for combat duty (except that officers belonging to a division in a corps were sent first to corps headquarters), at the same time forwarding a full and complete report to these Headquarters.

The provisions of this order requiring division and higher commanders to convene efficiency boards to pass on officers deemed so inefficient that they should be eliminated (or, if regular officers, demoted), was not generally complied with. Commanders continued to send officers to Blois, regardless of whether they were believed fitted for other duty, or wholly disqualified for commissioned service.

CLASS B AND C OFFICERS: Another large class of officers that required classification was the wounded and disabled officers (Class B and C) who were temporarily or permanently unfitted for combat service, and whose services were utilized to release officers on duty in the S. O. S. for combat service at the front. There was a total of 962 officers of this class.

It will be seen that the fundamental idea in the Reclassification System was the placing of officers in positions where they might render the maximum service to the government. This demanded prompt advancement in the case of an officer who demonstrated exceptional qualifications for a higher position. It is manifestly to the interest of the government to give an officer the rank commensurate to the importance of the duties efficiently performed by him. Having once given an officer advanced rank, it was impossible to reduce him in grade in the event of his failure to meet requirements.

To provide a method by which exceptionally qualified officers, as well as those who were inefficient, could be placed in positions where they could render the best service, a cablegram was sent by G. H. Q. requesting the necessary authority. This was approved by the War Department and resulted in a number of advancements in rank and discharges from service in one grade with acceptance of a lower rank.

THE WORKING OF THE SYSTEM: The Casual Officers' Depot at Blois was also commonly referred to as the Reclassification Depot. The administrative handling of officers sent to Blois for reclassification comprised only a part of the functions of this Depot. Casual officers arriving from the United States were automatically evacuated from ports to this station for classification and assignment; replacements for various S. O. S. Services were likewise sent there for classification and assignment; and all Class B and C officers and enlisted men evacuated from hospitals were automatically sent to this station for classification and assignment to such duties as they were physically able to perform. These various functions required a large personnel and statistical organization, which also furnished the administrative machinery for reclassification.

On reporting at Blois for reclassification, the officer was interviewed by the personnel adjutant who, if the report in his case had not been received, obtained from him certain data regarding the casue of his relief, qualifications, etc. He was also required to fill out his qualification card. He was then assigned quarters; if a field officer, at a hotel or billet; if a company officer, in the French barracks used as officers' quarters.

The letter or report giving in detail the reasons for the relief of the officer, orders for discharge, proceedings of board, were sent to these headquarters, and usually

were received some days after the officer reported at Blois. This resulted in certain officers being held as long as two weeks awaiting action. During this period officers were utilized in drilling and instructing casuals, attending tactical walks, supervising construction, or other duty.

Upon the receipt of the report in his case, he was ordered to these Headquarters for personnel interview and reclassification. Depending on the decision as the result of the interview, and the consideration of all the reports or other available data, he was either ordered back to Blois for action of efficiency board under G. O. 45, or was was assigned to such duty as his vocational experience or special qualifications fitted him for, or sent to a replacement depot for return to combat duty in another division.

The officers destined for action of the Efficiency Board, with view to their elimination or demotion, were returned to Blois to appear before the Efficiency Board. They were allowed counsel and if practicable, witnesses, and upon completion of their cases, forwarded through these Headquarters, were held at Blois awaiting final action by the C-in-C. If, as a result of approved findings of the Board, they were retained in the service, they were then reclassified and assigned to duty in the S. O. S., or returned to combat duty in another division.

It will be noted that the actual reclassification and assignment, was not done at Blois but at these Headquarters. In the organization of the Reclassification Depot at Blois it was intended that it should include a permanent board composed of officers of long experience and recognized ability, whose sole duty would be to carefully investigate and inquire into all cases of misfit and inefficient officers, and to recommend reassignment to appropriate duties, discharge, demotion, or such other disposition as the interests of the service might require. Suitable officers for this important duty were never available. In default of such officers and Board the actual reclassification was done at Headquarters, S. O. S. by personal interview with each officer ordered to Blois for reclassification and assignment.

This work was done by the Deputy Chief of Staff, assisted by a General Staff officer in immediate charge of the reclassification work. The Deputy Chief of Staff personally acted on the cases of senior field officers, and the junior officer on the remaining cases. Difficult or doubtful cases were considered by the two as a Board, and the Commanding General was kept in touch with the work being done by reference to him of typical cases for decision as to policy, also for decision in the cases of senior field officers recommended for return to combat duty. The Commanding General also personally handled the cases of general officers.

DETAILS OF RECLASSIFICATION: The reclassification of officers who were considered inefficient or unsuited for combat or other duty on which employed involved one or more of the following operations:

1. Action of Efficiency Board in cases of officers whose inefficiency was believed to be such that there value to the service in any grade or capacity was questionable.

2. Officers ordered discharged for inefficiency with troops who, upon careful investigation and reclassification, there was good reason to believe that they might make good in other work, and in whose cases orders for their discharge was suspended pending try-out.

3. Action of Efficiency Board, after reclassification, in the case of ofcers whom it was necessary to reduce in grade in order to utilize their services, in view of lack of qualifications for any position commensurate with their rank. Example, a field officer, who could only be used as captain of a labor company.

4. Regular officers who by their inefficiency in combat or other duty were believed incapable of rendering good service in any position commensurate with their advanced temporary grade required action of Efficiency Board for demotion.

5. Reclassification without action of Efficiency Board in the following classes of cases:

(a) Officers found unsuited for combat duty, but whose qualifications were such as to indicate proficiency in other duty.

(b) Student officers, attending Service Schools, who were found unqualified for such duty, but were believed suitable for other duty.

(c) Officers commissioned in a Staff Department or Service whose civilian experience did not fit them for such duty, but which indicated proficiency in another Staff Department or Service.

(d) Wounded and disabled officers (Class B and C) reclassified for such duty as physically able to perform in order to release officers for combat duty.

6. Acceptance of resignation (recommended) in the case of long and honorable service in the National Guard, advanced age, or for other special reason meriting consideration, where no misconduct is involved. This action generally taken without referring the case to an efficiency board.

7. Reassignment to combat duty in another division, in the case of an officer relieved from duty with troops and sent to the S. O. S. for reclassification. This was done only as a result of personal interview, careful consideration of the officer's statement, the reports of his superiors, opinion of his qualifications by other officers (if obtainable), and when all the circumstances of the case seemed to warrant another trial under different commanders. This action was frequently taken without referring the case to an efficiency board.

8. Assignment to combat duty, or service schools, in the case of officers having had military training and who were commissioned in a staff department or service and found unsuited for such duty.

9. Disciplinary action if the allegations involved misconduct rather than inefficiency, or if misconduct was brought out by the investigation of the board.

10. Action of Disability Board in cases involving mental or physical disqualifications.

While all inefficient officers relieved from organizations in the Zone of the Armies were sent to Blois, those in the S. O. S., serving in combat organizations or staff department, were usually ordered before boards convened by orders from these headquarters at the station where the officer was serving. If the allegations of inefficiency were sustained by the Board these officers were also sent to Blois to await orders, and were reclassified and assigned, discharged, or demoted, etc., the same procedure being followed as in the case of those sent directly to Blois for action in their cases.

A most essential feature of reclassification was the follow-up system. One month after a reclassified officer reported for duty in his new assignment, his commanding officer was required to report on his efficiency, the manner in which he performed his duties, whether he should be continued on his present duty, etc. In addition, every change of status and everything pertaining to the officer's efficiency, was noted on his record and kept up-to-date. Many officers were tried out in two or more positions before making good. As a result of this policy, and the care exercised in assigning officers to duties, only a small percentage of reclassified officers were found wholly unfit, necessitating the final resort to the Efficiency Board to eliminate them from the service.

RESULT OF RECLASSIFICATION: Up to February 15, 1919, when the Depot closed, a total of 1,101 officers had been reclassified, and 270 officers sent before an efficiency/board. The total of reclassified officers included all officers sent to the S. O. S. from combat organizations for reclassification, or as result of action of efficiency board, but did not include the officers that were reclassified at Corps or Army Headquarters, or at G. H. Q., and not sent to the S. O. S. for duty. Nor does the total as to efficiency

board cases include officers ordered before efficiency boards by division, corps army or G. H. Q. orders.

Provisional officers at the regular army and regular officers holding temporary rank, if considered unsuited for their advanced temporary grade, upon reclassification, were ordered before the Board at Blois, with the view to demotion. The same policy was pursued with reference to temporary officers.

Of the 270 officers acted on by the Efficiency Board at Blois, 39 were returned to combat duty in another division, 48 discharged, 12 demoted, 35 sent to the United States for muster out (after Armistice), and the remainder assigned to various duties upon reclassification in the S. O. S.

In addition to the reclassified officers returned to combat duty, when our troops began active operations, every regular officer who could be spared, and every temporary officer who was believed qualified by previous training and whose place could be filled, was released for duty at the front, though the needs of the S. O. S. for officers were never adequately met. As a rule, the officer who did not possess qualities that fitted him for duty at the front, was not capable of successfully performing many of the duties in the S. O. S. which required the same qualities of good judgment, agressiveness and driving force to overcome obstacles and get results.

Of the four classes of officers who were reclassified, there is no doubt of the value to the service of reclassifying the following: 1st, those who had been ordered discharged and were given a second trial; 2d, student officers found unsuited for combat duty while taking the course at a service school; and 3d, those who were found unsuited in a service or staff department and were believed qualified for duty in another service or staff department. The bulk of the officers reclassified belong to the 4th class, viz., those serving with combat organizations who were found unsuited for combat duty. From this class some criticism has come.

NUMBER RECLASSIFIED: The following tabulations show the result of reclassification and the action of efficiency boards or regular officers (including provisional) and temporary officers:

	FROM COMBAT	SOS	ASSIGNED TO SOS	RETURNED TO COMBAT	RETURNED TO US	TOTAL
Reg. Army	66	2	46	20	2	68
Reg. (Prov.)	62		43	8	11	62
Natl. Guard	373	4	273	32	72	377
Natl. Army	513	61	400	58	116	574
GRAND TOTAL						1,081 *

(*) Does not include General Officers, Marine and Navy.

NUMBER BEFORE EFFICIENCY BOARDS:

	FROM COMBAT SOS		ASSIGNED TO COMBAT SOS		DEMOTED ASSIGNED TO COMBAT SOS		DIS-CHARGED	RET. TO US	TOTAL
Reg. Army	20		4	7	3	6			20
Reg. (Prov.)	20		4	13	1	1		1	20
Natl. Guard	93	2	11	48		3	17	16	95
Natl. Army	121	14	18	68			31	18	135
GRAND TOTAL									270

On November 27, 1918, there were, according to best available data, a fraction less than 82,000 officers serving in the A. E. F. On March 1, 1919, the authorized commissioned strength of the Regular Army was 12,213. Assuming that approximately 40% of this number served overseas, the officers of the A. E. F. consisted approximately of 77,000 temporary, and 5,000 regular (including provisional and temporary appointments). Based on this data, the above tabulation reveals the following interesting information:

1st, That 1 regular officer in 40, and 1 temporary officer in 80 were found unsuited for the duties they were performing and had to be reclassified.

2d, That 1 regular officer in 125, and 1 temporary officer in 335 were ordered before Efficiency Boards.

3d, That, approximately, 23% of the regular officers, and 11% of temporary officers who were found unsuited for duty with troops were returned to duty with troops after reclassification and as result of action of efficiency boards.

The proportionate excess of regular officers as compared with temporary officers who were relieved from combat duty was undoubtedly due to two principal causes:

1. The difference in the standard of efficiency expected, naturally resulting in higher commanders being much more exacting in their requirements of regular officers than of temporary officers performing similar duties.

2. The commissioned strength of the Regular Army on January 1, 1916, was less than 5,000. It was increased during the war by provisional and temporary appointments of lieutenants to over 12,000. The sudden demand for officers to fill the number of vacancies caused by the great increase in the Regular Army upon our entry into the war, coincident with the requirements of the National Army and National Guard for officers, resulted in a considerable lowering of the standard. These officers, a large proportion being young and inexperienced, were rapidly advanced to the grade of captain and major by the normal system of promotion in the regular establishment and quite naturally many proved unequal to the command of war strength organizations.

The fact that the proportion of regular officers returned to combat duty in another division was double that of temporary officers was due primarily to the difference in the standard of efficiency referred to in the preceding paragraph. A number of senior regular officers were relieved while serving in the training areas, because they were believed physically unfit to staff the strain of combat service. In the cases of others sent back from the front the reasons given for their relief did not appear to justify the casting aside of the years of experience and training possessed by these officers. This was a valuable asset of the government which could not be replaced. As an indication of the care that was exercised in returning officers to combat duty, the records show that of the 164 officers, who, upon reclassification, were given a second chance in another division, less than 5% were again found wanting.

ADJUTANT GENERAL'S DEPARTMENT, S. O. S.

Adjutant General:

Col. Orrin R. Wolfe, Inf., assigned August 29, 1917, by G. O. 1, L. of C.

Col. Frank A. Wilcox, Inf., assigned November 30, 1917, by G. O. 16, L of C (Died in service).

Col. L. H. Bash, Inf., assigned February 13, 1918, by G. O. 16, L of C.

The Adjutant General's Department was subdivided as follows:

Statistical Division: The Statistical Division embraced the following subsections:

(a) Personnel Section: On September 1, 1917, the Personnel Section commenced to keep a complete record of all officers, army field clerks, enlisted men and civilians on duty or stationed at Headquarters, L. of C. On December 3, 1918, statistical sub-

sections were established at each of the technical and supply services and at the staff departments stationed at Headquarters, L. of C. The Personnel Section compiled, published and distributed lists and directories, as follows:

1. Weekly strength return of all officers and army field clerks in the A. G. O., Hq. S. O. S.
2. Monthly return of A. G. O., Hq. S. O. S.
3. Daily reports of changes in A. G. O., Hq. S. O. S.
4. Weekly roster by departments of all officers in the Arrondissement of Tours.
5. Monthly directory of all officers and army field clerks on duty at Hq. S. O. S., arranged alphabetically and by departments.

(b) Troop Movements Section: The Troop Movements section of the Statistical Division furnished information covering present or past locations of organizations in the S. O. S., and also the shipping, telegraphic and personnel addresses. A semipmonthly station list of troops in the S. O. S. was compiled, published and distributed, also a Daily Change Sheet, covering movements of all S. O. S. units for each day. The first of these lists was published on October 22, 1917, comprising five pages. On November 11, 1918, the list consisted of 105 pages and contained the location of 5,674 organizations, units, detachments and headquarters, stationed at 1,150 different towns and camps in France. Special card files were maintained for the purpose of keeping record of all casual companies and automatic replacement drafts.

(c) Returns Section: This branch was organized on September 1, 1917. A complete return of all troops in the S. O. S. was compiled and consolidated monthly.

(d) Arrondissement of Tours Section: This section of the statistical Division was charged with keeping a card file of every enlisted man stationed in the Arrondissement of Tours. A weekly strength report covering this personnel was compiled, consolidated and forwarded to G. H. Q.

(e) Officers' Qualification Card Section: Organized on October 1, 1918, under the same system that was in effect at G. H. Q. for all officers of the A. E. F. This branch provided and procured officers on requisition for regular or special services, selected through the complete information covered by their Qualification Cards.

(f) Soldiers' Qualification Card Section: From Soldiers' Qualification Cards men were selected with special civil vocational qualifications for assignment where their special qualifications could be used to the best interest of the service. These cards were also used to select men with particular military qualifications in which they became adept through specialized training at army training schools.

Records Division: This division was organized on August 29, 1917. On October 2, 1917, the War Department system of recording and filing was instituted at this branch.

Cables and Code Division: This division was organized on February 22, 1918. All cablegrams were indexed according to the subject matter therein, after which they were filed numerically, thereby making a permanent record for ready reference. Owing to the volume of cable business on already overtaxed lines, there was established on July 17, 1918, a system whereby certain cablegrams which were not deemed urgent, were sent by courier. On August 6, 1918, the Commanding General, S. O. S., was authorized to send cables direct in all matters not involving large questions of policy. This increased the amount of work in the Cables Division and necessitated creating a code department. This new department was organized on August 6, 1918, with experienced personnel obtained from G. H. Q. with the new S. O. S. series, (including courier cablegrams) there were eight series of cablegrams to and from the American Expeditionary Forces. A complete file of all eight series was kept at both G. H. Q. and Headquarters, S. O. S. Up to November 11, 1918, a grand total of 897,651 code words had been coded and decoded.

Orders Division: This division was organized on August 29, 1917, to supervise the pre-

paration of all Special Orders, General Orders and Bulletins which emanated from Headquarters, S. O. S. From August 29, 1917, to November 11, 1918, a total of 105,887 special orders were prepared in this division.

Personnel Division: The large amount of correspondence pertaining to individual officers and soldiers, as parts of the S. O. S., made necessary distinct department of the A. G. O., called the Personnel Division. This division handled on an average of 700 papers a day and 500 telegrams a month.

Chief Clerk's Division: This division was organized on August 29, 1917, to receive mail. An average of 3,000 papers per day was handled. The mimeograph room was attached to this division.

Identification Cards and Information Division: On January 6, 1918, this division was organized and issued identification cards directly to officers and recorded and indexed all such cards issued by the various branches of the S. O. S. Up to November 11, 1918, 8,000 identification cards had been issued to officers. A total of 38,774 identification cards were on file in this division, including those cards issued to officers at Base Sections.

Mailing and Courier Division: This division, organized on August 29, 1917, was charged with the duty of addressing and forwarding all official mail which emanated from the staff departments and the Adjutant General's Office. Until the establishment of the Postal Service it also served as a divisional headquarters for the A. G. O. couriers. An average of 600 letters a day passed through this division for addressing and forwarding. From June to November, 1918, 45,000 pieces of registered mail were recorded, receipted for and transmitted through this division.

Headquarters Printing Division: This division was organized on March 27, 1918, and immediately began to operate day and night. The necessary printing for the various headquarters of departments was done in this plant. On November 11, 1918, 12 presses were in operation. From March to November, 1918, a total of 1,150 printing requisitions were completed and delivered to the various departments at these Headquarters, varying in number from a hundred to one million seven hundred and fifty thousand copies.

Supply Division (blank forms and AGO property): This division was organized in August, 1917, as a source of supply of blank forms of the Adjutant General's Office, intended for the S. O. S. It distributed all such orders and bulletins. The original number of copies of each general order, circular and bulletin required during January, 1918, was placed at 50. Up to November 11, 1918, it had grown to such an extent that 20,000 copies were required for the regular issue. This division also supplied every soldier and officer in the A. E. F. with such post-cards as were authorized. Two million two hundred and twenty thousand of such cards were printed and circulated up to November 11, 1918.

Censor Division: This division was organized in September, 1917, to perform censorship duties. From August 29, 1917, to November 11, 1918, 74,162 official letters emanating from the A. G. O. passed through the Censor's hands. For the same period 70,000 personal letters written by the enlisted personnel of the A. G. O. were censored and forwarded.

Miscellaneous Division: This division was organized in October, 1917, for the purpose of writing all letters, indorsements and memoranda of the A. G. O. proper. It was also the translating department for the A. G. O.

Method of Handling Business of the Adjutant General's Department: All general papers arriving were sent to the Adjutant General, who separated them into three classes:

1. Those matters upon which action was merely that of record of transmittal, and all matters, records, etc., that pertained entirely to the Adjutant General's Department.
2. Papers that pertained to the various technical services.
3. Papers upon which action was required by the General Staff.

The first class was held and acted upon by The Adjutant General and where necessary, was presented wither to the Chief of Staff or to the Commanding General for action. The second class of papers was sent to the technical service to which they pertained. The third class was either sent direct to the section of the General Staff which handled the particular subject involved, or if of considerable importance or of a general character involving more than one section of the General Staff, they were sent to the Secretary of the General Staff for distribution.

INSPECTOR GENERAL'S DEPARTMENT, S. O. S.

Inspectors General:

	DETAILED	AUTHORITY	RELIEVED
Colonel Henry L. Kinnison	Nov. 2, '17	SO 86 GHQ	Nov. 30, '17
Colonel Robert Alexander	Nov. 30, '17	GO 18 LoC	Feb. 2, '18
Colonel John S. Winn, I. G.	Feb. 2, '18	GO 14 LoC	Sept. 9, '18
Brig. Gen. T. Q. Donaldson	Sept. 9, '18	GO 43 SOS	To date

The activities of the Inspector General's Department in the Lines of Communication commenced with the detail, on November 2, 1917, of an Acting Inspector General. As the personnel increased, inspectors were sent to the headquarters of the various sections. By the end of June, 1918, there were one or two inspectors in each section of the S. O. S. in addition to those at Headquarters. The section inspectors made the regular inspections of troops and special investigations when directed, keeping in touch with the movement of supplies and the efficiency of the personnel of the S. O. S. Between September 1 and December 31, 1918, the Tours office alone made 78 inspections of troops; 152 inspections of money accounts; and 40 investigations. For the inspections of money accounts of disbursing officers, officials of the Treasury had been commissioned in the department. This work was initiated in February, 1918, by the arrival of one of these special inspectors. Later the number was increased to four.

During September, 1918, there was a change in the policy of distributing the personnel of the department, with a view to centralizing the inspections of troops. To this end, the number of officers at each section headquarters was reduced to one, and the others assembled at Tours.

On the date of the armistice, the Inspector General's Department in the S. O. S. consisted of one brigadier general, 5 colonels, 8 lieutenant colonels and 8 majors, all but 3 lieutenant colonels being regularly detailed or commissioned in the Inspector General's Department; 11 field clerks, 1 regimental and 6 battalion sergeants major. After the armistice the work of the department was greatly increased by the preparation for the return of troops to the United States and the large number of matters requiring investigation. It was found necessary to call for additional personnel, most of which were used at the prots of embarkation, embarkation centers and depots, in the rapid inspection of the large numbers of troops passing through, reaching a maximum in the latter part of March, 1919, of 86 inspectors general and attached officers.

PROVOST MARSHAL GENERAL

Provost Marshals General:

	DETAILED	AUTHORITY	RELIEVED
Lt. Col. Hanson E. Ely	July 20, '17	GO 17 GHQ	Aug. 24, '17
Colonel William H. Allaire	Aug. 24, '17	SO 77 GHQ	July 10, '18
Brig. Gen. H. H. Bandholtz	Sept. 20, '18	GO 163 GHQ	To date

The Provost Marshal General was first recognized as a staff officer of the American E. F. in G. O. 8, G. H. Q., July 5, 1917. The first P. M. G. had headquarters at G. H. Q.

The Provost Marshal matters connected with combat troops were at first handled by the Military Police companies forming an integral part of each division, but the duties connected with the elements of the rear were performed by the Military Police and train guards organized for this purpose. To properly develop this latter field, the Provost Marshal General's Department was placed under the Commanding General, S. O. S., with headquarters at Tours.

The first order providing for the organization of a special force to be known as the Military Police Corps was G. O. 111, July 8, 1918, G. H. Q. The regiments of traffic police and headquarters guards were absorbed by this new corps, but companies assigned from tactical units to sections of the S. O. S. were left under the control of their respective commanders and the P. M. G. was held responsible for the training of organizations and personnel only before they were assigned to Military Police work.

The control of the movements of Americans away from tactical units were early recognized as a necessity, and made one of the duties of the P. M. G. G. O. 29, of August 31, 1917, G. H. Q., first took cognizance of this and required all members of the A. E. F. to report their arrival and authority, in each city of France. It also required the A. P. M.s to investigate the papers of all American citizens wishing to enter the zone over which the A. E. F. had control.

The matter of securing and managing leave areas for members of the A. E. F. on leaves of absence, was first made a function of the P. M. G., but was later turned over to the Commanding General, S. O. S. Headquarters of the P. M. G. were transferred from Tours to Chaumont on October 15, 1918, per G. O. 180, G. H. Q.

JUDGE ADVOCATE'S DEPARTMENT

Judge Advocates:

	ASSIGNED	AUTHORITY	RELIEVED
Major Hugh A. Bayne, J. A.	August 29, '17	GO 1 LOC	Oct. 23, '17
Lt. Col. Willey Howell, J. A.	Oct. 23, '17	GO 78 LOC	Dec. 26, '17
Major Hugh A. Bayne, J. A.	Dec. 26, '17	Seniority	Feb. 26, '18
Colonel John A. Hull, J. A.	Feb. 26. '18	GO 3 SOR	Nov. 27, '18
Colonel Blanton Winship, J. A.	Nov. 27, '18	GO 59 SOS	To date

General court-martial jurisdiction was granted the Commanding General, S. O. S., by the President under the special provisions of the 8th Article of War on September 4, 1917. Due to the distance of Base Section No. 3 from these Headquarters, and the granting to it of general court-martial jurisdiction, a judge advocate's office was established at the headquarters of that Base Section on January 7, 1918.

General court-martial jurisdiction was later granted to the following authorities:

Base Sections 1, 2, 5, Advance Section and Intermediate Section	April 7, 1918
Paris	December 23, 1918
Base Section 8	November 8, 1918

The general plan of organization of this Department in the S. O. S. called for a judge advocate and an assistant jude advocate at each section. Trail judge advocates

were secured from line officers. Acting judge advocates were stationed at Base Sections 4, 6 and 7, although general court-martial jurisdiction was not conferred there.

The office of the Judge Advocate, S. O. S., was organized as follows:

(a) Review of court-martial records with recommendations thereon.
(b) Advice upon interpretation of law, regulations and general orders.
(c) Problems of international law and French law.
(d) Questions of fiscal affairs, contracts and accounting.
(e) Trial work.
(f) Admiralty and maritime questions.
(g) War Risk Insurance advisor.
(h) Advisor to Director General Transportation.

The special developments brought about by the war which referred particularly to the Judge Advocate were:

(a) The recommendations concerning the immunity of members of the American E. F. from French criminal jurisdiction.

(b) Immunity of members of the American E. F. and its agents from French civil jurisdiction.

(c) The establishment of the R. R. & C. Service.

ALLIED MILITARY MISSIONS, HEADQUARTERS S. O. S.

Chiefs of Missions:

FRENCH MISSION	DETAILED	RELIEVED
Colonel C. L. Matharel	Jan. 13, 1918	April 27, 1918
Brig. Gen. E. H. Fillonneau	April 27, 1918	Nov. 1, 1918
Lt. Col., A. H. Guillon	Nov. 1, 1918	To date
BRITISH MISSION		
Brig. Gen. H. N. Sargent	April 26, 1918	To date

Two missions were established at these Headquarters, French and British. Both have rendered valuable service in the transaction of business requiring cooperation with the Governments they represented. As there was a great volume of business of this class with the French Government, the Service of the French Mission especially resulted in great saving of time, increased efficiency, and proper cooperation.

PART III

TERRITORIAL ADMINISTRATIVE SECTIONS, S. O. S.

* * * * * *

Section Commanders:

ADVANCE SECTION:	FROM	TO	AUTHORITY
Col. Harry Burgess. 16th Engrs.	Sept. 17, 17	Nov. 1, 17	P 5 GO 3 L of C
Brig. Gen. Johnson Hagood	Nov. 1, 17	Nov. 30, 17	GO 10 L of C
Brig. Gen. Wm. R. Sample	Nov. 30, 17	To date -	GO 17 L of C

INTERMEDIATE SECTION:	FROM	TO	AUTHORITY
Lt. Col. John F. Madden, QMC	Sept. 17, 17	Nov. 17, 17	GO 3 L of C
Lt. Col. Wm. Elliott, QMC	Nov. 17, 17	Nov. 30, 17	SO 72 P 10 L of C
Brig. Gen. (then Col) Arthur Johnson	Nov. 30, 17	Apr. 12, 17	GO 15 L of C
Maj. Gen. Wm. H. Hay	Apr. 12, 19	To date	P 63 SO 102 GHQ
BASE SECTION NO. 1:			
Col. David S. Stanley, QMC	June 24, 18	July 6, 17	AGO War Diary
Lt. Col. S. D. Rockenbach	July 6, 17	Sept. 1, 17	do
Col. L. H. Bash	Aug. 24, 17	Nov. 20, 17	P 24 SO 77 L of C
Brig. Gen. Charles A. Doyen	Nov. 12, 17	Dec. 5, 17	Virtue of Seniority
Brig. Gen. Robert D. Walsh	Dec. 5, 17	July 24, 18	P 3 GO 19 L of C
Col. John Stephen Sewell	July 24, 18	Feb. 19, 19	P 1 GO 32 SOS
Brig. Gen. S. D. Rockenbach	Feb. 20, 19	To date	P 1 GO II, SOS
BASE SECTION NO. 2:			
Brig. Gen. Charles H. Cole	Nov. 6, 17	Dec. 2, 17	P 24, SO 143 L of C
Brig. Gen. Wm. S. Scott	Dec. 5, 17	Aug. 10, 18	GO 19 L of C
Brig. Gen. W. D. Connor	Aug. 10, 18	Nov. 9, 18	GO 50 SOS
Brig. Gen. Robert D. Walsh	Nov. 12, 18	Feb. 17, 19	GO 96 SOS
Maj. Gen. Chas. D. Rhodes	Mar. 14, 19	To date	So 73 P 68 SOS
BASE SECTION NO. 3:			
Maj. Gen. George T. Bartlett	Oct. 5, 17	Mar. 23, 18	P 2 SO 117 GHQ
Maj. Gen. John Biddle	Mar. 23, 18	To date	GO 2 SOS
BASE SECTION NO. 4:			
Lt. Col. J. L. Gilbreth, QMC	Aug. 21, 17	Jan. 8, 18	P 17 SO 72 GHQ
Lt. Col. Carle Abrams	Jan. 4, 18	Jan. 11, 18	P 10 SO 4 L of C
Brig. Gen. Richard Coulter	Feb. 18, 18	Nov. 22, 18	P 1 GO 18 L of C
Brig. Gen. John B. Bennet	Nov. 22, 18	To date	P 82 SO 255 SOS
BASE SECTION NO. 5:			
Col. L. H. Bash. Inf.	Nov. 20, 17	Jan. 26, 18	P 5 SO 117 L of C
Brig. Gen. N. F. McClure	Jan. 26, 18	May 5, 18	P 1 GO 12 L of C
Brig. Gen. George H. Harries	May 5, 18	Nov. 18, 18	P 17 SO 54 SOS
Maj. Gen. E. A. Helmick	Nov. 19, 18	To date	P 112 SO 252 SOS
BASE SECTION NO. 6:			
Col. M. W. Rowell, Cav.	May 27, 18	Mar. 9, 19	P 68 SO 76 SOS
Col. Geo. McD. Weeks	Mar. 9, 19	To date	Virtue of Seniority
BASE SECTION NO. 7:			
Brig. Gen. Charles A. Gerhardt	May 17, 18	Oct. 11, 18	P 68 SO 76 SOS
Col. William Kelly, Engrs.	Oct. 11, 18	Apr. 25, 19	P 36 SO 213 SOS
BASE SECTION NO. 8:			
Brig. Gen. Charles G. Treat	Oct. 21, 18	To date	Tel. GHQ, Oct. 21, 18

BASE SECTION NO. 9:	FROM	TO	AUTHORITY
Col. John S. Sewell, Engrs.	Feb. 19, 19	To date	Let. of Ins. C. G. S. O. S.
DISTRICT OF PARIS:			
Brig. Gen. R. M. Blatchford (Jul. 25, 17) (Commanding General, Line of Communications and District of Paris)	Aug. 29, 17	Nov. 5, 17	GO 1 L of C
Col. Kirby Walker	Nov. 3, 17	Dec. 3, 17	GO 11 L of C
Brig. Gen. Edward M. Lewis	Dec. 3, 17	May 1, 18	GO 30 L of C
Col. George C. Saffarans	May 1, 18	May 15, 18	Tel GHQ May 1, 18
Maj. F. A. Barker, U. S. M. C.	May 15, 18	June 7, 18	Tel GHQ May 15, 18
Brig. Gen. W. H. Allaire	June 6, 18	Aug. 1, 18	P 68 SO 86 SOS
Brig. Gen. W. W. Harts	Aug. 1, 18	To date	P 30 SO 213 GHQ
ARRONDISSEMENT OF TOURS:			
Maj. Gen. Francis J. Kernan	Jan. 13, 18	July 29, 18	GO 66 GHQ
Maj. Gen. James G. Harbord	July 29, 18	To date	P I GO 33 SOS

Territorial Administrative Sections were created and readjusted from time to time as necessity demanded. The Commanding Generals of Sections had a great deal of business to transact with the French military regional commanders and for this reason in defining the limits of sections French regional lines were generally followed. General Orders No. 26, G. H. Q., August 28, 1917 charged the commanding officers of sections with the duty of Assistant Chiefs of Staff, for the purposes of control and coordination. This system, however, was departed from, and the section commander, under the reorganization, though not an Assistant Chief of Staff, was the direct representative of the C. G., S. O. S., and his relations to the representatives of the various services in the section corresponded to the relation of the C. G., S. O. S. to the services at Headquarters, S. O. S. Section Commanders were directly responsible for the proper attention to duty of all within their sections, discipline, supply and sanitation. They were not authorized to make changes in the approved projects of construction. Questions relating to priority of shipment were settled by them, and in this they had the assistance of a staff officer, who represented G-4 at these Headquarters.

Section commanders coordinated, when the necessity arose, the assignment and employment of all labor, including casuals, combatant or noncombatant, and they were charged with the pooling of motor transportation within the limits of their sections. All correspondence not technical and not relating to the routine work of departments passed through their office. The decision in large questions of priority of shipment was reserved by Headquarters S. O. S. In these cases the Chief of the Service concerned would apply directly to these headquarters where the priority would be determined.

REVIEW OF SECTIONS

BASE SECTION No. 1 with headquarters at St-Nazaire, was the first base section established, and developed from the port of St-Nazaire. It was at St-Nazaire that the first American convey landed, on June 26, 1917.

St-Nazaire developed into the greatest freight port of the American E. F., 1,600,000 tons of cargo having been discharged there at the date of the armistice. During 1918, 397 ships were handled there, remaining in port an average of 13.4 days. The

great storage depot at Montoir was built near St-Nazaire. Another important port of this base section was Nantes, on the Loire River. Here there were French docks with eight berths, which were turned over to the Americans by the French, and these docks handled the third largest amount of freight, next to St-Nazaire and Bordeaux, of the the ports used by the Americans, 639,000 tons being handled there up to the date of the Armistice. During 1918, this port handled 248 ships, with an average of 9.2 days per ship in port.

Angers, Savenay, Meucon, Coetquidan and Saumur were important towns from the standpoint of American E. F. activities. At Angers was located the principal engineer training base for engineer officers and soldiers arriving as casuals from the United States. Base Hospital No. 27 was also located at Angers, as was a replacement depot for D. G. T. troops.

Meucon was an artillery training camp for two brigades. The 4th Artillery Aerial Observation School was also located here.

Savenay, which is 25 kilometers east of St-Nazaire, was an important hospital center. It was particularly important as an evacuation point for sick and wounded.

Coetquidan, a former French artillery camp, was taken over by the Americans and converted into a two brigade artillery training camp. The 1st Artillery Aerial Observation School was also located here.

Saumur was an important railroad junction. The Americans constructed considerable additional railroad facilities here. A school of instruction for field artillery officers was at this place, where a large number of American field artillery officers were trained.

BASE SECTION No. 2 included the ports in the River Gironde and the port of La Pallice and the territory in the zone surrounding these points. Later, La Pallice became part of Base Section No. 7. The headquarters were located at Bordeaux, which was the termius of the one of the main lines of communications used by the Americans. Bordeaux was one of the first ports selected for American use, because there were docks at French Bassens available for immediate use.

The handling of freight, hospitalization and artillery training were the important activities of this section.

The great docks at American Bassens, where ten berths were constructed by the Americans, and an additional 10 berths secured from the French, were an important feature of this section. Grouped around these docks were classification and storage warehouses, a large refrigerator plant, an engine terminal, and other necessary railroad facilities.

A large depot at St-Sulpice was constructed by the S. O. S. and a small one was established at Coutras. Warehouses were constructed at Sursol and Aucanne. Ammunition storage facilities were constructed at St-Loubes. Large artillery training camps were established at Souge and Le Corneau. Remount Stations were at Carbon-Blanc, Merignac, Bayonne, Biarritz, and Hendaye. A stevedore camp was at Bassens, Rest and Embarkation Camps were at Grange Neuve and Genicart. Thirteen base hospitals, with a combined bed capacity of 33,000, were located within this section. There were also thirteen sawmills used in connection with forestry operations.

Bordeaux was the second port in France for the reception of freight, having handled up to January 1, 1919, 1,749,700 tons. During 1918, 381 ships docked at Bordeaux. The amount of freight handled at this port was increasing at a greater rate than at any other port occupied by the Americans. Had the war been prolonged, Bordeaux would have been the first port in the amount of American freight handled.

BASE SECTION No. 3 was established primarily for the care of American troops passing through England to France. These troops were landed at liverpool, transported by rail to the British channel ports (Southampton and Dover), and sent across the English Channel to

Havre, Cherbourg and Calais. American Rest Camps were established at Liverpool, Southampton, Winchester and Romsey. A large number of American Air Service personnel were trained in this base section. As subsidiary to the handling of troops, there were constructed in this base section a number of hospitals and camps.

BASE SECTION No. 4 was originally Base Section 3. It was established as the agency for receiving American troops and supplies arriving in France from England. The important points of American activities in this base section were Le Havre, Rouen, Calais, and Boulogne. Le Havre, which was the headquarters of the section, handled 735,668 troops up to the date of the armistice, and during 1917-8 discharged 506,000 tons of freight. During 1918, a total of 185 ships docked there, remaining in port an average of 6.1 days. During the same period, Rouen handled 95 ships, discharging 186,433 tons of freight.

Due to the constant shortage of rail transportation, supplies of all kinds not required immediately at their destination, were shipped by barges from Le Havre up to the Seine to Paris for distribution.

BASE SECTION No. 5: Within this section, the important American activities outside the port of Brest were at Cherbourg, debarkation port; Rennes, the location of a locomotive terminal and repair shops; St-Malo, leave area; and Granville, a coal port.

The port of Brest was the most important port of debarkation in France as the only deep water port available to the American E. F.

The principal feature at the port of Brest was the Rest and Embarkation Camp at Pontanezen, the largest American camp in France.

On January 1, 1919, 533,000 tons of cargo had been discharged at Brest, 7,125 tons at Cherbourg, and 26,000 tons of coal at Granville. On January 1, 1919, 804,670 troops had landed at Brest. During 1918, Brest handled 394 ships, with an average of 3.5 in port per ship.

On May 24, 1918, the port of Brest disembarked from a fleet of transports, 42,152 American troops within twenty-four hours.

After the armistice, Brest was selected as the principal embarkation port.

BASE SECTION NO. 6 was established June 28, 1918. Its headquarters were at Marseilles. This port was not used previously by the American E. F., due to the great submarine danger in the Mediterranean. No American troops were brought to France through this port, and it was used only for freight. The French assigned docks with berths for nine ships. During 1918, a total of 62 ships, with an average of 17.1 days in port, were handled, and a total of 431,598 tons of cargo discharged.

A motor reception park was maintained at Marseilles; also a labor camp. A storage depot at Miramas was established.

BASE SECTION No. 7: The first headquarters of this base section was at La Pallice, but later moved to La Rochelle. Prior to June 28, 1918, this section formed part of Base Section No. 2

It was at the ports of this section that a large part of the coal for the American E. F. was received and here was the principal depot for the storage of oil and gasoline.

A Remount Depot and a Car Erection Center was also within this section.

The principal points of American activities were: La Rochelle, the location of Camp Pullman, a car erection plant which erected nearly 20,000 American cars; La Pallice, port of entry and oil and gasoline storage depot; Aytre; Aigrefeuille, the location of storage and classification yards, which point was to be a general storage depot for La Rochelle and La Pallice; Rochefort, a port of entry for coal and general cargo; Tonnay-Charente and Marous, coal storage depots. Talmont was an approved site for a great deep water port, and work had begun which ceased at the Armistice. At Montagne, there was a cement plant.

The total tonnage at La Pallice for 1917-8 amounted to 788,809 tons; at Rochefort, 517,995 tons. At La Pallice, 141 ships were handled with an average turnaround of

14.37 days; and at Rochefort, 166 ships, with an 8.83 days turnaround.
BASE SECTION No. 8 consisting geographically of all of Italy, with headquarters at Padova, was established to provide a single control over the different American activities operating in Italy. These activities consisted of a regiment of Infantry, an aviation school at Foggia, hospital and ambulance units, M. T. C. companies; and a detachment of aviators in training and on combat duty with the Italian Army. Supplies for American troops in Italy were secured on requisition from the General Intermediate Storage Depot at Gievres, France. The Quartermaster depot was first located at Villafranca di Verona, and later was moved to Alessandria (Alexandria) where warehouses were taken over from the Italian Government.
BASE SECTION No. 9: Immediately after it was decided that there would be an Army of Occupation on the Rhine, it was decided to supply it by using the Rhine and Scheldt Rivers as a line of communications, with Rotterdam and Antwerp as the ports for handling the supplies. Antwerp was the principal port, with Rotterdam handling only such cargo as could be directly trans-shipped and sent to Coblenz.

All freight and cargo was handled by civilian contract, thus eliminating the necessity of maintaining a large army personnel or doing any construction work within the base. The Commanding General of the S. O. S. for the Army of Occupation established headquarters at Antwerp. All replacements to and evacuations form the Army of Occupation were made via France.
BASE SECTION No. 9 was designated on April 8, 1918, by G. O. 19, S. O. S., to include the occupied portions of Holland and the Kingdom of Belgium, exclusive of the Department of Luxemburg, with headquarters at Antwerp. Previous to this, February 4, 1919, Rotterdam had been designated as the American Military Supply Depot.
INTERMEDIATE SECTION: This section, as first established by G. O. 20, GHQ, dated August 13, 1917, included all territory in the zone between the limits of Base Sections Nos. 1 and 2 and the French Zone des Armees Headquarters were located at Nevers. The Intermediate Section contained more territory than any other section and a very large number of important projects.

The great Intermediate Storage Depot was located at Gievres, where were stored the greater part of supplies sufficient to last the American E. F. for 30 days. At the Armistice there were completed about 4,500,000 square feet of covered storage space, and about 10,000,000 more square feet of open storage space were in use. Gievres had a personnel of approximately 700 officers and 25,000 soldiers.

Another great storage depot comparable to Gievres was located at Montierchaume, but was only nearing 50 per cent completion at the armistice. There had been erected here 56 storage buildings, with a total area of 1,214,000 square feet of covered storage space.

Mehun-sur-Yevre was an important point where the Ordnance Repair Shops and the Intermediate Ordnance Depot No. 4 were located. Large quantities of captured enemy armament were repaired here and returned to the front. During the major operations of the American Armies, as many as 3,000 ten-ton cars were loaded and shipped daily from the Mehun plant.

The First Replacement Depot, from which the 41st Division, later known as the 1st Depot Division, supplied replacement for the First and Third Armies, was located at St-Aignan. 165,887 replacements and 73,014 casuals were sent to organizations through this depot, up to December 1, 1918. Schools for intensive training were established here which gave instructions to men awaiting assignment to combat units.

At Blois there was a depot for the classification and distribution of casual officers and soldiers arriving from the United States. Officers who became physically disqualified or were found unsuited for duty with combatant troops were reclassified at Blois.

The Intermediate Section was the main center of training activities for the Air Service. At Issoudun was located the 3d Aviation Instruction Center, where the majority of American Pilots received advanced training. Others were trained at a French flying school at Chateauroux, about 20 kilometers southeast of Issoudun. The Air Service Production Center No. 2, the Supply Depot No. 3, and an Acceptance Park were located at Romorantin, one of the largest American aviation projects in France. The 7th Aviation Instruction Center was located at Clermont-Ferrand, which was also a center for the training of mobile heavy artillery.

Within the Intermediate Section were located many important hospital centers, the largest of these being at Mars, Mesves, Allerey, Chateauroux, and Orleans. The headquarters of the section, Nevers, was the center for several hospital trains.

Nevers was an important railroad center and the location of Intermediate Quartermaster Depot No. 1, and the Locomotive Repair Shops of the American E. F.

The Motor Transport Repair Shops of the American E. F. were located at Verneuil, 30 miles west of Nevers

The Central Records Office of the American E. F. was located at Vourges.

Advance Section: Organized to extend the service of territorial command in the S. O. S. up to the point where delivery of supplies was to be made to field transportation of combat forces. However, when supplies from the Intermediate and Base Depots reached the Regulating Stations, further distribution was under the Regulating Officer, an agent of G. H. Q.

The activities in Advance Section were:

Regulating Stations: Liffol-le-Grand, Is-sur-Tille and St-Dizier.
Air Service: 6 depots - 27 airdromes - 2 schools.
Quartermaster: 3 depots - 7 remount depots - 10 veterinary hospitals.
Ordnance: 9 supply depots.
Medical: 63 hospitals.
Motor Transport Corps: 4 overhaul parks - 1 depot - 1 reception park
2 service parks - 21 centers.
Engineers: 1 depot - 1 light railway shop - 4 forestry districts.
Chemical Warfare Service: 1 depot.
Signal: 1 depot - telegraph and telephone lines.

NUMBERICAL STRENGTH OF THE S. O. S.

NOVEMBER 11, 1918.

As an indication of the magnitude of its activities, the number of troops in the S. O. S. on November 11, 1918, was as follows:

	OFFICERS	MEN	NURSES	TOTAL
Advance Section	4,914	101,271	1,728	107,923
Intermediate Section	6,365	117,214	1,938	125,517
Paris	1,936	17,639	584	20,159
Base Section No. 1	4,628	93,119	502	98,249
Base Section No. 2	3,801	90,301	671	94,773
Base Section No. 3	1,505	27,580		29,085
Base Section No. 4	219	3,944		4,163
Base Section No. 5	718	15,211		15,929
Base Section No. 6	380	8,870		9,250
Base Section No. 7	375	11,559		11,934
Headquarters, S. O. S.	2,379	16,544	134	19,057

	OFFICERS	MEN	NURSES	TOTAL
Base Section No. 8		Officers and Men		5,451
Depot Divisions in SOS	3,029	94,886	29	97,944
Casual Officers Depot	334	4,772		5,106
Totals	30,593	602,910	5,586	644,540

There were also 23,772 civilians employed in the S. O. S. and carried on the A. E. F. strength returns, making a grand total on this date of 668,312.

C-in-C Rept. File: Fldr. 312: Report

Labor Bureau

HEADQUARTERS, SERVICES OF SUPPLY, A. E. F.,
Tours, France, December 23, 1918.

[Extract]

1. Necessity of Securing Labor: During the months of December 1917 and January 1918, when the American personnel of the American Expeditionary Forces was small, it became evident that the necessary labor for the rapid creation of the enormous works required to care for the great American army could not be obtained with sufficient quickness from America. Careful study was made of the situation by experts including Brig. General Charles P. Dawes. General Purchasing Agent, Brig. General W. D. Connor, Chief of Staff. Services of Supplies, Lt. Colonel J. C. Greenway, Engineers, and Lt. Colonel John Price Jackson, Engineers, later appointed Chief of the Labor Bureau, and the result of the conclusion on the part of the Commander-in-Chief and his staff was that it would be necessary to obtain labor from Europe to overcome the stringent urgency which then existed.

2. Preliminary Organization: In order to carry out this policy Brig. General Dawes, General Purchasing Agent, was ordered to create a Labor Bureau for the purpose. After conference with those acquainted with the situation, including the French authorities, the Labor Bureau was established on February 1, 1918, having for its purpose the following objects, which were enunciated in General Order No. 5, Headquarters, Services of the Rear, March 4, 1918, as follows:

> 1. The general purchasing agent is hereby charged with the responsibility for the procurement of the civilian manual labor in Europe, other than labor procurable locally through the French regional authorities as regulated in Bulletin No. 14, Hq. L. of C., February 13, 1918. He is designated as the sole agent through whom negotiations with the French in relation to such labor are to be conducted. He will organize a labor service for the purpose of securing labor in Europe and will conduct this service through a bureau to be known as the labor bureau, the chief of which shall be appointed by him.
>
> 2. There shall be established, as future circumstances may indicate as necessary or desirable, a depot or depots for the reception, organization, care and maintenance of such labor as has been newly secured or is either temporarily unemployed or unassigned.

These depots will be under the supervision of the commanding general of that section of the S. O. R. in which they shall be located. The latter will be guided in his supervision by letters of instruction, issued from time to time, from these headquarters to meet special requirements in the matter of food, shelter and general care brought about by reason of different nationalities or required by contract arrangements under which such labor was procured.

3. For the purpose of employment labor personnel will be organized into small units, corresponding to labor gangs under a single foreman. For purposes of administration, such as shelter, messing, payrools, etc., these small units will be combined into larger groups approximating an infantry company. Officers will be assigned by the general purchasing agent to care for and otherwise administer the interior economy of these units. Upon these officers rests the direct responsibility for carrying out contract agreements and safeguarding the well being of their labor units. They will report through military channels, all irregularities which cannot be locally corrected.

4. Allotment of all labor procured by the labor bureau will be made at these headquarters to the several sections of the S. O. R. and regulations for such labor will be submitted accordingly. Distribution within each section will be made by the commanding general thereof, who, through, his R. T. O. will arrange for transportation direct to station. Assignment to tasks will be made by the officer in charge of each protect, groups of projects, or tasks, as the case may be.

5. Nothing herein contained is to be construed as prohibiting chiefs of supply department from taking advantage of local conditions to secure ordinary day labor locally. In all such cases, negotiations must be entered into with the French, as indicated in Bulletin 14, Hq. L. of C., February 13, 1918. This procedure must be rigidly observed in order to avoid wage competition and the possible withdrawal of labor from French employment to the detriment of their program of war supply.

The general purchasing agent under the powers granted him by special order of the Commander-in-Chief appointed the writer of this report, as indicated above, chief of labor bureau, and the following day appointed Captain Jeremiah Smith, Jr., Deputy Chief. An organization making provision for suitable divisions of the labor bureau, and briefly stating the functions to be performed was then prepared, and approved by the general purchasing agent and the Commander-in-Chief. This preliminary organization is as follows:

ORGANIZATION OF THE BUREAU OF LABOR OF THE GENERAL PURCHASING AGENT

The Bureau of Labor of the General Purchasing Agent is divided into several divisions: The activities of the divisions are under the supervision of the Chief of the Bureau of Labor, subject to the direction of the General Purchasing Agent. The names and functions of the divisions are given below:

1. The Division of Contracts and Governmental Relations: This division shall perform the following duties:

a. Take all contracts for labor.

b. Deliver copies of the proper contracts to the local commanding officers who receive labor through the bureaus, and to Hq. S. O. R.

c. Obtain and keep a live file of the requirements of the A. E. F., for labor.

d. Keep the bureau of procurement and transportation informed as to the points where shipments of labor are desired, and the kinds of labor wanted.

e. Make arrangements for, receive and act upon reports of accidents and any other matters required by the French laws or regulations not specifically given into the hands of other divisions.

f. Act as intermediary with the French officials and officials of other governments for the purpose of maintaining a proper accord between the practices of the bureau and requirements of such governments as may be essential in our employment of labor of various nationalities.

g. Keep in frequent and close touch with the officials in charge of the several French bureaus having to do with the employment of labor of various nationalities, including the French, for the purpose of exerting our full influence in obtaining the maximum number of laborets.

h. perform such services in addition to the above specific duties as are incidental to, or by inference required by, the specific duties named.

2. The Division of Procurement: The purpose of this division is to procure labor for the A. E. F. It shall perform the following specific duties:

a. Place agents in all of the principal official French employment agencies for the purpose of collecting and preparing for its despatch to the American lines, such labor as may from time to time become available.

b. Place agents at all French border towns to which labor, other than American arrives, whose duty shall be the same as in paragraph a.

c. Place in all countries from which suitable labor can be obtained without undue use of ships, agents who shall collect and ship labor to the French points of entry.

d. The principal agent in each foreign country shall have assigned to him such assistance as is necessary for building up an organization which shall accomplish the full purpose sought.

e. Seek out reliable French contractors who will procure labor for the A. E. F. and have suitable contracts executed with them through the service of the division on contracts, etc.

f. Arrange with our representatives in countries (paragraph C.) other than France, to make arrangements with labor agencies and contractors for getting labor to the French border, for the A. E. F. lines.

g. Arrange to have full weekly reports from all agents in the field.

h. Arrange to have telegraphic notice sent to the Bureau of Labor at the earliest possible moment when groups of labor have gathered together. Such telegraphic information shall give full information concerning the number of laborers in a group; their nationality; the date they will be ready for transportation; food, clothing and supplies needed; and such other information as may be necessary to properly transport them from the French border and set them to work.

i. Perform all other duties incident to, or inferred by the above specific duties.

3. The Division of Transportation: This division shall have charge of labor groups from the time they are turned over to it by the division of procurement, until they are turned over to the division of organization noted hereafter. It will have the following specific duties:

a. Make arrangements for transportation of labor from the points of procurement, or from the border points, where such labor comes from beyond the borders of France, to its point of final destination where it is to be utilized.

b. Arrange for the proper food or meals of labor groups during the period indicated in paragraph A.

c. Appoint agents to accompany labor groups from the points of procurement to the labor depot, if they are to be delivered at that point, or to the point where they are to be utilized, and turn them over to the division of labor organization.

d. Receive full weekly reports of the activities of each agent in the field. These reports shall include information as to the exact date of receipt of labor and its delivery, the number of laborers in each group, the conditions of the labor, and any other information of value.

e. Arrange for telegraphic reports to be sent to the bureau of labor at the earliest possible moment by agents of the division, as to the date of arrival and depart of such groups and giving any information as to special conditions which must be arranged beforehand for their reception.

f. Perform any other services incident to, or inferred by the specific duties named above.

4. Division of Labor Organization: This division will receive all labor delivered to the A. E. F. and shall properly organize it and keep in touch with it so long as it is employed by the A. E. F. It shall perform the following specific duties:

a. Receive all labor delivered by the division of transportation.

b. Make arrangements whereby the labor will be paid in accord with its contract of employment.

c. Keep the quartermaster's department notified of food, clothing, and other supplies that will be needed at the various points of the A. E. F. lines.

d. Organize the labor into units of approximately 250 men each, number the groups of each nationality received serially adding and alphabet letter to indicate the country from which the labor unit came.

e. Create a depot to which procured labor, and labor which is to be transferred may be sent pending final disposition.

f. Arrange at the Labor Bureau to organize labor delivered there before being forwarded to final destination.

g. Assign a division representative to each unit organized in the labor depot and arrange either to assign or have the commanding officer assign a representative to units organized at other points than the labor depot.

h. Have it understood that the persons assigned to the labor units shall be under the command of the commanding officer where the labor is assigned, and shall perform such regular duties as the commanding officer may order. This representative shall be permanently attached to the labor unit to which he is assigned, and when such a labor unit moves, he shall move with it.

i. Arrange that the representatives, permanently attached to a labor unit, makes weekly reports to the division of labor organization, of his activities and of the condition of the labor unit to which he is attached.

j. Have the labor unit representative report promptly accidents to members of his unit and such other information as may be required to enable the A. E. F. to fully comply with the French laws and regulations.

k. Have each labor unit representative understand that he will be responsible for the good spirit of the unit under his control, for the accident and sickness list, and other elements entering into the good performance and welfare of his unit.

l. Shall take such other actions as are incident to the above specific duties or which may properly be inferred therein.

5. Division of Medical Care: This division shall be responsible for the care of the sick and for the sanitary conditions of labor in use by the A. E. F. It shall perform the following specific duties:

a. By arrangement with the medical department of the A. E. F. have available sufficient medical service for properly attending to the medical attention to the medical requirements of the labor units at each point where it is utilized.

b. Have available as in paragraph A, sufficient hospital facilities for both the sick and the wounded.

c. Arrange to have such sanitary inspection of sanitary conditions as would properly fall within the control of the medical department.

d. Arrange that full weekly reports be made by local medical representatives, of sickness among the labor employed.

6. The Intelligence Division: This division shall be in charge of a representative of the A. E. F. Intelligence department, and shall have the duty of keeping that department fully informed of the activities of the Labor Bureau in order that, as far as possible, undesirable characters may be eliminated from the labor service.

7. The Bureau of Accounts and Records: This division is charged with the duty of keeping accurate accounts of all expenditures made by the bureau, and of funds advanced to it, and of also keeping all other accounts incident to the work of the bureau. It shall perform the following duties:

a. Keep a full and accurate set of books for recording disbursements and moneys received. These books shall have a personal account for each receiving or expending United States funds.

b. Shall be responsible that legal vouchers be obtained and promptly submitted for all expenditure.

c. Shall file all reports from the various divisions and keep them ready for all ready reference.

d. Shall tabulate and weekly submit to the chief of the Bureau of Labor a summarized statement of the official accounts of the bureau and a summary of the reports from the chief of the several divisions.

e. Keep accurate roster of bureau personnel.

8. ORGANIZATION OF PERSONNEL: There shall be a chief of the Bureau of Labor who shall be directly responsible to the chief purchasing agent and make periodical reports to him and upon his order, and in his name, to the G. H. Q. of the number of laborers procured, and such other information as is necessary to keep them fully informed.

There shall be an assistant of the Bureau of Labor, who shall also be the head of the division of contracts and foreign relations. He shall assist the chief, act in his stead during his absence.

There shall be a head of each division of the bureau as named above.

Each of these heads shall make weekly reports of their activities and shall be under the direction of the chief of the bureau.

Attached to each division shall be such assistance, field agents, representatives of labor units, etc., as may be required for the performance of their several functions.

The heads of divisions shall meet in conference, collectively, with the chief of the Labor Bureau, at least once a week, for the purpose of correlating the several divisions of the work and for advancing it as a whole in the most effective manner. It shall be understood that in advising with the chief of the bureau at these meetings, the spirit shall be distinctly one of cooperation, and that each chief, as well as the staff under him, is distinctly responsible for the success of the entire bureau, as well as that of his own division. The general purchasing agent will attend and preside at these meetings when he deems it advisable.

To all members of the force of the Bureau of Labor who receive funds of the United States, or who make disbursements or contracts with the A. E. F., will be held pecuniarily responsible to the United States Government for their use of such funds, or their acts, and to those officers of the A. E. F., from whom they may receive funds.

* * * * * *

3. Personnel of Organization: After the first shipment of labor to the lines of the A. E. F. it became clearly evident that civilian or semi-militarized labor would have to be quite thoroughly organized by officers, commissioned and noncommissioned, who had some special training in the handling of labor of this kind, or who were already experienced in such matters. The officers of the army, as a whole, though trained and competent in the handling of troops, or for other military purposes, had, as a rule,

little or no experience with the problems to be encountered in handling civilian labor. It was, therefore, immediately necessary to obtain a staff of officers and enlisted men who would be able to perform this service, and at the same time, harmonize the introduction of civilian groups into military camps, which, in itself, was a delicate and difficult task.

The procurement of the labor, both male and female involved not only ability to select out good labor from bad, but a high order of diplomacy in dealing with foreign government officials, a knowledge of the labor and immigration laws of France and the emigration laws of other European neutral or Allied nations, a knowledge of foreign languages, and an indomitable pluck and determination.

A strong and specially directed effort was therefore made to obtain suitably selected officers and men for these purposes; * * *

* * * * * *

4. Organization of Labor: For the reasons stated above, it was absolutely essential that suitable organization be given the labor before it was placed on the lines. In order that this might be done to proper advantage, depots were established at St-Denis, near Paris, and at Toulouse, in the lower part of France. The labor from the border towns, coming from Portugal, Spain and Italy, and Marseilles, was gathered largely at the depot at Toulouse. At St-Denis labor recruited from the north, west and center of France was gathered for organization and distribution.

The commanding officer of the labor depot, upon receiving labor, sorted it into groups, by nationalities and trades. Upon a call for labor from the General Staff, S. O. S., the depot commanding officer was instructed to send a group of labor of the characteristics required, under the direction of commissioned and noncommissioned officers, to the point designated.

If the amount of labor in any one classified group was not sufficient to supply the needs as called for by the requisition, additional shipments of the same classification of labor were added as they became available, until the requisition was filled.

The early months of the Labor Bureau activities, it was impossible, with the enormous shortage, during the winter and spring, of American enlisted and commissioned personnel in France, to obtain the amount of supervisory men required. As a result, the number of commissioned or noncommissioned officers was variable, and depended upon the supply. It was found after some experience, however, that two officers and fifteen noncommissioned officers attached to a company of two hundred and fifty civilian laborers formed about the best operating unit.

Strong efforts were made by the general purchasing agent, and the chief of the Labor Bureau to have a corps organized to which personnel would be assigned from casuals in the A. E. F., or by mobilization and shipment from the United States. As a result of these efforts, and cablegrams from the Commander-in-Chief to America, an order was sent from Washington, reading as follows:

No. 1147-R
April 20

G. H. Q., A. E. F., France,
April 21, 1918

PERSHING-AMEXFORCE

* * * * * *

2. With reference to paragraph 3 A your 898, 133 captains, 133 1st Lieutenants, 134 2d Lieutenants, 1,000 sergeants and 2,000 corporals,

quartermaster corps authorized to permit you to organize 200 administrative labor companies. Do you with us to furnish any of personnel? Will these companies take place of any of the service battalions item 418 called for by service of the rear project of September 18? If so, cable total number of labor battalions you will require after deducting labor companies you are organizing there. March.

* * * * * *

MCCAIN.

At the same time it was arranged that 200 officers and 2,000 men should be carefully selected as those capable of handling labor, and shipped from the United States for taking charge of civilian labor. These shipments began to arrive by early fall this year, and relieved the personnel situation to such an extent that the handling of civilian labor became a comparatively easy matter.

5. Procurement and Foreign Relations: The Chief of the Labor Bureau was instructed by the general purchasing agent to make arrangements with the help of the French for the procurement of labor under conditions, and in a manner which would not disturb the French, or other European labor markets. Machinery was inaugurated under the active personal guidance of the general purchasing agent, whereby the Labor Bureau was in practically continuous contact with the French mission attached to the general purchasing agent's office, through that with M. Ganne, Chief Liaison Officer of the French for the A. E. F. and the various French Ministries, more particularly the Ministry of Labor and its subdivisions, the Bureaux de Placement du Travail, the Bureau of Foreign Labor, and the Bureau of Colonial Labor. A special labor representative of the French was placed on this mission for the purpose of cooperating with the Labor Bureau in handling labor problems involving the A. E. F.

Labor agencies for the procurement of French labor and the importing of labor from other countries were promptly established in Paris, Lyon, Nantes, Toulouse, Perpignan, Bayonne and Mentone, the latter three largely for handling imported labor. These agencies worked side by side with the Bureaux des Placements of the French, and of the various officers attached thereto each covered his respective district of France. Periodical trips were taken from the central office to surrounding towns within the district. Before these trips were made suitable advertisements made out in accord with the Laws and approval of the French were posted and circulated in the local newspapers. By this means at each one of the French depots a continuous stream of labor was caused to flow to the American lines.

In this kind of procurement it was found necessary to use great care and discretion that those who were not satisfactory did not return to another depot and endeavour to obtain reemployment by the Americans. To prevent this, those who were distinctly unfit, physically or by character, for labor, were prevented from obtaining reemployment by the requisite information concerning them being sent to all of the agencies.

In importing labor from Spain and Portugal particular care was needed to prevent those of pro-German leanings, or actual spies, from entering the American service. The Intelligence Service of the American army, under special direction of Captain Cauvin, made quite careful investigation of each man, and were able to largely eliminate questionable characters.

In addition to the agencies named above, agencies were established in Rome, Madrid and Lisbon, to arrange for the importation of labor with those countries. In order that the relations with the French might work smoothly at all times, the Labor Bureau, under the direction of the general purchasing agent, was in practically continuous touch at its General Headquarters in Paris with the various French authorities.

One of the most important of the regulations was that labor should be procured at the prevailing rate wages in the district where it was to be employed; was to be given barracks and reasonable housing accomodations, and was to have food of a character suited to it. Some difficulty was encountered in determining the best food to be furnished, and in obtaining it from the American stores. The general order covering this subject is included with this report.

In Spain and Portugal much difficulty was encountered in recruiting, in Spain, partly due to apathy on the part of certain officials toward the Allied cause, and in both countries by reason of a wish to retain their labor within their own boundaries. These both largely disappeared, however by mid-summer 1918, and a steady flow of labor was gotten through the medium of private procurers under arrangements and conditions which had been worked out by the Labor Bureau with the French.

Italy had a great number of refugees, and arrangements were finally come to whereby the Italian government agreed to aid in the recruiting of labor among these, up to 10,000 or more. A stream of this labor was fairly well established by the fall of 1918, and proved to be of a very high type.

A labor regiment from the Italian army had also been sent by the government of Italy to the American lines at an early date.

Female Labor: Female labor, as well as male labor, was procured, and in the majority of cases the bulk of this could be obtained in the vicinity of the place where it was to be used, since a comparatively small percentage of the women of France were engaged in war work. Women were used on a great variety of service, and proved to be excellent labor.

No attempt was made to organize women into special labor companies as this seemed to be, at the beginning, unnecessary. On the other hand where this labor was brought from a distance a Labor Bureau officer was stationed for the purpose of handling matters relating to its internal economy as in the case of the male labor.

Though at the beginning the organization of woman labor seemed to be unnecessary, experience showed that some more or less formal organization would prove of advantage both in enabling the central authorities to be kept informed as to the numbers and use of female labor and conditions under which they were working, and also to obtain the greatest efficiency from such labor. During the summer, therefore, a bulletin on labor specifying the method for the organization of female labor was published and steps were taken to begin the organization of the latter under the terms and conditions contained therein. A copy of this bulletin is included in the appendices. [not printed].

In addition to woman labor, during the spring of 1918, a great shortage occurred in clerical service, and the Chief of Staff, S. O. S., instructed the Labor Bureau to enter into the work of procuring labor of this type. As a result many French women who were able to do English typing and shorthand were procured and employed. This supply, however, proved to be short, and a representative was sent to England to obtain a contingent of W. A. A. C.'s, or more formally known as "Queen Mary's Army Auxiliary Corps." Arrangements were made with the British Government to forward up to 5,000 W.A.A.C.'s, or more, if needed. A stream of W. A. A. C.'s, therefore, was started, some 300 being arrived at about midsummer, and other smaller contingents as needed thereafter. The W. A. A. C.'s have given unusually competent service, and are a distinct credit to the English organizations which organized them.

Mechanics: A large call developed for carpenters and masons in the building of the S. O. S., and for a great variety, but in less numbers of other mechanics. This call became so insistent and important that it was found necessary to create a subdivision of the procurement division to handle this kind of procurement. In doing this, not only was the whole procurement organization made use of, but special attention was given by the subdivision itself to locating this kind of skilled labor necessary. If a dredge crew, with its engineers and other skilled workers, was needed, the head of

the skilled mechanics subdivision looked to Marseilles, or one of the other seaports. Carpenters and masons were available in all countries, but at various times they were found in greater numbers at one particular point or another. This special work was handled by Sergeant Robert C. Wallace, Engineers, and in such a way that practically all calls for skilled labor were filled promptly upon demand from the army. The total number of skilled laborers procured was 3,852.

6. Cooperation with the French: The labor situation of the A. E. F., and its needs in the way of civilian labor were early laid before the French authorities clearly, and an appeal made to obtain their active cooperation. By conferences with the various authorities arrangements were perfected for the immediate supply of a portion of the Chinese imported by the French Government, French Colonials, North Africans, Moroccans, and for importing Spanish, Portugese, Italians, and others from foreign and neutral nations. The French gave every possible aid and assistance in this important work for the A. E. F. and though seriously short of labor by reason of the fact that the virile men of France, and indeed, of all Europe, had been taken for army service, vigorously took a hand to help the A. E. F. over the emergency, and the result of this cooperation was that many thousands of Chinese and Colonial French laborers were promptly put at work upon the American lines.

Contracts and Agreements: French labor is in France divided into manoeuvres, common labor, terrassiers, strong earth workers, and the various classes of skilled mechanics. Of the last, the A. E. F. needed large numbers of carpenters and masons, and a few electricians, plumbers, steamfitters, and men of other trades. All French workers were employed on the basis of an individual contract, in accord with the system prevailing in the French Bureaux de Placement. A copy of the blank most used will be found in the appendices.

The wages paid manoeuvres and terrassiers, which were largely worked as one class by the A. E. F., was from 7 1/2 to 10 francs per day. In addition to the wages, they were furnished barracks, and had a deduction made from their wages of Fcs. 2.50 per day for rations. When they were housed in tents, an additional fifty centimes per day was granted them.

Most of the Spanish and Portugese, and other foreign labor, was employed on the same terms, but beginning with the summer of 1918, a new contract was made with a prominent business man in Spain to act as recruiting agent. Under the terms of this contract, the labor employed received nine francs per day, barracks, and rations at Fcs. 2.50 per day, but in addition to this, a payment of Fcs. 2.50 per day was made in Spain, to cover the cost of recruitment, and pay Fcs. 1.75 to the family of the worker, by reason of the losses sustained through the existing rate of exchange, and by reason of his being transferred to a foreign country.

The contract for civilian labor with the Italians was very similar to that made for the Spaniards having a rate paid the workman himself, but a part of his wage paid in Italy, direct to the family, through the Italian authorities. The Italian contract was for four months' duration, while all others were for three months duration, and at the end of the contract, a delayed payment was made of from thirty to fifty francs. This delayed wage payment was held in order to enable the A. E. F. to retain the labor at least through the period of the contract. In this regard it served excellently.

Two other nationalities from which the Labor Bureau drew largely and which performed a large proportion of the civilian male labor, were Chinese imported by the French for war service in the safe sectors, and North Africans from the French Colonial possessions, which were drafted for this service. The former consisted of North Chinese, who were large and strong, and excellent workers on heavy duty; Anamites, who were small but active, quick and wiry, and did fine service in handling the lighter stores, in working on aeroplane construction, and in doing other duties of the less heavy nature. However,

when given special shovels and tools, the latter also gave fair service on earthwork, such as leveling aviation fields; and the southern Chinese, who seemed less accustomed to the ways of the west, and required more direction. Each class of the Chinese was employed on a separate memorandum with the French, but on a basis which made the cost to the A. E. F. approximately the same as that for other foreigners. Kabyles, or North Africans, coming from Morocco and Tangier, were large strong men, and excellent workers. It is doubtful if any labor of the A. E. F. consistently gave as large an output per man as these Kabyles. They were employed under an agreement with the French, which made the cost to the American Government about uniform with that of other civilian labor.

In the case of the Chinese, and the Kabyles, the French were under contract with the Chinese Government which compelled the observance of certain conditions of labor, while in the case of the Kabyles, the French draft likewise included certain conditions. In order to see that these conditions were properly carried out, each of the A. E. F. companies organized from this labor, or group of companies, had furnished with it a French adjutant, or officer, and two or three enlisted French soldiers. It was the duty of this French personnel to report to the French Government as to the conditions of living and labor of these groups, and to cooperate with the American officers in their proper discipline and handling. At first more or less difficulty occurred, due to this French supervisory personnel, partly by reason of the lack of understanding on the part of the A. E. F. as to the conditions of the contracts, and partly due to the French personnel having a lack of proper knowledge of the handling of labor, and the duty which should be expected of it. After sufficient time had elapsed, however, for both sides to become fully acquainted with conditions, these difficulties largely disappeared, and the system worked quite satisfactorily.

In addition to the payments to the men, and the wives of the men, a payment of approximately ten francs each was made to the French, as the fair cost of their expense in aiding the A. E. F. in making the procurement. In the case of the Chinese, this payment was in the form of a small payment per day, which also covered the cost of clothing, and some other equipment which the French furnished.

Contractors: A large amount of the work of the A. E. F. was done by contractors, mostly Frenchmen. These contractors were under obligation to furnish labor, and materials on a percentage basis, and were probably a necessity by reason of the fact that they could take short cuts in getting materials and knew where they were to be located, and thus aided materially in speeding up the work. Unluckily, they were unable to recruit sufficient labor to carry out their contracts promptly, and the Labor Bureau was put to the necessity of furnishing these organizations with labor, or arranging the means whereby it could be gotten, as well as obtaining labor for organized administrative labor companies. Much difficulty was experienced with these contractors, and though they took labor as procured under the direction, or by the Labor Bureau, as the rates agreed upon between the French and American authorities, they had a tendency to raise wages to an exorbitant amount. This resulted in a tendency to raise wages throughout France, which, of course, meant a serious disturbance of French conditions. Every effort was made to prevent this from happening, and whenever the Labor Bureau received notice from the French, or otherwise, that wages paid by a contractor were higher than those agreed upon, the matter was taken up directly with the service or department of the A. E. F. for whom the contractor was working, and as far as possible, the practice was eliminated. In spite, however, of the best efforts, contractors frequently paid higher wages than normally paid in the districts of their operations, and caused much difficulty to the French services, and also to the A. E. F. with regard to the labor employed in accord with French terms.

Local Procurement: Local officers commanding posts were permitted to procure male and female labor from the nearby surrounding regions in accord with the terms arranged between French Bureaux de Placement and the Labor Bureau. The Labor Bureau, in many

cases, maintained a man at the local Bureaux de Placement to act as procurement agent, and to see to it that the conditions agreed upon were properly carried out. With few exceptions this local labor was employed in entire conformity with agreements. The Labor Bureau did not deem it necessary to form specific organizations of women workers. Instead of doing this, it aided the arms of the service needing women, by helping to procure such labor locally, which was turned over to the service to be organized and handled. However, in certain isolated posts, where large operations were being carried on, it was necessary to procure women from a distance, in which case the Labor Bureau procured and transported this labor, and then assigned an officer to handle the special problems involving its use, under the direction of the commanding officer of the post.

Labor Direction: The labor problem of the A. E. F. consisted in properly handling labor battalions from America, much of it colored, line troops, or troops composed of specialists from America, and the civilian labor. The civilian labor problem was under the direction of the Labor Bureau. The labor troops from America were mostly under the direction of the departments of the service for which they were recruited. The line troops were used upon urgent necessity, and placed under the direction of the services needing them. This situation was not satisfactory, and required for proper improvement, a central authority handling the entire problem of labor. In view of this, the chief of the Labor Bureau wrote the general purchasing agent giving these facts in some detail, and recommending that a labor direction be formed for all labor, not included among certain classes of specialists of the higher type. This plan involved the attaching to G-4 of the Staff, S. O. S., a labor director who would be in contact with the director in each army, S. O. S., and each army at the front. These secondary directors, it was proposed, would have under them labor directors in local posts in the rear, and for corps and divisions in the army. The plan carried with it sufficient assistants to perform the work properly in each division. The relation of this labor direction, it was proposed, should be similar to that of the G-4's of the staff, running from the staff of the Commander-in-Chief to the smaller units, and that all labor, except that named should be distinctly distributed, organized and handled by this organization. By this arrangement the commander of a division, or section, would have the control of the labor, but would use the labor director as his agent. By this means it would undoubtedly have been possible to make the maximum number of man hours of labor higher, and also to increase the efficiency of the labor through more direct supervision of its commanding personnel.

This problem became further complicated by the taking of many German prisoners. In order to tend toward the unit direction of all labor in the A. E. F. as indicated above, the formation of the prisoner guard companies was assigned to the army service corps, in which the labor bureau was located. This brought under one organization all civilian labor, and approximately 45,000 prisoners. Concurrently with this and carrying out the same policy, tables of organization for various labor units to be established in the army service corps were promulgated, and such units created. These included rest camp detachments, headquarters detachments, and many other labor units, for various purposes. This development, however, was not sufficient to accomplish fully the purpose, and, therefore, the staff drew up, after much discussion, and consultation with labor experts of the British and French armies, a scheme for the labor direction, much as indicated and using the Labor Bureau as a nucleus. This plan, however, was not put into effect by reason of the fact that the Armistice intervened.

The matter is one of so great importance that in the organization of the new standing army it seems most desirable to establish some such form of centralized labor direction for all army labor. While our country is at peace it may appear that a direction of this kind may not be needed, but the instant we enter another war the labor arm is as important as that of any other part of the army, and if it is not thoroughly ogranized

the effectiveness of our army must seriously suffer. It should be understood that our officers are not, as a rule, men who have handled labor to any great extent. In the present generation it is becoming more and more recognized that the mere employment and and putting to work of labor is not economical or satisfactory, and that the proper use of labor is one of intricacies and requiring the services of the expert. The Labor Direction is therefore seriously needed, headed by a man who had had experience and training in handling labor and who is held responsible for results. With this man as a start a system such as that outlined might well be built up, and where necessary, personnel be taught and developed to complete the organization.

Demobilization: Upon the signing of the Armistice, general order was promulgated, upon instructions from America, which stopped the great bulk of the construction work of the A. E. F. Immediately contractors and post commanders began to discharge labor. It became evident at once that the throwing of the great bulk of civilian labor upon the French labor markets in the course of a few days, or a couple of weeks, would seriously disarrange that market, and might even result in internal troubles of a very unsatisfactory nature. As a result, the chief of the Labor Bureau, after consultation with the general purchasing agent, requested the Commanding General S. O. S. to give orders that no labor should be discharged, except on his approval. This resulted at once in holding up the discharge of labor, and, as a matter of fact, prevented the loss of much labor, which it was found a little later, could be used to advantage.

Under the supervision of the general purchasing agent the Labor Bureau had, before the Armistice, started making arrangements with the French for a reasonable demobilization of the labor when the cessation of hostilities came. The memorandum of the meeting on this subject is included in the appendices. Though this memorandum was of an informal nature, it was agreed to by the various French authorities, and by the American authorities, and is now the basis upon which discharges of labor are occurring.

Shortly after the Armistice, the army policy was adopted to return the labor troops to America as rapidly as possible, and hold the organized administrative labor companies for labor purposes in the A. E. F. This was later modified by orders reducing the organized labor to one-half its present strength, but holding a skeleton of the procurement system intact, in order that procurement could be made if needed later, coupled with orders for the quick discharge of contractors' labor on work which had stopped, and local labor where not needed. All of this labor, however, had to be disposed of under the agreement made with the French by the Labor Bureau. The result has been that unneeded labor is being steadily discharged, or taken over by the French, and in such a way that the French can largely absorb the labor as they change from a war to a peace basis. It must be understood that the whole French nation has been for over four years in the war, and, therefore, practically all of its labor has been doing war work of one kind or another. This means a complete revision of the French industrial status, which cannot be accomplished quickly. America, with a far more simple problem, has continued many war contracts to give time for the proper disposition of the workers to peaceful pursuits. It is being found possible to join with the French to aid them in the difficult problem of taking care of the labor, which they as generously aided in providing, in a way which is apparently not disturbing conditions, and is providing no serious loss to the American army, by reason of the large amount of work that is still necessary to be done.

The French authorities have been particularly helpful throughout the war on the labor project. The calls upon the French Government for labor for its own services have been enormous, and a great shortage has been evident every day throughout the year that the Labor Bureau has been in existence. Nevertheless, it exerted every effort to aid the Americans, and actually crippled itself in many cases for the purposes of helping out the serious emergency by which the A. E. F. was confronted.

Creation of Army Service Corps: As there were many officers and enlisted men being sent from America as casuals for attachment with the general purchasing agent, there were no opportunities for adequate promotion of the commissioned personnel, or for granting commissions to enlisted personnel of particularly desirable qualifications. Partly because of this lack, and also because of a similar lack with reference to certain other organizations of the army, an order was issued on August 22, 1918, cresting the army service corps, and making a certain specified number of vacancies. This order is included in the appendices.

By reason of the fact that the army service corps was created largely as a vehicle for handling the military features relating to the Labor Bureau and other bureaus of the army, the Labor Bureau was properly made a part of that corps and the chief of the Labor Bureau was made its deputy director. Under this arrangement the Labor Bureau reported directly to G-4, services of supplies on all matters relating to the handling of labor as was done before, and to the general purchasing agent with relation to the procurement of labor and dealing with foreign governments, but in all matters of military organization it reported to the army service corps. The main headquarters of the Labor Bureau were at this time moved to Tours, though the organization division and certain other parts were retained in Paris in order to be close to the general purchasing agent and the French authorities.

Colonel Douglas Settle, a regular army officer of wide experience was made director of the army service corps.

Expense of Procurement: It was found at the inception of the Labor Bureau, as indicated above, that more or less money would be required by the procurement and transportation officers to pay expenses in the procurement of labor, for which bills could not be previously obtained. As most of the officers were of low rank, and were living under necessarily expensive conditions, it was essential that they have funds at their disposal. The quartermaster disbursing officer in Paris agreed to furnish these funds to each of the officers involved, as his agent. For many reasons, this, however, did not seem to be the best method, because the conditions under which the money would have to be spent would be more or less complicated, and each man would need to be very fully and carefully informed, and his accounts handled in a uniform manner with the others. It was also deemed not fair to require these officers to bear the full financial brunt of this money, while the central authorities of the Labor Bureau were not responsible. The chief of the Labor Bureau, therefore, arranged with the disbursing officer to become personally liable for such money as was needed, to receive the same, and distribute it through a central labor bureau business office to the officers needing it. This method was worked out exceedingly well. The difficulty of making the expenditures in exact accord with the law, and in a way acceptable to the disbursing officer, and the auditors, was very great, but as the whole matter was in the hands of a central authority who could be in close contact with these officials, the results have been satisfactory. The regulations under which these moneys were expended were as outlined in memorandum in the appendices.

The books of the chief of the Labor Bureau were audited on December 5, 1918, balancing correctly with the accounts of the quartermaster.

Hours of Labor: During the period of the war, the varying emergencies which arose, and which had to be met effectively and quickly in order to save the lives of the Allied armies and to assure victory, made regularity in labor hours difficult and inadvisable. As in the case of the fighting soldiers, labor, which was actually, and indirectly, part of the army, was subject to the same unusual conditions caused by the enemy, or otherwise, as were the fighting armies themselves. However, our Allies had largely adopted a ten hour day to be used as a basic during the war period, and in conformity therewith the same hours of labor were uniformly accepted by the A. E. F. Shortly after the signing

of the Armistice, however, conditions has so changed that the consideration of a change of this basis seemed possible. The chief of the Labor Bureau therefore consulted with with French officials and found that they would be willing to have the Americans adopt a basic eight hour day if this were done under conditions which would not disturb the wage scale for French labor. As a result of this information the chief of the Labor Bureau wrote the Commanding General, S. O. S. and recommended that as rapidly as it could be reasonably accomplished in view of all the complications involved, all labor of the A. E. F. be placed upon an eight hour basis. It is probable therefore that this action will be accomplished gradually as conditions warrant.

Information Concerning Labor Procured, Personnel in Command, etc.: At the time of the Armistice there was on duty with the Labor Bureau in the various divisions, the following personnel:

Officers	193
Enlisted	1,575
Civilian labor (in the form of administrative labor companies under the command of American officers and enlisted men)	20,380
This labor included the Italian militarized labor which was handled as the semi-militarized Chinese, semi-militarized French colonials and the purely civilian labor.	
Women, employed directly by the procurement division of the Labor Bureau, or locally procured under the arrangements made by the Bureau of Labor with French authorities	10,666
Labor furnished to contractors or other services, not organized into administrative labor companies, and which were procured directly in accord with arrangements by the labor bureau	11,620
Total	42,666

In addition to this labor the Commander-in-Chief instructed the labor bureau to report on the number of German prisoners of war organized into labor companies, by the army service corps of which the labor bureau was a part.

These numbered at this time	35,100
The total non-American militarized labor therefore on which the labor bureau received reports was	77,766

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JOHN PRICE JACKSON
Lt. Colonel, Engineers, U. S. A.,
Chief of Labor Bureau

Engineer Activities

HEADQUARTERS, SERVICES OF SUPPLY, A. E. F.,
Tours, France, March 12, 1919.

[Extract]

ORGANIZATION OF THE ENGINEER DEPARTMENT

From a total of six men - three officers and three civilians - on May 28, 1917, the Engineer strength of the American Expeditionary Forces increased until on November 11, 1918, there were under the direct command or the technical supervision of the Chief Engineer, A. E. F., 174,000 officers and men, distributed as follows:

CHARACTER OF SERVICE	OFFICERS AND MEN
With Armies	86,400
Miscellaneous (Including troops in training, at schools, shops, etc.)	18,500
Construction (In the Services of Supply under the Division of Construction and Forestry)	43,500
Forestry	18,500
Supplies	7,600
Total Engineer Troops under C. E., A. E. F.	174,000

The organization of the Engineer Department, in the form it had assumed when hostilities ended, consisted essentially of the following four main branches or divisions of the Chief Engineer, A. E. F., whose headquarters were at Headquarters, S. O. S.: (1) Assistant to the Chief Engineer, A. E. F., at G. H. Q.; (2) Division of Construction and Forestry; (3) Division of Military Engineering and Engineer Supplies; (4) Division of Light Railways and Roads.

In presenting a chronological account of Engineer Department organization it must be made evident at the start that the duties charged to the Chief Engineer, A. E. F., during the last four months of hostilities, had previously been discharged through the medium of three distinctly different organizations. Therefore, four separate organizations will be described, and in the order of their establishment, as follows:

Engineer Department, May 18, 1917, to July 11, 1918 - Colonel (after August 31, 1917, Brig. Gen.) Harry Taylor, Chief Engineer, A. E. F.

Office of the Chief Engineer, L. of C., August 13, 1917, to March 12, 1918, Lt. Col. C. W. Kutz from August 14 to August 24, 1917, then Brig. Gen. C. H. McKinstry until September 17, 1917, then Brig. Gen. M. M. Patrick, until March 12, 1918, C. E., L. of C.

Service of Utilities (two of its four departments, March 12, 1918, to July 11, 1918, Major General W. C. Langfitt, Chief of Utilities.

Engineer Department, July 11, 1918, to date, Major General W. C. Langfitt, Chief Engineer, A. E. F.

ENGINEER DEPARTMENT TO JULY 11, 1918

The Chief Engineer Officer of the American Expeditionary Forces, Colonel Harry Taylor, was assigned to that duty by the Chief of Engineers, Washington, D. C., on May 18, 1917. On the following day two Engineer Officers were detailed as his assistants - Captain Ernest Graves and Captain Robert G. Alexander. The three officers, with three civilian assistants, comprising the Engineer Department of the A. E. F., departed New York with the Commanding General, A. E. F., and his other staff personnel aboard the S. S. *BALTIC* on the afternoon of May 28, 1917. The ship was twelve days en voyage to Liverpool, and every day at sea was employed by the Engineer staff members in the preparation of detail plans for housing the troops and supplies of the successive A. E. F. contingents. Three days out from New York, May 31, Colonel Taylor was appointed a member of a board of five officers, called the Board on Ports, the duty of which, to quote the appointing authority, was "to consider the advantages and disadvantages of such ports as may be indicated at that time (upon arrival in France) as possible bases for the American Expeditionary Forces." On the day of arrival in London, June 8, the Commanding General at Headquarters there, directed that the Board on Ports "proceed not later than Sunday, June 10. 1917, to the following places in France: St-Nazaire, La Pallice, Bordeaux and the Gironde ports, Nantes, Nevers and Marseilles, visiting Marseilles as the last port. The travel to Nevers should be to inspect the possibilities for a depot."

The Board left London June 10, 1917, arrived in Paris on the 11th and began its work in Nantes on the 12th. Its members were back in Paris with a report to the Commanding General on June, 18, having made thorough inspections of all facilities in Nantes, St-Nazaire, La Pallice, Bassens, Souges, Pauillac and La Verdon. The recommendations contained in their report formed the basis for subsequent operations in Bases Nos. 1 and 2, L. of C.

During the port investigations of Colonel Taylor, Majors Graves and Alexander had continued from London to Paris and established there the Office of the Chief Engineer, A. E. F. The existence of the Military Railways Commission, sent to Europe by the War Department, May 14, 1917, to make a study of, and report on, transportation facilities and requirements in the western allied theater of operations, was terminated by the arrival in France of Headquarters, A. E. F. Accordingly, on June 15, 1917, its five members, Majors W. B. Parsons, W. J. Wilgus, A. B. Barber, F. de St-Phalle and W. A. Garrett, reported to the office of the Chief Engineer, A. E. F., for duty. After a few days the latter two officers departed on a mission to Washington, being replaced on June 20 by two forestry specialists, Major H. S. Graves and Captain Barrington Moore. The Chief Engineer Officer's staff of assistants than had nine officers.

The office of the Chief Engineer continued in Paris until August 31, 1917. Prior to that time, and for two months thereafter in fact, there was no real semblance of a fixed office organization. Such a thing was entirely precluded by the scarcity of Engineer Office personnel. During the latter part of August the number of officers in France was increased by thirty. Most of them, however, were assigned to duty with other organizations, principally with the Chief Engineer, L. of C. A few officers retained by the Chief Engineer, A. E. F., were simply detailed to certain specific rush assignments, which upon completion, were succeeded by others.

The Chief Engineer's Office during July and August, 1917, was the seat of great activity and far-reaching labors. Investigations and surveys were made; the large construction projects were formulated; estimates embracing the needed materials were prepared; labor requirements were calculated; necessary quantities of construction equipment were determined. Then, too, as a result of those labors and numerous Inter-Allied

and French departmental conferences, attended by Colonel Taylor or members of his staff many important recommendations, including the organization of a Transportation Department and Gas Service, were made to the Commanding General and to the Chief of Engineers; requisitions for Engineer troop equipment, supplies and materials were cabled to Washington, while numerous plans and specifications for construction material, and wharf, railway, plant and shop equipment were sent there by courier and by mail.

Colonel Taylor became Brigadier General, National Army, on August 31, 1917, and on the same day moved his office to the new Headquarters, A. E. F., at Chaumont. In the meantime, as will be shown later, many of the duties of the Chief Engineer, A. E. F., had been delegated to the Chief Engineer, L. of C., and, until March 12, 1918, except for technical supervision of the operations of all Engineer units, he was concerned principally in matters of military engineering, training of troops, and the procurement of Engineer supplies.

In the fore part of November 1917, his office at G. H. Q., had assumed an organiztion along the following lines:

There were four divisions, some with sub-divisions or sections;

1. The Accounts and Contracts Division charged with the responsibility of discharging the duties pertaining to keeping of all accounts, making contracts and all auditing.

2. The Administration Division engaged in the executive control of the office and handling of all routine paper work. It had four sections -

(a) Personnel Section for the classification of engineer officer personnel and the supply of such personnel upon requisition.

(b) Military Information Section engaged in the collection and dissemination of military information of an engineering character to all Arms and Departments.

(c) Inspection and Training Section engaged in the supervision of Engineer units in matters of training.

(d) Motor Transport Section engaged in the management of the Engineer Motor Transport Service, which at that time existed. The equipment of the service, however, was later placed in the general pool and the Section abolished.

3. The Operations Division had six sections:

(a) Technical Military Engineering Section engaged in the collection, compilation and proper distribution to Engineer units of current information of a military engineering nature.

The five following engaged in surveys, drafting of requisitions and the formulation of policies pertaining to the respective services.

(b) Electrical and Mechanical Section
(c) Water Supply and Sewerage Section
(d) Camouflage Section
(e) Searchlight Section
(f) Geologic Section

4. The Supply Division, while concerned in the Chief Engineer's function of engineer supply, was engaged principally in the active supervision of the purchase in Europe (through the engineer purchasing officer) and the requisition from the U. S. of Engineer materials.

Prior to August 30, 1918, the Chief Engineer, A. E. F., himself, had been the A. E. F. engineer disbursing officer. On that date he appointed Colonel T. H. Jackson, Engineer Purchasing and Disbursing Officer, to be also the engineer member of the General Purchasing Board, constituted by G. O. 23, G. H. Q., August 20, 1917. The Engineer Purchasing Office, located in Paris, with branches at other points in France, as well as in England, Switzerland, and Spain was then no longer a section of the office of the Chief Engineer, A. E. F., but it served as the purchasing agency of all material, whose requisition originated in the Engineer Department and was approved by the Chief

Engineer, A. E. F., and to it were presented all bills and vouchers for payment from Engineer funds. Beside the foregoing duties the Engineer Purchasing Officer was charged, after February 4, 1918, with the manufacture of cement, and a section of his office directed the operation by U. S. Army troops of several cement mills in France. Colonel Jackson was relieved as Engineer Purchasing Officer, December 24, 1917, by Colonel J. A. Woodruff. The latter was relieved, in turn, by Colonel C. McD. Townsend, February 14, 1918.

On March 19, 1918, the Office of the Chief Engineer, A. E. F., was transferred from G. H. Q. at Chaumont to Headquarters, S. O. S., at Tours, and somewhat reorganized to care for certain changes in its functional and geographical relations. Although the headquarters of the Chief Engineer, A. E. F., were at Headquarters, S. O. S., it was required in orders that the Chief Engineer's office should be so organized that his presence at G. H. Q., or at any part of the field, would not lessen the efficiency of his department. Therefore, it became necessary for him to maintain an office at G.H.Q., with an assistant, Colonel M. L. Walker, in charge and to have an assistant, Colonels C. W. Kutz, J. B. Cavanaugh, and W. A. Mitchell, successively, in charge of his office at Headquarters, S. O. S., as well.

The G. H. Q., office of the Chief Engineer was concerned entirely with matters pertaining to engineer service in the Zone of the Armies and was organized accordingly. The Accounts and Contracts Division, the Electrical and Mechanical, and the Water Supply and Sewerage Sections of the Operations Division were transferred to the Tours office, but a Supply Section was left at G. H. Q., to serve as an agency in facilitating the distribution of engineer material in the Army Zone. On May 1, 1918, the Operations Division was abolished and the Geologic, Camouflage and Searchlight Sections were placed directly under the Assistant to the Chief Engineer in charge of the office; also an Engineering Intelligence Section and a Bridge Section was organized and placed in similar positions. The Board on Military Engineering, authorized March 16, 1918, was organized March 30, and became a component of the G. H. Q., office of the Chief Engineer, A. E. F.

The office of the Chief Engineer, A. E. F., at Hq., S. O. S., was constituted with three divisions. An Operations Division under the direction of the S. O. S. Office Assistant was composed of the Electrical and Mechanical Section, the Water Supply and Sewerage Section, the Personnel Section and the Records Section. The Supply Division was composed of the Procurement Section and the Care and Storage Section, each with various subsections. The Care and Storage Section included the former Depot Section of the Supply Division of the Office of the Chief Engineer, L. of C., (abolished March 12, 1918.) The Administration, Finance and Accounts Division discharged the duties of the former Accounts and Contracts Division.

OFFICE OF THE CHIEF ENGINEER, L. of C. (AUGUST 13, 1917, to MARCH 12, 1918).

Organization of the Line of Communication was begun by its commanding general on August 13, 1917. Among the first departmental offices of his headquarters to be established was that of the Chief Engineer, L. of C., Lt. Col. C. W. Kutz, appointed C. E., L. of C., August 14, 1917, was succeeded ten days later by Brig. Gen C. H. McKinstry. The latter was in turn relieved by Brig. Gen. M. M. Patrick, September 17, 1917. Since the far greater portion of Corps of Engineers duties for months to come were necessary in the service of the Line of Communications most of the Engineer officers who became available during August were assigned to that service by the Chief Engineer, A. E. F.

The main functions of the C. E., L. of C., were general construction, less the railway and dock construction then assigned to the Transportation Department, and the supply of engineer materials. Accordingly his office was organized with two divisions - the Administration and Construction Division and the Supply Division. The

former division, dealing with matters of office routine, policy, requirements, design and inspection pertaining to construction in the field had seven sections:

1. Administration Section
2. Barracks and Camp Section
3. Hospitalization Section
4. French Camps Section
5. Oil Storage and Plants Section
6. Water Supply and Sewerage Section
7. Drafting and Reproduction Section

The Supply Division was concerned in lumber production and the receipt, storage and and issue of engineer materials, and therefore, had a Forestry Section and a Depot Section. The acquisition of stumpage and the operations of Forestry troops in the forests and mills were directed through District and Operations Commanders, by the Chief of the Forestry Section, who was at the same time commanding officer of all Forestry troops. Under direction of the officer in charge of the Depot Section there were established engineer depots at Gievres, Is-sur-Tille, Bordeaux and St-Nazaire.

Unlike forestry operations all construction work in the Line of Communications were directed by District (later called Section) Engineer Officers who, on Engineer Department construction matters, were directly subject to the instructions of the Chief Engineer, L. of C.

SERVICE OF UTILITIES (MARCH 12, 1918, to JULY 11, 1918)

The Service of Utilities was authorized in General Orders, February 16, 1918. Major General W. C. Langfitt was appointed Chief of Utilities, March 10, 1918. The following quotation from General Orders indicates the scope of the duties of the Service as a staff department of Headquarters; S. O. S.:

* * * Service of Utilities * * * will include the Transportation Department, the Motor Transport Service, Forestry Service and lumber and tie production, and all construction under the C. G., S. O. S. * * * co-ordinated by the Chief of Utilities * * *
Utilities Department of Construction and Forestry:

In organizing his Service Department, General Langfitt took from the defunct office of the Chief Engineer, L. of C., its Administration and Construction Division and the Forestry Section of its Supply Division, and on March 12, 1918, created therefrom the Utilities Department of Construction and Forestry. Practically the entire organization and personnel, less the Depot Section, of the former Office of the Chief Engineer, L. of C., comprised the new department, of which the former Chief Engineer, L. of C., Brig. Gen. M. M. Patrick, became the Director. Charged by the Chief of Utilities with all forestry and lumber production duties and all construction in the S. O. S. including the railway and dock construction of the Transportation Department, General Patrick reorganized his department with the following sections:

(a) Forestry Section
(b) Plant Construction Section
(c) Hospitalization Section
(d) Warehouse and Barrack Construction Section
(e) Water Supply Section

On March 23 the latter four sections were consolidated, becoming sub-sections of a General Construction Section and, the Forestry Section continuing as a department section, two additional department sections were created - an Administration Section and a Railroads and Docks Section.

The organization of the Department of Construction and Forestry so continued without change, except that Brig. Gen. Edgar Jadwin, having succeeded General Patrick as Director, May 16, 1918, created the detail of Deputy Director. The field direction of forestry operations was accomplished by the Director of Construction and Forestry

through his Chief of Forestry Section and in the manner described as having been employed by the Chief Engineer, L. of C. The field direction of construction work in the seven Base Sections, two Intermediate Sections, and the Advance Section of the S. O. S. Zone was accomplished through the Section Engineer officers thereof - also a method continued from the previous organization.

Utilities Department of Light Railways and Roads:

Taking from the Transportation Department the function of construction, maintenance and operation of light railways and that of construction, repair and maintenance of roads, General Langfitt, on March 19, 1918, created the Utilities Department of Light Railways and Roads and to it assigned those functions.

Under Brig. Gen. Edgar Jadwin, as Director, the Department of Light Railways and Roads was originally made responsible for the construction, equipment, maintenance and operation of all narrow gauge railways in advance of normal gauge railheads, and for the construction and maintenance of all roads in American-occupied territory, together with the quarrying of material therefor. However, the department was relieved of the greater part of that responsibility within the first two months of its existence. After April 1, 1918, all road and quarry duties in the Base and Intermediate Sections, S.O.S., were discharged by the Department of Construction and Forestry; after April 12, 1918, all light railway, road and quarry work in the Army Zone was carried on under tactical command, but with departmental, technical supervision; after May 7, 1918 all road and quarry work in the Advance Section, S. O. S., was carried on by the Department of Construction and Forestry under technical supervision of the Department of Light Railways and Roads. In light railways and roads operations areas under various tactical commands, the department maintained technical supervision through departmental officers detailed to the staffs of the Chief Engineers of those commands. In the Advance Section, S. O. S., the Sectuon Engineer Officer, Department of Construction and Forestry, was made also Engineer, Light Railways and Roads, and technical supervision was maintained through him.

Hence, except for technical supervision in the Advance Section, S. O. S. and in the Army Zone, the function of the Department of Light Railways and Roads after May 7, 1918, became primarily that of an agency to estimate light railway and road requirements in trained personnel and in construction and operation equipment, and to make provisions for their delivery to the construction and operation forces.

Under General Jadwin, as Director until May 16, 1918, and from that date under Colonel Herbert Deakyne as Director, the Department of Light Railways and Roads discharged its duties through the following Section and Sub-Sections Chiefs:

(1) Manager of Roads
(2) Supply Officer
(3) Manager of Light Railways
(3A) Chief Engineer
(3B) General Superintendent of Transportation
(3C) General Superintendent of Motive Power
(3D) General Superintendent of Construction

ENGINEER DEPARTMENT FROM JULY 11, 1918.

On July 11, 1918, the Service of Utilities, as the coordinating factor of the four Utilities Departments, was abolished. Its Chief, General Langfitt, superceded General Taylor as Chief Engineer, A. E. F. The Engineer Department, or rather, the Office of the Chief Engineer, A. E. F., was reorganized to include, as three divisions, the former Office of the Chief Engineer, A. E. F., and the two former Utilities Departments - Light - Railways and Roads, and Construction and Forestry. It then consisted of the Chief Engineer, A. E. F., the Deputy Chief Engineer, A. E. F., (Brig. Gen. T. H. Rees until October 15, 1918, then Brig. Gen. Charles Keller), the Adjutant and the

Personnel and Operations, Administration, and Historical-Technical Sections in the immediate office at Headquarters, S. O. S., beside the:

Division of Military Engineering and Engineer Supplies
Division of Construction and Forestry
Division of Light Railways and Roads
Office of the Assistant at G. H. Q.

The Adjutant's office and the Administration Section were taken over from the former Office of the Chief of Utilities, while the Personnel and Operations Section and the Historical-Technical Section were acquired by transfer from the former Office of the Chief Engineer, A. E. F.

Division of Military Engineering and Engineer Supplies:

The former Office of the Chief Engineer, A. E. F., was, on July 11, 1918, reorganized as the Office of the Director, Division of Military Engineering and Engineer Supplies, and until after November 11, 1918, continued as follows:

Director: Brig. Gen. Harry Taylor until September 11, 1918, when he was relieved by Colonel F. C. Boggs, Corps of Engineers, who was in turn relieved by Brig. Gen. J. F. McIndoe, October 15, 1918.

(a) Supply Section
(b) Water Supply Section
(c) Electrical and Mechanical Section
(d) Office Service Station
(e) Accounts and Contracts Section

The Engineer Purchasing Office continued to function as the purchasing agency for the Supply Section of the Division of Military Engineering and Engineer Supplies, and in the direction of cement manufacture. Colonel Townsend was relieved as Engineer Purchasing Officer, October 21, 1918, by Colonel F. C. Boggs.

Division of Construction and Forestry:

The former Utilities Department of Construction and Forestry on July 11, 1918, became the Division of Construction and Forestry, Office of the Chief Engineer, A. E. F., and without change in its internal organization until after the signing of the Armistice, it so continued.

Division of Light Railways and Roads:

Without change in its form of organization until after the cessation of hostilities the former Utilities Department was continued as the Division of Light Railways and Roads, Office of the Chief Engineer, A. E. F., Office of the Assistant at G. H. Q.

Retaining its organization of the period prior to July 11, 1918, until after the beginning of the Armistice, the Office of the Assistant to the Chief Engineer, A. E. F., at General Headquarters, maintained a relation to General Langfitt similar to its former relation to General Taylor, except that its connection with the immediate office of General Langfitt passed, in most matters, through the Director of Military Engineering and Engineer Supplies. After the departure of General Taylor for the United States, September 11, 1918, that connection was made direct.

* * * * * *

SEARCHLIGHTS

Searchlight service, as a special function of the Engineer Department, began with the arrival in France, August 20, 1917, of the First Divisional Engineer Train. Approximately 100 enlisted men and two officers of that Train went to Paris and began receiving instruction, remodelling equipment received from the French, and engaging on related duties, at the headquarters at Fort Mont Valerien of the French searchlight section. Frequent trips to the French and British fronts impressed upon the mind of the Commanding Officer, Capt. John C. Gotwals, later Lieut. Colonel - the necessity of greatly increasing personnel and equipment for the proper protection of congested troop areas at the front and of dumps and important S. O. S. installations.

Adequate personnel was provided through Table III, Tables of Organization, series B, wherrby two searchlight companies were to form, with a surveying and ranging company, the second battalion of each corps regiment of engineers. One company searchlight troops from each corps engineer regiment was to be used in field searchlight service and the other on antiaircraft defense. Investigations pointed to a greater need for antiaircraft units, so all personnel was diverted to that use, though instruction of all units included practical emplacement and operation of field searchlights. Through such provision and later extensions in organization, searchlight troops, designated as the 56th Engineers, comprised at the time of the signing of the Armistice, a regimental headquarters and 10 companies. In practice, searchlight personnel was split up into operating units of 1 officer and 50 enlisted men each.

Later, when the school had been started, all instruction of searchlight personnel was carried on at the school at Langres where, during the months of August, September and October, 1918 a daily average of 600 men were receiving instruction. The six weeks' course was very comprehensive, including instruction in gas engines, electrical wiring, construction and use of telephones, repair and driving of auto trucks, as well as drill in field and antiaircraft searchlight operation and practical operation of machine guns. Upon completion of this six weeks' course, units were equipped and sent into the field.

During 1917 no field operations were undertaken by the searchlight troops. Small detachments, placed with the British for training, saw slight action early in the year 1918. The first sections of troops instructed at Langres, and furnished with American equipment, were detailed to operate with the French early in May 1918. These sections, totalling 6 officers and 200 enlisted men, equipped with eighteen 36-in. lights, saw action for several months with the French Tenth Army. During both the St-Mihiel operation and those in the Argonne-Meuse sector searchlight troops did valuable service. With the recall of troops from the French armies, American searchlight troops successfully sealed an area, stretching northwest from Dieulouard, of approximately 1,000 square kilometers. When the Armistice was signed, there were in service a total of 72 searchlights of all types, of which 42 were with the First Army, 16 with the Second Army, 6 at Colombey-les-Belles, and 8 at Is-sur-Tille.

One of the main achievements of the searchlight section was in gaining thorough coordination between searchlight personnel, scout planes and antiaircraft batteries. Tactical use of these troops was exercised by the Chief of Antiaircraft Artillery of the army or corps with which they were operating, though technical efficiency was a responsibility of the army or corps searchlight officer.

Coordination obtained as well between field operating units and experimentation and research personnel, affording to operating units information upon the latest devices on location of hostile planes. Intelligence reports were furnished from time to time, embodying the latest ideas on the use of antiaircraft searchlights.

CAMOUFLAGE

Camouflage, a special service, grew from a three-man organization in July 1917, lacking definition as to its tactical relations and control to a full-fledged engineer service with a personnel of approximately 670 officers and men. Not until December 4, 1917, was any authorization given for the organization of a camouflage section, but from that date camouflage troops were designated officially as the 40th Engineers. With authorization for expansion of personnel given during 1918, the final organization consisted of two battalions and a regimental headquarters, all under the command of Lt.Col. H. S. Bennion, Corps of Engineers.

During 1917 the work of camouflage troops, then carried as engineers, unassigned, the personnel being on detached service from engineer units already in France, consisted mainly in the study of British and French methods. In late September, however, a small factory was opened in Paris, and a small supply of materials was furnished a few American units from this factory. Early in 1918 a large factory was opened at Dijon, to which place the headquarters of the camouflage troops were transferred and maintained during their entire sojourn thereafter with the A. E. F. as an advance workshop, for the supply of divisions operating in the vicinity, was opened early in 1918 at Nancy. Both the Nancy and Dijon factories continued operations until the Armistice, though the Paris factory had been closed in February.

For combat purposes camouflage personnel was widely scattered. Its chief concern was in the instruction of line troops in the use of camouflage and in the direction of the actual work at the front. Erection of camouflage fell to line troops, lack of personnel being keenly felt in the camouflage section during its entire activities. From January to November 1918, inclusive, there was an average of 26 officers and 403 enlisted men in the camouflage section, exclusive of a few attached officers and troops. Approximately half of this number were employed continuously at the camouflage workshops, the other half being scattered wherever American units were operating in the line. Included in the latter half were details instructing at army and corps schools, and in seven artillery organization and training centers.

Actual field operations began in January 1918 when one officer was attached to the 1st Division. In April camouflage troops were operating with four divisions. In June a total of 7 officers and 128 enlisted men were operating with 7 divisions in the line, and upon the formation of the American First and Second Armies this ratio of 1 officer and 18 camoufleurs was practically maintained per division of line troops. Work at the front included not only actual provision of camouflage, but also intelligence work, undertaken with the help of the Air Service for the improvement of camouflage methods, material and discipline. During October, when operations at the front were at their height, there were with the armies a total of 31 officers and 322 enlisted men.

Production of camouflage materials was extensive at Dijon. The Nancy factory was used principally for the supply of small materials. From available figures, from January to November 1918, inclusive, more than 3,000,000 square yards of camouflage material - wire netting, fish nets, garlands, hangar covers, sniper suits, painted burlap and coco matting - were produced. Fifteen percent of this amount was on hand, unused, at the close of hostilities. A quantity of other camouflage material was supplied, not included in the above figure, and this comprised all necessary wire sets, observation posts, umbrella frames, shell holes, dummy heads, helmet covers and rifle covers.

It should be added that the manufacturing personnel of the camouflage factory at Dijon, notwithstanding the fact that it was recruited largely from female refugees from Northern France, attained a high degree of efficiency, so that the daily output per individual became fully double that of the individual workers in the French factories, for example, and the cost per unit of product was correspondingly reduced. Many ingenious labor-saving devices and methods were developed, and the plan as a whole was a credit to the A. E. F.

In accordance with the most approved method of supply of materials, units were allowed to draw directly upon the Dijon factory to the limit of their credit, such credit being based upon a supply of 20,000 sq. yd. per month per division in the line. Camouflage dumps were maintained in corps areas.

WATER SUPPLY

Water supply activities for the A. E. F. are divided into three groups: (1) water supply for the Army areas; (2) water supply for the S. O. S., (3) supply of materials for work with the armies and the S. O. S. During the early period of American participation in the war the water supply in the S. O. S. constituted by far the larger volume of work, consisting of extension of existing resources and development of new ones. As the volume of work in the S. O. S. increased and investigations relating to prospective Army work were initiated, a division of functions resulted whereby a Water Supply Section of the Office of the Chief Engineer, A. E. F., was created to handle the Army water supply work and all functions relating to preparation of specification and procurement requisitions for materials and equipment. The S. O. S. work of increasing old and creating new sources of water supply, on the other hand, was placed under the jurisdiction of the C. E., L. of C. (later Director of Construction and Forestry).

The work of the Water Supply Section, as a part of the organization of the Division of Military Engineering and Engineer Supplies, under the Chief Engineer, A. E. F., covered in general, studies of the demands for water supply stores, preparation of forecasts of needs as a basis for procurement, compilation of monthly priority tonnage schedules and initiation of special American and European purchases. After the early period when European purchases were the necessary rule, the procurement of water supply stores was based either on special or on large general requests covering all kinds of material and sent to the Chief of Engineers at Washington or to the Engineer Purchasing Officers at Paris or London for purchase.

Organized as a branch of the Engineer Department the Water Supply Service for Army zone work consisted of certain officers and special Engineer troops (26th Engineers) experienced in water supply work. These troops operated as Army Engineer troops, for it was considered of fundamental importance to assure the permanance of the personnel engaged on the specialized duty of supplying the Army with water. The functions of the Army water supply organization included the investigation of water resources, the development of water supplies and the construction and operation in Army zones of such works as were necessary to make water available at water points for troops and animals, including conveniences for filling water carts, water tanks trains, buckets, canteens and other containers. Upon tactical units devolved the responsibility for transporting water from water points to the final point of consumption.

The 26th Engineers was the first water supply regiment to be organized for service with the U. S. Army. It provided personnel and equipment for supplying water in large quantities, primarily for the use of troops and animals in the field, but also for other needs incident to military operations. The nature of the service was such that the regiment never operated as a unit. To a large extent the work of supervision of Army water supply was done by the officer in charge of the Water Supply Section, (who was also Colonel of the 26th Engineers) under the Division of Military Engineering and Engineer Supplies, Office of the Chief Engineer, A. E. F.

The establishment of water points for army use involved the provision of piping and pumping facilities, tanks, reservoirs, and other facilities. One of the most important items in the program was the supply of water for animals, involving the construction of horse-watering points and troughs of different types. To control the quality of drinking water, laboratories of two types, fixed and mobile, were employed, the latter being mounted on motor trucks. In addition, water tank trains and motor trucks equipped with purification apparatus in the form of filters and chlorinators

were operated. Light railways were employed whenever available for the transport of water in tank cars.

The early field service of the water supply organization began about February 1, 1918, with reconnaissance along the fronts of the French Eight and Second Armies. On the Toul front during May and June 1918, the Water Supply Service assumed its first direct combat responsibilities. In August the water supply troops took over partial water supply responsibility in the divisional area near Baccarat. At about the same time the service began to function also in the Chateau-Thierry region. Preparatory to and during the St-Mihiel and Argonne-Meuse operations the Water Supply Service performed its most extensive work.

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GEOLOGIC INVESTIGATIONS

Geologic investigations were carried out, in the course of A. E. F. operations, by several different agencies, all of the Corps of Engineers.

Early in 1917, American officers examining the work done by the British on the western front had strongly recommended that special geologic investigations be undertaken by the A. E. F., in order to facilitate the development of mining methods and of water supplies.

In accordance with these recommendations a Geologic Section, under the C.E.,A.E.F., was ultimately organized. In the course of its work, which late in 1918, was carried out by six geologic officers, this Geologic Section prepared geologic maps of the American front, designed for general use, for water-supply service and for special tank service. These maps were prepared by the geologists of the Section, as a result of the study of published French data and of original field work; and were reproduced by a plant handled by a detachment in the 29th Engineers. It is believed that their use gave results of immediate practical importance, as connected with the siting of field defenses, with the indication of the areas within which underground water supplies could be reasonably expected, and of the areas which would be respectively easy or difficult for tank operations at various seasons of the year.

Even earlier in date than the inauguration of the special Geologic Section, an engineer officer had been detached to examine and report on the many hospital, depot and camp sites suggested along the L. of C., with special reference to the subject of securing underground water supplies. This work was carried out very promptly and successfully, as is particularly evidenced by the group of deep wells at Bassens and Beau Desert, in the Bordeaux region. These wells averaged a flow of over five hundred gallons per minute, and in each case the water bearing strata were incountered by the drill within a few feet of the depth at which the reporting engineer officer had placed its probable location.

Further investigations, geological in their scope, were carried out by different engineer officers, including reports on the sand and gravel deposits of various parts of France; and on the available road-metal supplies of various areas.

The net result of the geologic work accomplished for the A. E. F. was satisfactory, aiding materially in the effectiveness of engineer operations and suggesting the advisability of a special development of this line of work in any further American Military Organization.

ELECTRICAL-MECHANICAL SERVICE

An Electrical-Mechanical Section was established in the Office of the Chief Engineer, A. E. F., in August 1917, and charged with responsibility in all matters of an electrical-mechanical natute. The need for such a section had been indicated by

information from the British and French. A careful study of their electrical and mechanical work, made in order that our forces might profit by their experiences, emphasized the great importance of such work in modern warfare and showed that a special service was needed to take care of it in the A. E. F.

The E-M Section then engaged in the establishment of an E-M Service for the A. E. F. and developed an organization therefor. This organization divided the A.E.F. into districts with an officer placed in resonsible charge of all electrical and mechanical matters within each district, these districts being coordinated from a central headquarters, namely the E-M Section, O. C. E., A. E. F.

In General, the zone corresponding to the Line of Communications (SOS) and the zone of each army comprised the respective districts. These were further divided into sub-districts as developments required. They were determined by territorial rather than military jurisdictional boundaries, (although the two were usually conterminous), in order to avoid shifting control of plant or overlapping of effort.

The functions of the service comprised the installation, operation, maintenance, inspection, transfer and salvage of all stationary electrical and mechanical plant, other than that controlled by staff departments and other services not included within the Engineer Department. All plants of an unusual nature, which would not have otherwise been specifically cared for, was thus definitely placed, as well as the usual plant for lighting, power, etc. The functions also included the performing of all service of an electrical-mechanical nature. They further included installation, operation, maintenance, etc., of pumping plant for the Water Supply Service in the advanced areas, the E-M and Water Supply Services operating in close touch with each other.

After the organization of the E-M Service had been effected, and at the proper time to correspond with the growth of the A. E. F., the E-M Section, O. C. E., made the necessary extensions in it. An Electrical-Mechanical Regiment, organized as Army Troops, with personnel of specialized training and furnished with the necessary special tools and equipment, was requested. The 37th Engineers were, therefore, authorized in December 1917, and were organized and sent to France May-June, 1918. This regiment was divided, part being in the S. O. S. and part in the advanced areas until the First Army was formed, when it was entirely utilized in the First Army Area. Later on when the Second Army was formed the 24th Engineers, which was originally a shop Regiment, was placed as the R-M Regiment of the Second Army. When the Thurd Army was formed the 37th Engineers were divided again, part going to the Third Army. Additional E-M troops totalling approximately two regiments, were later included in the troop program from the U. S. to take care of rapidly increasing work in the S. O. S. and in the Advanced areas. When the Armistice was effected, greatly curtailing E-M activities, it became unnecessary to send these additional troops to France.

The E-M organization was ectended to the district comprising the L. of C. (SOS) in January 1918, when arrangements were made with the C. E. thereof to establish an E-M Section in his office. An officer of suitable professional and military attainments with several officers as assistants was assigned in charge. (This section was afterwards changed under the D. of C. and F., and included within the Plant Construction Section, but its duties and personnel remained practically the same.) This was similarly done for the sub-district comprising the Advance Section, L. of C. in February 1918. As these extensions were made, the E-M Section, O. C. E. imparted all necessary information and assistance and certain work in these fields which had previously been done by it was turned over to the corresponding organization. In the latter extension, the personnel which had actually been doing the work, including the supervising officer, was absorbed.

The numerous changes in military organization and jurisdiction which were made from time to time did not permit the coordination of the E-M Service as a whole being accomplished otherwise than through personal contact. However, the E-M organization was such that, regardless of these changes it was able to carry on its work. Each district

had its E-M head with whom the Electrical-Mechanical Section, Office of the Chief Engr., A. E. F., maintained close relations through frequent conferences, thus enabling satisfactory cooperation.

While the organization was being worked out and before it was sufficiently extended to be capable of functioning, and before any special E-M troops were available, the A. E. F. needed certain electrical and mechanical work to be immediately done in the advanced areas. Headquarters and schools were being established, camps and hospitals were being constructed, and all had to be provided with light, power, etc., without delay. This early field work was all done by the E-M Section, O. C. E., with only its very limited office personnel, until March, 1918, when the organization was sufficiently in action and capabke of taking care of it. It was done under the most adverse circumstances, operating personnel being borrowed from the shifting units, and supplies obtained wherever procurable. This early work consisted of some 30 separate plants ranging in size from 1 to 200 kw. with an approximate aggregate capacity of 600 kw. together with the necessary wiring of buildings.

The advantages were early seen of utilizing all available French sources of power for the needs of the A. E. F., and the E-M Section, O. C. E., A. E. F., therefore made a complete investigation of all French power plants and transmission lines within the French Zone of the Army, along thr front from Chateau-Thierry down to the Swiss Border. This information was later distributed in the form of complete maps and proved useful in subsequent dealing with this question.

A complete investigation was early made of European markets with a view to securing all possible electrical-mechanical supplies therefrom to relieve congestion in the tonnage situation, and also because of delays on supplies from the U. S. A great part of the early supplies were obtained in Europe. A thorough systematic record of E-M supplies was established, and maintained until the armistice. This proved invaluable and permitted a clear-cut perception of the supply problem at all time.

In February, 1918, when the technical staff services were placed under the C. G., S. O. S., and moved from G. H. Q. to Hqs. S. O. S., this reorganization brought about certain changes in the duties of the E-M Section, O. C. E., A. E. F. Its duties then developed more fully into the actual provision of electrical-mechanical materials, in addition to coordination of the service. Theretofore actual provisions for supply had not been a duty of the E-M Section, and its supply activities had been confined to cooperation with the Engineer Supply Department in an advisory capacity. By this time the organization of the E-M Service had been accomplished and was established as a functioning service throughout the A. E. F., hence subsequent activities in this direction were confined to minor details.

The question of supply was then given exhaustive study because of its great bearing on the success of the service. Specific standards of method and materials were developed through coordination of the needs and experiences of the respective districts. Former initial supplies were not renewed, but a standard stock list of electrical supplies was developed and placed on the U. S. for the automatic procurement of just the supplies needed to meet conditions existing throughout the A. E. F. In addition large exceptional requisitions were initiated for purchase both in the U. S. and in Europe.

Among its activities in the coordination of the E-M Service, this section prepared and issued to all concerned an Electrical-Mechanical manual, in which was included technical information needed in the field, and a complete catalogue of standardized supplies.

Standard lighting outfits, including generator set and all material necessary for lighting corps and division headquarters, and for dugouts and evacuation hospitals were developed and issued from the depots as complete units.

Under the reorganization of the Engineer Department in July 1918, when the Division of Military Engineering and Engineer Supplies was created as a subdivision of the Office of the Chief Engineer, the E-M Section was attached thereto. It retained its

former duties and its relations with the C. E., A. E. F., as well as the D. M. E. and E. S., and kept in intimate touch with all E-M activities in the field, although under more difficult circumstances.

In addition to these relations it also maintained close liaison and cooperation with the French, British and Belgian electrical-mechanical services through frequent conferences. Very close liaison was also maintained with the Technical Board, thus effectively enabling thorough cooperation on the question of power in the S. O. S. Many requesitions to cover power plants were initiated, always, however, in concurrence with the Technical Board and the D. of C. and F., who were principally concerned. Numerous complete power plants were requisitioned from Europe, this being done whenever possible to save tonnage. However, in order to meet the rapidly increasing demand for power which the markets of Europe could not supply, designs and specifications of certain suitable standard steam electric power plants complete were made, and requisitions placed on the U. S. for a total of 56 of them in sizes 125, 250 and 500 K.V.A.

The signing of the Armistice brought to a close the majority of E-M activities, and shortly after, provisions for practically all E-M supplies were cancelled. Only a small quantity of supplies from European requisitions were excepted.

At the time of the Armistice the E-M activities of the A. E. F. were covered as follows:

Office C. E., A. E. F., Division of M. E. and E. S., E-M Section as central headquarters office with 4 officers, engaged in supply of E-M Service throughout A. E. F., coordinating, etc. as outlined above.

Office D. of C. and F., E-M Section (under Plant Construction Section) as central office for E-M Service in S. O. S., with 8 officers, engaged in supervision of projects and design for power plants, substations, transmission lines, etc. Actual execution of work in Base, Intermediate and Advance Sections, S. O. S., performed under the various Section Engineers with detachments from engineer regiments. Officers attached as electrical assistants to respective Section Engineers.

Armies - E-M troops, with special equipment, shops etc. engaged in actual execution of pumping, lighting and power plants, etc., within the Army areas.

* * * * * *

Following the Armistice, when the D. M. E. and E. S. was dissolved, the E-M Section of the D. M. E. and E. S. was re-attached directly to the Office of the Chief Engineer, A. E. F. The principal duties of this section since hostilities ended have been intelligence work as to German electrical-mechanical activities, combined with the collection of samples of electrical-mechanical material and apparatus used in the war. This collection includes French and British, as well as German, material and is to be sent to the United States historical and research purposes.

SOUND AND FLASH RANGING SERVICE

This service came into being on a small scale in 1917 when experimental work was begun in the U. S. Later in the year, a number of engineer officers, headed by Lieut. Colonel Augustus Trowbridge, Corps of Engineers, arrived in France for the purpose of creating and supervising an adequate organization of these special troops for the A. E. F., and of training and equipping them.

The troops employed consisted of a detachment from the 116th Engineers and of parts of two battalions of the 29th Engineers, to whom were assigned numerous engineer officers of the requisite scientific and technical qualifications.

A school and depot for the service were established at Langres, and while the service as a whole was under the control of the Topographic Section (G-2-C) of the General Staff at G. H. Q., new personnel, replacements and supplies were furnished by the C. E., A. E. F., who at all times used his utmost resources in helping to place

this service upon an efficient operating basis. In so doing it was, of course, frequently necessary to foster the interests of this special service at the expense of other Engineer activities directly controllec by the Chief Engineer.

Reports show that the service was developed to a high degree of efficiency, due entirely to the high grade of personnel, officers and men, supplied by the Engineers. The operations involved in the work of this service are assimilated to those of the highest kind of precise surveying, a purely engineering operation, and while, as was the case with the A. E. F., the active field work should, for tactical use and employment, be under the control of the artillery, it is equally true that the personnel should be organized, trained and administered by the Engineers, from whom, as above stated, it is derived.

During the St-Mihiel operation three American Sound and two Flash Ranging Sections of from 55 to 90 men each were in the field, and at the close of the Argonne-Meuse operation five sections of each type, about 1,000 men, were in the field. In addition, a large number of men, over 600 in all, were at the same time undergoing training at the Langres School.

SURVEYING AND PRINTING

This service was also an engineer activity, organized, equipped and maintained by the Corps of Engineers and from engineer funds. It was manned by the 1st Battalion, 29th Engineers, and its main function was the operation of the excellent Base Printing plant at Langres. In addition, it equipped and operated a number of mobile printing plants designed for field use. The main function of these plants was the preparation and supply of the very great number of maps used all over the A. E. F. For the performance of this work, a modern and complete plant, probably by far the best in use by any army, was supplied by the Chief of Engineers, and installed, maintained and operated by the above troops of the 29th Engineers, who had been especially recruited in the U. S. from appropriate engineering organizations.

This service was controlled by the Topographic Section (G-2-C), of the General Staff at G. H. Q., and no detailed report of operations is, as yet, at hand. It is known however, to have functioned excellently.

In addition to the preparation of maps, this service did considerable field surveying to complete and supplement existing maps, and it also printed the confidential notices and bulletins issued by G-2, General Staff, G. H. Q.

BRIDGING

The ponton and other bridge work was carried our along the front by Engineer troops; while all matters relative to technical control of this work were regulated by the Communications Section, Office A. C. E., at G. H. Q.

The general duties of this Section covered the assigning, transfer, training, discipline and equipping of the Ponton Trains and Bridging Battalions; a knowledge of the requirements and troubles experienced by the division, corps and army engineers, and the special engineer services, and to take measures to remedy them; to furnish technical advice to such departments as would desire it; and the working out of final designs for such types of light and heavy timber and steel span bridges, with their attendant-equipage and reinforcing, as conditions and needs warranted.

With regard to bridging operations, it was necessary to experiment with tractors and trailers for hauling ponton equipage, due to the lack of animals. One hundred tractors were purchased in England and a portion of them were shipped to the Advanced Bridge Depot at Abainville, but none were received prior to the cessation of hostilities. Some tractors arrived in France from the United States and were used to excellent advantage during the short period of time they could be utilized. One hundred and

fifty Cleveland tractors were shipped from the United States in October 1918, and one hundred and fifty more were to be shipped in November. It was intended to utilize these tractors with the corps, armies, and army reserve. Numerous experiments were made with Troy trailer escort and British G. S. wagons, with a view of making such modifications as would better adapt them for hauling ponton equipage.

A canvas type, floating foot bridge was designed by Colonel Lampert and approved by the Board on Military Engineering, which filled the need for some form of portable, emergency unit. A unit of two hundred and eighty-five feet was constructed that could be loaded on one motor truck, having a weight of about 4,500 pounds. This bridge was used to great advantage on numerous occasions, and was furnished the Armies and various corps in limited numbers.

The 464th and 465th Ponton Trains were the only special ponton troops to get with the Armies.

ENGINEER SUPPLIES

Engineer supplies which had been procured for A. E. F. operations, form the beginning of work in France up to December 31, 1918, amounted to more than 3,000,000 tons; the total cost involved was more than $450,000,000. The procurement, storage and distribution of this material was the main function of the Division of Military Engineering and Engineer Supplies. Engineer Supply Section: As first organized in 1917, the supply section covered with a skeleton force, three main lines of activity, (1) Purchasing and Disbursing: (2) Requisitions and Requirements; (3) Engineer Depots. In the year and a half during which engineer supplies were purchased, stored and distributed for A. E. F. use, many changes and developments took place in methods of handling this business. The internal organization finally adopted for the Engineer Supplies Section subdivided the work as shown in the following schedule. This was the organization in force during the latter months of the war and until January 1919.

(A) Production and Procurement Section
1. Front Lines Supplies
2. Unit Equipment
3. Light Railways and Roads
4. Railways and General Construction
5. Electrical and Mechanical
6. Water Supply

(B) General Depot Section
1. Front Line Section
2. Electrical Section
3. Forestry Section
4. Structural Steel, etc.
5. Cement Section
6. Construction Plant
7. Motor and Other Vehicles
8. Standard Railways
9. Light Railways
10. Roads
11. Water Supply
12. Hardware and Tools
13. Retail Issue

(C) Section Engineer Depots
   1. Advance Section
   2. Intermediate Section East
   3. Intermediate Section West
   4. Base No. 1
   5. Base No. 2
   6. Base No. 4
   7. Base No. 5
   8. Base No. 6
   9. Base No. 7

(D) Shop and Repair Section

(E) Traffic Section

(F) Statistical Section

PRODUCTION AND PROCUREMENT

The Procurement Section of the Engineer Supplies Office assumed the routine of preparing requisitions for purchase. These were placed on the PARIS and LONDON Purchasing Offices, if the supplies were susceptible of purchase on the Continent or in England; otherwise, the requisitions were placed, through channels, with the Chief of Engineers in WASHINGTON. Naturally the great majority of our engineer supplies had to come from the United States. By December 31, 1917, Requisitions 1 to 12, covering the bulk of the initial and automatic supplies estimated to be needed in France, had been placed on order, and some shipments had already been made and received. * * *

Of the total supplies used by the Engineers of the A. E. F., a large proportion was shipped directly from the United States as shown by following tables:

TABLE I. STATEMENT OF TOTAL U. S. TONNAGE FLOATED TO DECEMBER 15, 1918.

	WEIGHT TONS	SHIP TONS
General Machinery	45,454	81,525
Iron and Steel Products	242,226	145,100
Railway and Hand Tools	26,780	44,850
Railway Rolling Stock	343,888	521,575
Railway Motive Power	144,066	284,450
Lumber	39,086	55,400
Track Matrls. and Fastenings	488,793	488,800
Automotive Transportation, etc.	22,127	37,650
Horse Drawn Transportation	7,967	20,850
Building Materials and Supplies	98,671	116,400
Liquids	7,067	5,425
Explosives and Accessories	952	975
Unit Accountability	7	25
Engineer Supplies	52,106	103,325
Misc. - Office Supplies	2,239	3,925
Floating Equipment and Accessories	10,093	11,625
Materials and Tools for Locomotives and Car Repair and Erection Shops	10,407	12,875
TOTALS	1,541,929	1,934,775

The remainder of the engineer supplies used by the A. E. F. were, as stated, secured by purchase in France, England, Switzerland, and Spain.

EUROPEAN PURCHASES

Supplies and materials bought in Europe were handled by the Engineer Purchasing Officer, at Paris, at first acting as the independent representative of the C. E., A. E. F., and at a later date, subject to the coordination of a General Purchasing Board.

On August 20, 1917, a General Purchasing Board was formed. The Engineer Purchasing Officer, and the purchasing officers of other branches of the service formed this board. From that date on all purchases in Europe required the approval of the General Purchasing Board before being consummated. The total purchases in Europe up to November 11, 1918, are shown on the following table:

TABLE 2: RECAPITULATION OF EUROPEAN PURCHASES

France - Commercial Sources	1,040,990	Tons	Francs	621,622,566
France - French Government	248,125	"		149,910,097
England - Commercial Sources	66,000	"		55,354,000
England - British Government	350,000	"		269,048,000
Spain - Commercial Sources	11,181	"		4,605,000
Switzerland - Commercial Sources	101,867	"		84,696,250
TOTALS	1,818,172	Tons	Francs	1,185,275,913

Summing up the figures relative to purchases in America and Europe, the totals in Table 3, are determined.

TABLE 3 - ESTIMATE OF TOTAL TONNAGE AND COST OF ENGINEER SUPPLIES RECEIVED TO DECEMBER 31, 1918.

	TONS	COST
From the United States	1,496,489	$ 248,993,322
From England	396,000	56,145,818
From France	1,234,968	134,393,870
From Switzerland	96,867	14,643,410
From Spain	797	59,630
TOTALS	3,225,121	$ 454,236,050

About August 1, 1918, the purchasing offices in England, Switzerland and Spain, which had up to that time been handled directly by the Engineer Purchasing Officer at Paris, under assistants in the three countries, were taken over by the General Purchasing Agent. These changes in control have made it difficult to check the data as to tonnage purchasec in the different European countries.

The estimate of Table 3, does not include 89,540 tons of supplies cancelled in Europe and 45,440 tons of U. S. supplies returned as ballast.

The estimated cost shown in Table 3, is based upon the average purchase prices and does not include ocean freight charges. The U. S. Shipping Board has stated that the cost of Atlantic ocean transportation was $60 per gross ton from American Atlantic ports to French Atlantic ports, and $65 per gross ton from American Atlantic ports to Mediterranean ports. In addition, the Quartermaster Department estimated that the average cost per short ton of rail transportation in the U. S. from the center of supply to the seaboard was about $10 per ton. In estimating the actual cost to the Government of the supplies, f.o.b., France, the above tonnage should be multiplied by $63 per short ton, and the product added to the total cost shown in the corresponding table.

No figures or records are available in respect to what should be added, if anything, to obtain the f. o. b. prices on Continental purchases. In respect to purchases in England, some were contracted for f. o. b. France, other tonnage was handled on American transports, and it is estimated that 20,000 tons were handled on English transports. It is probable that the average cross-channel transportation cost was about $12.50 per ton.

If the ocean and channel freight costs, as far as they can be approximated, be added to the above, we have a total cost for engineer supplies, as delivered in France, of about $550,000,000. As finally delivered at their point of use that total cost, in all probability exceeded $600,000,000.

STORAGE SPACE OCCUPIED

The Engineer open and covered storage actually occupied at the various depots in France on November 11, 1918, amounted to more than 15,000,000 sq. ft., divided among the depots as shown in Table 4.

TABLE 4 - ENGINEER STORAGE SPACE OCCUPIED NOVEMBER 11, 1918.

	Square Feet Covered Storage	Square Feet Open Storage
Gievres	350,375	6,000,000
Is-sur-Tille	169,000	2,600,000
Montierchaume	15,000	1,500,000
St-Sulpice	96,970	1,274,560
Montoir	86,800	2,215,000
La Pallice	40,000	270,000
Marseilles	6,000	492,500
TOTALS	764,145	14,352,060

An item of technical value can be deduced from the figures given, taken in relation to the tonnage actually stored at each depot. The data and the results are given in Table 5.

TABLE 5 - SQUARE FEET OF STORAGE PER TON

Depot	Storage Occupied Square Feet	Amount Stored Tons	Area Divided By Tonnage Sq. ft. per T.
Gievres	6,350,375	123,200	52
Is-sur-Tille	2,769,000	58,990	47
Montierchaume	1,515,000	42,911	35
St-Sulpice	1,371,530	65,560	21
Montoir	2,301,800	119,300	19
La Pallice	310,000	20,000	16
Marseilles	498,500	16,750	30
Total and Average	15,116,205	446,711	34

CEMENT SUPPLY

From the outset, the question of cement supply for the American Expeditionary Forces showed several points of distinctive interest. The material to be supplies was of great importance, both in front line operations and in the various services of the rear. It had, furthermore, to be supplied in tonnages greater than that of any other single engineering material except lumber and forest products, and these tonnages involved a large amount of bulk, requiring great space in both shipment and storage. Finally, there was an additional difficulty in the supply of this commodity, due to the large consumption of coal necessary for its manufacture. In making a ton of Portland cement there is consumed, between the power plant and the kilns, at least half a ton of coal. For a cement supply of say 20,000 tons per month to the A. E. F., there would be used up 10,000 tons per month of coal: and in view of the enemy occupation of the most important French coal fields, and of the heavy strain on the English and Welsh fields, this was a very serious problem. It was of course entirely out of the question to ship cement in any quantity from the United States.

Despite these difficulties, the necessary cement supply was secured and delivered successfully, so that at no time was any A. E. F. operation held up because of lack of cement. The supply was furnished from three different sources. At first direct purchases were made, for specific jobs, from French and Swiss cement mills. Later, a group of large orders were placed on English makers. Finally, seven cement mills in France were taken over for A. E. F. use and operated, either partly or entirely, by engineer troops under engineer officers. This last method was strikingly successful technically, the product under military management being of higher grade than that made previously by the civilian owners. The three mills entirely operated by A. E. F. troops were located at Mortagne-sur-Gironde (Charente Inferieure): Le Teil (Ardeche) and Cruas (Ardeche). In addition four mills, partly operated by Americans were located at Bordeaux, Guerville, (Seine-et-Oise), Beaumont (Seine-et-Oise), and Couvrot, (Marne). Some 55,000 tons in all were made before the Armistice ended this work.

The total cement acquired for A. E. F. use, by purchase and manufacture, amounted to about 215,000 tons. This was used for many different types of construction, from dock work at the base ports to shelters and gun emplacements at the front. A portion of the total was made up by engineer troops into various molded concrete products including pipe, beams, shell-bursters, etc. This latter type of work was inaugurated by Cement Mill Companies 2 and 8, at Le Teil (Ardeche). A little later the First Army concrete factory was put into operation at Liverdun (Meurthe-et-Moselle).

The success of cement manufacture in France is made more notable by the fact that it was undertaken and carried out by general engineer troops, without any previous training in that line of work, operating at detached posts, ordinarily far from other American forces, and consequently under great difficulties as to supply.

CONSTRUCTION AND FORESTRY

The functions of general construction and the supply of forest products were executed, in the zone of the Services of Supply, by the Chief Engineer, A. E. F., through the Division of Construction and Forestry. Despite difficulties incident to the increased program of troop arrivals established during the summer of 1918, submarine warfare, and the constant shortage of ocean tonnage, cars, man-power, and material, this organization fulfilled all its essential responsibilities.

Included within the scope of the duties of the Division of Construction and Forestry, were construction of ports, storage depots, hospitals, railroads, and shelter for troops, with all the necessary auxiliaries, and procurement or production in French forests of a large part of the lumber, ties, piling, poles, and fuel wood used by the A. E. F. At the time of the signing of the Armistice, operations were in progress at

approximately 400 projects in England and in every section of France with a force of 145,000 men, composed of 77,500 American troops on construction and 18,500 on forestry operations, 15,000 German prisoners, and 34,000 civilians of a dozen different nationalities. Engineer technical troops were used largely for the purpose of supervision.

Through decentralization and the use of type plans, as far as practicable, was obtained the elastic and adaptable organization, demanded by the changing and rapidly increasing, although always insufficient, force and the variety and wide distribution of projects. The work was controlled by the Director of Construction and Forestry from the central office at Headquarters, S. O. S., through a Section Engineer Officer in each of the sections, each acting in accordance with general instructions conforming to the policy of higher authority. The central office, functioning under the immediate charge of the Deputy Director, was divided into four sections; General Construction; Railroads and Docks; Forestry; and Administration. The Director was thereby enabled to devote much of his time to inspections, consultations, and the consideration of special problems. The results confirm this as a satisfactory type of organization for handling so large a construction force under such varying and trying conditions.

TYPE OF CONSTRUCTION

PORTS - At the time the Armistice was signed there had been acquired from the French or constructed a total of 89 berths of lengths averaging 410 ft. The projects then constructed were the 10-berth dock at Bassens and 2 berths at Brest. Many French ports were improved by the installation of additional tracks and of large cargo handling devices. Three berths of the projected 8-berth dock at Montoir were completed and ready to receive ships by January 1, 1919.

Lighterage wharves were constructed at St-Loubes and St-Pardon, accomodating 8 and 2 lighters respectively. Eighty-four lighters of from 300 to 500 tons capacity and 7 derrick barges were built.

Had the war continued, the total number of berths for American Army use would have been increased to 160 by July 1, 1919. Twenty-six new berths had been authorized for construction. On all authorized projects, except one, preliminary construction had begun, and, on the projected 10-berth dock and storage depot at Talmont, work was well advanced.

STORAGE DEPOTS - Storage requirements necessitated the construction of large supply depots at the ports and in the Intermediate and Advance Sections. In addition covered storage had to be provided at numerous projects such as hospitals, bakeries, salvage plants and aviation centers. For these diverse facilities, there had been provided on November 1, 1918, 23,296,885 square feet of covered storage space, distributed as follows:

(a)	Covered storage constructed by D. C. and F.	19,538,763	sq. ft.
(b)	Steel warehouses purchased and erected	1,665,216	sq. ft.
(c)	Storage space secured from the French	2,092,906	sq. ft.

Largely in the great supply depots at Gievres, St-Sulpice, Montoir, Montierchaume, Is-sur-Tille, and Liffol-le-Grand, covered space sufficient to store supplies, including ammunition, for 3,000,000 men for 45 days was provided. Originally covered storage requirements were based on an allotment of 21 sq. ft. per man for a 90-day reserve. Experience proved 10 sq. ft. per man to be sufficient, and this allowance was further reduced to approximately 4 1/2 sq. ft. when a 45-day reserve was determined upon. Had hostilities continued, depot covered storage space, authorized for construction under the existing plans, would have provided for supplies for 5,000,000 men.

REMOUNT DEPOTS - The program for remount stations and veterinary hospitals was based on the assumption that approximately 165 animals would be received for every 1,000 men in combatant troops and accommodations would have to be provided for 10% of the total. Stables were constructed in remount depots for 19,900 animals and in veterinary

hospitals for 11,150 animals. Remount space for 9,100 animals and hospital space for 6,100 animals were obtained from the French. On November 1, 1918, there were accommodation in remount depots for four times the number of horses stabled.
GASOLINE STORAGE - For the storage of gasoline and oil, authorization was given for the installation of about 40 tank stations, with a total capacity of 2,805,000 gallons. When hostilities ended, practically all work was completed on the large storage areas at sea coast points and in the Intermediate Section, notably at La Pallice, St-Loubes, Blaye, and Gievres, and many of the smaller filling stations were installed.
REFRIGERATORS - From plans prepared by the Quartermaster Corps, the D. C. and F. constructed in all France refrigeration storage space for 10,350 tons of meat. In the vast plant at Gievres refrigeration space for the storage of 5,200 tons of meat and facilities for making 375 tons of ice daily were provided. At Bassens a plant capable of storing 4,000 tons of meat was built.
BAKERIES - At Is-sur-Tille, a mechanical bakery with an ultimate capacity of 700,000 pounds of bread daily and which actually produced 500,000 pounds daily was constructed from the plans of the Quartermaster Corps. Mechanical bakeries, each with a capacity of 80,000 lbs. daily, were being constructed at three base ports.
HOSPITAL CONSTRUCTION - When the Armistice was signed, space had been provided in hospitals for 280,000 beds, or for 14.2% of the A. E. F. Of this hospital space, 139,000 beds were in French buildings, 25,000 beds were in additions to these buildings, while 116,000 beds represented new construction. Thus, slightly more than one-half of the total hospitalization was provided by new construction, equivalent to 7,700 hospital barracks, 20 x 100 ft., which, if placed end to end would have extended 147 miles. Many of the French structures taken over were remodeled and improved.

In May 1918, the troop program was doubled and on June 1, 1918, the Commander-in-Chief directed that bed space be maintained in hospitals for 15% of the A. E. F., instead of 10% as theretofore. Despite the fact that the rate of hospital construction was trebled thereby, and that labor and materials were never available in adequate volume, from the first week in July space for 50,000 beds in excess of those occupied was at all times provided. Construction ranged from single buikdings serving as camp infirmaries to great barrack cities with accommodations for 20,000 patients exemplified by the centers of Mars, Mesves, Savenay, and Beau Desert.
RAILROADS - Taking over standard gauge railroad construction from the Transportation Department on March 12, 1918, after 62 miles of track had been built, the D. C. and F. constructed, by January 1, 1919, 885 miles of track with all the necessary adjuncts - engine terminals, machine shops, car repzir facilities, coal storage. More than 800 miles of yard and storage tracks were constructed, principally at the supply depots. Engine terminals with a total tracksge of 100 miles, were constructed at 12 points. All construction was on or adjacent to the regular lines of communications assigned for U. S. Army use by the French, except a small mileage at forestry projects and approximately 90 miles at hospital projects, ordnance depots, aviation centers, and similar places.

The outstanding feature of the railroad program was the construction of the Nevers cut-off, which, by providing a means of by-passing the congested yards at Nevers, shortened by hours the transport of men and materials from the ports to the front. This double track cut-off, 5-3/4 miles in length, involving a large volume of cut and fill and a half mile bridge spanning the River Loire, was completed in October 1918, four months after construction started. This was the only main line double track construction undertaken by the American Army in France. A third track, 6-3/4 miles in length paralleling the tracks of the Paris-Orleans Railway, was built from the dock at Bassens to the Depot at St-Sulpice.
TROOP SHELTER - In the provision of shelter for troops, 11,862 barracks were erected, equalling a solid string of buildings 225 miles long, capable of housing 742,000 men. Since the original aim was to erect barracks for one-third of the troops in France, the

requirements were more than met. Approximately 23,000 demountable barracks were contracted for in England, France and Switzerland, of which number 5,700 were received. Because of slow deliveries, it was necessary to construct in place, with lumber furnished by forestry troops, over one-half of the total number of barracks erected. In a single camp, approximately 500 barracks were constructed with accommodations for 55,000 men.

WATER SUPPLY - In many French municipalities and at hundreds of other places throughout the S. O. S. which served as sites for hospitals, camps, depot, shops - in fact wherever there was a concentration of American troops - it was the duty of the D. C. and F. to provide an adequate supply of pure water. Installations were made ranging from simple wells to big city projects, including dams, pumping plants, pipe lines, reservoirs, filtration plants, and all other accessories demanded by the best engineering practice. At St-Nazaire two rapid sand filters were built, one of 3,000,000 gal. and the other of 1,000,000 gal. daily capacity. Other filters were installed at Mesves, Mars, Savenay; Romorantin; Langes, and Chateauroux. At Brest waterworks providing a daily supply of 3,000,000 gal. were installed. A curved concrete dam was constructed to form a reservoir at Savenay, and earth dams were built elsewhere. Arrangements were made with the cities of Tours, Vierzone, St-Nazaire, and Dijon for the chlorination of their entire supplies. A system of water analysis laboratories was established and the water supply of the S. O. S. placed under the same care from a sanitary and bacteriological standpoint as is customary in the cities and states of the United States.

POWER - The D. C. and F., had charge of the preparation of plans and supervision of construction of power plants and electrical transmission lines for projects in the S. O. S. whose requirements were estimated at 31,000 kilowatts. Because of the fuel economy of central plants, the policy was adopted of utilizing French systems as far as practicable, augmenting them by transmission lines and additional machinery if necessary. For the ordnance repair shops at Mehun, the largest single electrical installation was made, involving placing, in an existing plant, a 5,000-kilowatt turbine and the construction of nine miles of 33,000 volt transmission line. Much construction, involving a number of large plants, was cancelled by the Armistice.

ROADS - All road work in the S. O. S., except that in the Advance Section, was executed by the D. C. and F. Previous to the Armistice, maintenance and repair work was done on over 300 miles of roads and 90 miles of new roads were constructed. In January 1919, the repair of all roads used by the A. E. F. in France and in Luxembourg, was assigned to the D. C. & F. In Germany, the division exercised coordinating supervision. Plant, material, and a force which numbered over 100,000 men were assembled from all sections for this work.

FORESTRY - Lumber production was commenced in October 1917, and increased steadily, despite difficulties that at times seemed almost insurmountable, until, in October 1918, 107 mills of varying capacity were in operation. The wide distribution of the work led to the designation of district commanders in the 14 districts which embraced most of the operations and to the placing of section forestry officers in Base Section 2, and the Advance Section, who controlled work in their sections and who were, in turn, responsible to the central office at Headquarters.

The production to February 1, 1919, which exceeds slightly that at the time of the Armistice, was as follows:

Lumber	204,900,000	ft., B.M.
Standard Gauge Ties	2,998,515	
Narrow Gauge Ties	941,469	
Misc. Round Products	1,746,378	
Fagots and Fascines	4,669	
Piling	35,595	Pieces
Fuelwood	319,057	Cords

This output was largely utilized in the execution of the construction program in the S. O. S. Piling for the Bassens docks was at first brought from the United States, but, through the efforts of the Forestry Section, piling up to a maximum length of 100 ft. was produced in France for the construction of the docks at Montoir, Brest, and Talmont. The lumber supply was augmented by purchases in France, Switzerland, and Norway.

In the foregoing recital of Construction and Forestry work the figures, unless otherwise noted, give the status at the time of the Armistice, following which, except in the provision of embarkation facilities, no further extensive construction was done. On November 14, 1918, G. O. No. 54, Headquarters, S. O. S. was issued, cancelled many projects and largely reducing others. At that time a total of 738 projects had been authorized. Of these, 166 had been completed, 162 were cancelled by G. O. No. 54, 154 were reduced, and 256 were not affected.

EFFECT OF ARMISTICE OF ENGINEER WORK

Early in November the Chief Engineer, A. E. F., following the receipt of confidential communications from G. H. Q. and Headquarters, S. O. S., took steps to prepare for radical changes in the policy of the Engineer Department in the event of the cessation of hostilities which then seemed probable. On November 5 he sent to the Directors of his Divisions of Construction and Forestry, Light Railways and Roads, and Military Engineering and Engineer Supplies instructions to take under consideration the status of our projects and be prepared to submit prompt recommendations as to what changes should be made in our orders both in Europe and the U. S. These data were supplied and later supplemented and consolidated to form the basis of a large portion of General Orders No. 54, Hqs., S. O. S., issued November 14, 1918. This document was one of far-reaching importance for the Engineer Department, for it called for a drastic cancellation or reduction of the vast construction program which was being prosecuted by the Engineer Department in the Services of Supply.

The effect of General Orders No. 54 and supplementary cancellations on the work of the Engineer Department - principally that of the Division of Construction and Forestry - is indicated by the fact that an estimated saving of $93,000,000 was made by prompt cancellation or reduction of construction projects. After the General Order was put into effect, a canvas of the situation showed that of the 738 completed and uncompleted engineer projects in the S. O. S., 162 projects had been cancelled while 154 others, uncompleted, were affected in varying degrees. Under the new policy the status of 256 uncompleted, and 166 previously completed projects remained unchanged.

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In Charge.

W. C. LANGFITT,
Major General, U. S. A.

SERVICES OF SUPPLY. A. E. F.,
Tours.

DEVELOPMENT AND MAIN ACCOMPLISHMENTS
OF THE ORDNANCE DEPARTMENT, A. E. F.

[Extract]

The establishment of the Ordnance Department, A. E. F., dates from May 26, 1917, when its headquarters were established in WASHINGTON, D. C., by General Order No. 1. Two days later, Lt. Col. C. C. Williams (later Major General, Chief of Ordnance), then Chief Ordnance Officer, A. E. F., left for France with General Pershing on the *Baltic.* He landed in France about two weeks later and entered immediately into active work at the first ordnance headquarters, 149, Blvd. Hausmann, and later, 10 Rue St-Anne, PARIS.

The overwhelming problem which the first chief ordnance officer faced, and which he and his successors completely solved, was that of securing, storing, distributing and maintaining ordnance material in France on a scale immensely greater than anything in American experience. There were no precedents. The base of supplies was 3,000 submarine-infested miles distant, and conference was limited to cable courier. The United States, in spite of magnificent preparations under way, was wholly unready for the industry of war, and its manufacturing facilities must be reconstructed or constructed entirely anew before the flood of munitions from that source could begin to pour in. Meanwhile material must be procured in enormous quantities to arm our troops until American plants got into action.

The essence of the achievement of the Ordnance Department, A. E. F., is that it has met the demands thus made upon it, though they were thrice multiplied: First, by hugely increased schedules of troop sailings to France; second, by greatly accelerated programs of military offensives; third, by expenditures of ammunition by the American forces enormously exceeding the French and British experience which had been assumed as a standard.

To effect the distribution of the material along, a score of great ammunition and general storage depots and many smaller army depots were stretched in multiple chains across France from the base ports to the front, together with an effective storage and supply system. To repair the guns, vehicles, and other equipment, more than twenty-five important shops were erected, equipped and operated, the chief of them being designed on a scale sufficient of itself to repair the artillery for an army of two million men. To train the personnel six large ordnance schools and a dozen smaller centers of instruction were established, and at these nearly 5,000 officers and men were educated in the highly specialized work of the department. All these things had to be planned and built from the ground up. And concurrently, to supply the material of war for the offensives up to the time of the armistice, sources of procurement were found and purchases made of artillery, ammunition, trench mortars and shells, machine guns, tanks, and equipment, aggregating a half million tons and more than a half billion of dollars.

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The board appointed by General Pershing, of which Lt. Col. C. C. Williams was the senior member, met on board the Baltic en route to France, and recommended that the American army should in the beginning use French artillery, this policy being eventually extended to include additional French and British artillery, artillery ammunition, machine guns and trench warfare material. There were several important considerations

that led to these recommendations, among which were the long period that must elapse before this particular material could be produced in quantity in the United States, and the willingness and ability of the French and British to furnish the material from the surplus capacity of the plants they had created for their initial supplies, which were now more than adequate to meet their drmands for replacement. To carry out the policy established by the adoption of the above recommendations, all purchasing by the United States in Europe was concentrated in a General Purchasing Board established in Paris, August 30, 1917. Col. E. D. Bricker was designated as the ordnance representative on that board on his arrival in France late in October 1917, and in that capacity established the Ordnance Purchasing Office in Paris, of which he was placed in charge. This position he still held at the signing of the Armistice.

While general plans for procurement, storage, issue and maintenance of ordnance material were being worked out at Paris headquarters, the field work of the department was being inaugurated by the arrival of Capt. (now Lt. Col.) Harmon with a depot company at St-Nazaire, the last of June. It became apparent immediately that storage facilities at ports would be insufficient, and the first depot was located by Capt. Harmon at Nevers about the middle of July. When the 1st Division moved forward to its training area at Gondrecourt late in July, the necessity for still further advance storage became apparent, also the necessity for a line of communications extending from base ports to the advanced area. A level tract of ground on the railroad at Demange-aux-Eaux was located and Advance Ordnance Depot No. 1, later known as A. O. D. No. 5, was located there in a barn. It grew rapidly to occupy five barns, two Adrian barracks and five acres of open field by the end of August, and supplied the division with sufficient France equipment for the training of troops.

DEVELOPMENT UNDER SUCCESSIVE CHIEF ORDNANCE OFFICERS

On these elements of base, intermediate, and advance storage, and the line of communications, the first establishment was built up about the first of September 1917, at which time the office of the chief ordnance officer was moved from Paris to Chaumont. On October 26, 1917, the headquarters line of communications were established in Paris under Col. H. B. Jordan. By early March 1918, a consolidation was effected, the office of the Chief Ordnance Officer, A. E. F., and the headquarters of line of communication being merged and becoming part of the consolidated headquarters, S. O. S., under Major General F. J. Kernan, at Tours. He was succeeded by Major General Harbord who assumed command July 29, 1918, and has been in command of the S. O. S. from that date until present writing. The office of the ordnance purchasing officer, however, remained continuously in Paris.

The first organization of the O. C. O. O., Headquarters, S. O. S., was made April 10, 1918. On May 9, a further development of the work of the O. C. O. O, along generally sumilar lines was effected by Colonel Jordan. General Williams had returned to America in April to become chief of ordnance being succeeded as chief ordnance office by Brig. Gen. C. B. Wheeler, who arrived early in May, spent some weeks inspecting activities in France, and shortly thereafter grouped the department into the form under which it has operated up to the present date. This organization which is along lines of activities, first created the following divisions: Administration, Requirements, Supply, Construction and Maintenance, and Engineering.

On October 9, 1918, Brig. Gen. J. H. Rice became Chief Ordnance Officer, succeeding General Wheeler who went to London as ordnance officer of Base Section No. 3, relieving Brig. Gen. Geo. W. Burr who had been in charge of that section since April 8, 1918. General Rice is still in command as Chief Ordnance Officer; he has bound the divisions more closely together and added a Personnel Division as the work connected with personnel handling has become too heavy to be longer carried as a section of the Administration Division.

The Chief Ordnance Officers, A. E. F., have therefore been:

Lt. Col. (later Brig. Gen.) C. C. Williams, May 26, 1917 to April 9, 1918.

Col. H. B. Jordan (acting), April 9. 1918 to May 3, 1918.

Brig. Gen. C. B. Wheeler, May 3, 1918 to Oct. 9, 1918.

Brig. Gen. J. H. Rice, Oct. 9, 1918 (still in command of the Ordnance Department, A. E. F.).

The duties of the several divisions of the office of the Chief Ordnance Officer may be briefly outlined as follows:

The Administration Division is charged with recording and filing correspondence, auditing of all ordnance accounts, maintenance of the ordnance library, publication and distribution of bulletins of ordnance information and ordnance orders, translation and interpreting work of the Ordnance Department, A. E. F., and execution of the general administration of the office of the Chief Ordnance Officer.

The Requirements Division is charged with preparation of all schedules for requirements of ordnance material in accordance with troop movements and military programs, and the placing of requisitions with the ordnance purchasing officer or of procurement requisition with the chief of ordnance for the various classes and amounts of ordnance material needed. Also with the compilation of the various monthly reports required, and the complete record and follow-up of requisitions placed and the ordnance tonnage. The Requirements Division having finished its work, has now been merged into the Supply Division.

The Supply Division is charged with supervision of all depots for the receipt, storage and issue of ordnance material, and for its efficient and safe operation; with the maintenance of stocks and the preservation of material in the depots, with the maintenance of relations with forces in the field necessary for the satisfactory supply of their needs; with the inspection of requirements for initial equipment of organization and the issuance of orders covering the shipment of the same to the training areas. The supervision of the work of port ordnance officers in the matter of handling material has also been one of the duties of this division.

The Construction and Maintenance Division is charged with the provision and maintenance of buildings and their equipment, including preliminary field work in connection with the selection of sites and the preparation of plans; also with the supervision of construction, and the actual work of maintenance and repair. Construction, itself, however, is performed by the engineer corps. The Construction and Maintenance Division is further charged with the determination, installation, inspection and maintenance of machinery for the shops and the mobile and semi-permanent ordnance repair shops attached to line organizations, with the operation of general ordnance repair shops, the supervision of these shops and the mobile and semi-permanent shops; with cooperation with the salvage corps in the repair and salvage of ordnance material; and with cooperation in preparing courses of instruction for personnel.

The Engineering Division is charged with the work of advising and instructing other divisions in all technical matters relating to procurement, handling, storage and transportation of ordnance stores and supplies; with investigation of causes of defects in ordnance material and determination of the necessary remedy; with the conduct of research work and tests at proving grounds, and the operation of proving grounds and laboratories maintained by the Chief Ordnance Officer of the A. E. F.; with the handling of matters of design, determination of types, developing of new material, or modification of old material; with the preparation of technical pamphlets, drawings, charts, etc.; with preparation of tables of ordnance to be included in units of issue, tables of spare parts, etc.; with cooperation in the work of instructing personnel, and generally in the collection of technical data and the rendering of such technical service as may be required.

The Personnel Division, later established (Nov. 11, 1918), took over the work formerly handled by a section of the Administration Division, which includes the work

of procuring personnel from the United States, receiving them at classification depots, and assigning them; with the handling of all military records and general files, maintaining records of arrivals and transfers of personnel; and generally, the handling of all matters pertaining to personnel in the S. O. S. and army areas other than those attached to line organizations.

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For carrying on the general work of the Ordnance Department, A. E. F., especially those activities relating to supply and maintenance of material, the general division of ordnance activities into base, intermediate and advance sections was worked out. The base section, which includes the ports, is the great reservoir of ordnance materials and facilities into which the initial supplies are poured. The intermediate section is the regulating mechanism taking up fluctuations of supply and demand. The advance section is the sensitive system in direct touch with the army and responsive to its need from day to day.

REQUIREMENTS, PROCUREMENT, AND SUPPLY

For the purpose of maintenance and reserves, it was planned to keep 45 days' supply in the base section, 30 days' in the intermediate section and 15 days' in the advance section. Owing to the activity of operations and the enormous demands for material at the front, this ideal was not realized, but approach to it was being made by the summer of 1918.

In conjunction with this established proportion and distribution of reserves the Automatic Supply Tables were worked out to keep our troops supplied, with as little bookkeeping as possible and with small possibility of error. This table was computed for each article, in the number of units necessary to supply 25,000 men for one month, allowing a liberal percentage for losses in transit or in storage. The base figure thus determined gave the number of each article which the ordnance department would require each month for each 25,000 men in the A. E. F. As the army grew in size, the quantities of eavry article needed for its equipment were thus automatically listed for shipment from the United States or from European sources, and came forward, without further notification, in an ever-increasing flow. In other words, normal requirements were filled automatically, and special action was needed only in case of changes, additions, demand for unusual articles, or other extraordinary developments.

Procurement, as just indicated, was from two great sources - the United States, through the office of the chief of ordnance; and European governments and manufacturers through the ordnance purchasing officer in Paris. Tables appended to the history of the Requirements Division show the larger items of ordnance material obtained from America, Great Britain, and France respectively. The Ordnance Purchasing Office, on account of the policy of using Allied artillery ammunition already referred to, and the temporary shortage in the United States of some other items, procurable and therefore purchased in France, was a very important activity up to the time of the Armistice, and requires special mention.

Purchase was made by this office on the authority of requisitions received from the Office of the Chief Ordnance Officer, A. E. F., and were placed direct, or referred to the ordnance officer of Base Section No. 3 (London), in case the purchase was to be made in Great Britain. Materials were obtained in France, England, Spain, Italy and Switzerland, partly (Especially in France and England), through the governments, and partly through merchants and manufacturers, and generally on the understanding that the United States would replace material received with a like amount of raw material. 440,000 tons of raw material was shipped to France under this agreement between April 1 and November 11, 1918. Some of the more important items bought in France were 514

tanks, 3,035 75-mm. guns, 1,190 155-mm. howitzers, 5,011,000 rounds 75-mm. ammunition, 2,909,200 rounds trench-mortar ammunition, 30,000,000 fuses, 3,000,000 bombs, 9,592 Hotchkiss machine guns and 40,000 Chauchat automatic rifles; from France also were procured pyrotechnics and some hand grenades. Among the interesting purchases from British sources might be mentioned 122 9.2-in. howitzers, 212 8-in. howitzers, 2,550 3-in. Stokes mortars and 865 6-in. Newton mortars. Not all of these purchases had been delivered before the signing of the Armistice, but the schedule of delivery had been lived up to, and the department bears cordial tribute to the generous and whole-souled cooperation of the Allied governments in furnishing munitions for the armies we were hurrying into the field.

A great gain in efficiency of storehouse operation resulted from the introduction of the British system in place of the earlier used American system of depot handling. Under the latter, one set of men and records attempted to cover the entire list of possibly 32,000 items included in ordnance supplies. Under the British system, ordnance material was divided into eight homogeneous groups with a special organization, office, and record system for each group. Incoming requisitions were broken up into group issue orders, each one of which covered only the material listed under one group. After filling these orders, the materials were assembled into cars or trains bound for similar destinations. The main office transcribed all transaction for general reports to headquarters, and from their inventory records made up the requisitions for the materials necessary to keep the stocks up to the 45, 30 or 15 days' supply prescribed.

In the storage of ordnance material, a sharp division had to be made between general ordnance stores which required only the ordinary conditions of warehousing and access to transportation, and the storage of ammunition, which on account of its dangerous character, must be handled far from centers of population and in warehouses specially constructed and widely distributed in small units to minimize the dangers of, or loss from, explosion.

The principal general ordnance storage depots were as follows: In the base section at Montoir, serving the ports of St-Nazaire and Nantes, with 480,000 sq. ft. completed; at St-Sulpice, serving the port at Bordeaux with 125,000 sq. ft. completed and 200,000 sq. ft. authorized; at Aigrefeuille, serving the ports of La Rochelle, La Pallice and Rocherfort, with 62,400 sq. ft. authorized at Brest, with 25,000 sq. ft. authorized; and at Miramas, serving the port of Marseille, with 30,000 sq. ft. completed.

General intermediate depots were at Gievres, with 320,200 sq. ft. completed and 59,800 sq. ft. authorized; at Montierchaume, with 362,000 sq. ft. authorized; and at Mehun with 120,000 sq. ft. completed and 120,000 sq. ft. authorized.

The advance depots were at Is-sur-Tille, with 120,000 sq. ft. completed and at Liffol-le-Grand with 12,000 sq. ft. authorized.

Ammunition storage depots were located as follows: In the base section at Usine Brules, with 45,000 sq. ft. completed; at Donges, with 405,000 sq. ft. under construction; at Montoir, with 110,000 sq. ft. completed and 25,000 sq. ft. under construction. All these served the ports of St-Nazire and Nantes. In addition the anmunition storage depot at St-Loubes, serving the port of Bordeaux, had 300,000 sq. ft. completed and 240,000 sq. ft. under construction.

Intermediate ammunition storage depots were at Foecy, with 410,000 sq. ft. completed and 210,000 sq. ft. under construction; at Issoudun, with 420,000 sq. ft. completed and 45,000 sq. ft. under construction; and at Le Cors, with 124,000 sq. ft. under construction. The advance ammunition storage depot was at Jonchery, with 300,000 sq. ft. completed and 175,000 sq. ft. under construction.

In addition to these, a number of army depots were operated at points convenient to railheads and sufficiently near the battle area to permit direct delivery of supplies to troops engaged therein. These depots were situated at Domgermain, Toul, Vaubecourt, Parois, Void, Souhesmes-le-Grand, Blenod-les-Toul, Saizerais, Nixeville, Barbant-en-Argonne, Les Islettes, Chatel Chehery, Eclisfontaine and Chattancourt.

REPAIR FACILITIES

The ordnance repair shops, like the depots, extended from base section up to the advance area. They were sometimes established at the same sites as the depots, but more often separately, and frequently specialized on some particular class of equipment, as for example, tractors and motor vehicles, artillery, small arms, etc. Every artillery training center necessitated a shop for repairs. The largest general repair establishment was the base ordnance shop at Mehun-sur-Yevre which is the physical expression in France of the original project for the American ordnance base depot in France as modified to meet existing conditions. Much of the original material and equipment was temporarily diverted to establish repair facilities urgently needed in the intermediate and advanced zone. The main project, however, was being reestablished and in larger part was in operation or coming into operation at the time of the Armistice. The intention was to erect at this point shops capable of making major and minor repairs for the ordnance of the army of 2,000,000 men. They were to have a capacity for relining 1,245 guns per month, from 75-mm to 155-mm in caliber. The carriage shop was designed to repair approximately 2,000 ordnance gun vehicles per month, the small-arms shop was to care for 150,000 rifles, 5,000 pistols and 20,000 machine guns per month. In addition there was to be an up-to-date forge shop, foundry, wood-working shop, truck and tractor shop and acetylene plant.

Next to Mehun the most important plant was the main advance shop at Is-sur-Tille with facilities for artillery and small arms repaur, fine machine work and tool making, wood working, and the repair of opitcal instruments and the salvage of equipment. On November 11 there were in addition to these two, 22 minor shops operating, located as follows: Angers, Angouleme, Bourg (operated by tank corps), Clermont-Ferrand, Coetquidan, Colombey les Belles (operated by Aircraft Armament Section, English Division), Doulaincourt, Haussimont, La Courtine, Langres (experimental shop), Le Courneau, Libourne, Limoges, Meucon, Orly Field (operated by Aircraft Armament Section, English Division), Romorantin (operated by Aircraft Armament Section, English Division), St-Jean-de-Monts, Saumur, Souge, Valdahon, and Void.

MOBILE ORDNANCE REPAIR SHOP

Further still to the front than the army shops were the heavy artillery mobile repair shops which were in fact small self-contained machine shops mounted on standard truck chasis and special trailers capable of following the army in action. These shops comprised such units as tool room, air compressor, forge, equipment repair and office truck, and lathe, welding and cutting, drill press, shaper, milling-machine and stock-room trailers, with accompanying machine-gun trucks, staff observation car, rolling kitchen, and motorcycle with sidecar for dispatch work.

The mobile ordnance repair shops, which operated still near the front, were attached to divisions and army parks, and had a complete small machine and hand tool equipment for making minor repairs on artillery materiel, automatic weapons, small arms, motor equipment, personal and horse equipment.

There were on order 24 H. A. M. R. S. at the signing of the Armistice, all of which would have arrived in France by the early spring. One section of one of the heavy shops arrived here shortly after the Armistice was signed and is now operating with the Third Army. Twenty-five M. O. R. S. were operating with the armies at the time of cessation of hostilities, and sufficient trucks with their equipment arriving from the States to equip the shops as they were needed to join the combatant forces.

The mobile ordnance repair shops were one of America's most important contributions to the problem of adequately and quickly repairing materiel so as to keep it in action, and in many cases carrying out repair work which the French did not attempt in

the field. An idea of their accomplishments is best given by a few specific examples. The 2d M. O. R. S. on the Soissons front put into action against the retreating Germans 28 pieces of their own artillery, ranging from 77-mm. to 210-mm. An American division located very far forward on one flank had been abandoned, but the canoneers remained at their guns until the French infantry, which had been holding their lines in the front, had passed behind them to the rear. They then removed the connection between each gun and its recoil cylinder and fired a round, permitting the gun to recoil completely off its carriage and thus doing sufficient damage to prevent its immediate use. This materiel was recaptured by the division two or three days later. It was turned over to the divisional mobile ordnance repair shop, which within a few days made the necessary repairs and restored the guns and mounts to serviceable condition. The M. O. R. S. attached to the 35th Division established the reputation of having no piece in the artillery out of action over five minutes during the Argonne drive. Guns and recoils were replaced on carriages during action, and the removal of shells stuck in guns came to be a regular function in which various ingenious methods were employed. Other jobs performed were furnishing of tools for the 75-mm. and the 155-mm. howitzers, supposed to be furnished by the French but not available, the manufacture of special tools for artillery work, the repair of water carts, rolling kitchens, bicycles, typewriters, shower baths, watches, meatgrinders, steam rollers, stone crushers, trench pumps, the repair and operation of captured German baths and delousing plants, and the handling of salvage work at the front.

ORDNANCE ENGINEERING

The scope of the work of the Engineering Division is generally indicated in the definition of their functions already given. One of their great accomplishments in cooperation with the Ordnance Department, U. S. A., was the motorization of the 155-mm. howitzer and 75-mm. field gun regiments. At the time of the Armistice, the Engineering Division was working on the problem of mounting artillery of the various calibers (including trench mortars) on tractors. This promised to be one of the most influential achievements of the war, as it would eventually have effected enormous changes in a campaign of open fighting.

The work done in connection with aircraft armament was another great engineering contribution to the Allied victory. It covered substantially completing the equipment of the planes which the French government was unable to turn over fully equipped, and included all matters connected with the installation of armament. Machine shops at Courevoie were taken over and operated, installation fields provided, depots established or adapted, and experiemental grounds located at Choisy-le-Roi, Clermont-Ferrand and St-Jean-de-Monts, where the training school for armament officers and personnel was situated.

Changes, corrections and adaptations were made, providing adaptations to both foreign built and American planes for Cox loading handles, machinegun sights and sight mounts (both fixed and free), upper plane mounts, cannon and cannon mounts, signal pistols, bomb releases, cannon and bomb sights, turrets, single gun mounts, twin gun mounts, special mounts, stick triggers and Bowdens, gunner's seats, link and shell ejection tubes, free gun magazines, compartment free gun magazines, gun heaters and armored seats, ammunition and links. In short, there was hardly a single item of armament in which there was not some change or development necessary.

The success of the work is attested by the following extracts from a letter from the Assistant Chief of the Air Service:

> I desire to take this opportunity of expressing to you my appreciation of the able and efficient work of the Aircraft Armament Section, Ordnance Department. . . It

is felt that, without the energy, loyalty and devotion to duty shown by this section, it would have been impossible to put combat planes on the front. . .

From the supply standpoint, there has never been a single delay in equipment of planes or of mobilization of squadrons due to a lack of airplane ordnance, nor to a lack of competent men to install it for us. This is also true of military operations. . . I believe that our Aircraft Armament Section has shown by far greater ability than the corresponding sections of the Allied services. At any rate we have covered in an armament way in one year the ground covered by the Allied forces during their whole war experience, and in many items of armament, I believe that we have surpassed them in efficiency. (Assistant Chief of Air Service, to Chief Ordnance Officer, A. E. F., November 27, 1918.)

ORDNANCE PERSONNEL AND SCHOOLS OF INSTRUCTION

In addition to the huge problems of supply and caring for material, the Ordnance Department, A. E. F., faced the gigantic, task of filling requirements for personnel which were estimated to reach a total of 74,000 officers and men by the end of the year 1918. A total of 1,803 officers and 12,205 men were on duty in the department at the date of the Armistice. The Personnel Division had worked out carefully studied requirements of men and officers by grades, by months, for each division in the O. C. O. O., A. E. F., for the S. O. S., and for personnel in the army area. These schedules called for 2,145 officers and 35,330 men in all to satisfy immediate needs. In order to qualify large numbers of these ordnance personnel for their highly specialized work, two general systems were provided - the Organization and Training Centers, and the Ordnance Schools.

Organization and Training Centers were under the supervision of the Construction and Maintenance Division and were established in connection with certain shops where equipment and expert personnel was already assembled for the work of repairing ordnance material. Instruction was a combination of lectures given by the ordnance officers in charge of the shops and by expert repair men and practical instruction obtained by assigning students to work in the shops with skilled workmen. These courses were given at Angers, Angouleme, Clermont-Ferrand, Libourne, and Limoges.

Ordnance schools of instruction were conducted first under the Engineering Division and later were transferred to the Personnel Division. Their courses of instruction included stock keeping and army accountability, and in the functioning and handling, disassembly, reassembly and repair of various types of ordnance material. The following schools were operated by the Personnel Division of the Ordnance Department; St-Aignan, courses in office procedure, handling of stores and shipments, minor repairs, care and nomenclature of ordnance material; St-Jean-de-Monts, aerial armament course, Is-sur-Tille, small and automatic arms course, course in artillery material, course in ordnance supply, and ordnance shop course; Jonchery, Feocy and Bourges, ammunition schools. There were also courses in motor equipment at various points, and a staff school for ordnance officers.

SUPPLY AND MAINTENANCE IN THE ARMY AREA

In the army areas, the ordnance department, making the best of the great shortages of transportation and personnel that were general throughout the A. E. F., conceived, created, and operated an extension of the supply and maintenance system which earned the commendation of commanders of line troops, from companies and batteries to armies. For general supplies, army depots were established. These, replenishing their stocks by trainload shipments from the S. O. S., made immediate emergency issues to troops in

the line on the verbal request of an officer, in the space of time required for the loading of the desired article from the warehouse into the waiting truck. Where no emergency existed, they filled even the largest requisitions with a minimum of formality and a maximum of promptness, the average time required for the obtaining of supplies by an organization being reduced by their operation from two and four weeks to an average of twenty-four hours. One of these depots alone, that of Souhesmes, handled more than 600 different articles, its issues ranging from 105,483 canteens to one Singer sewing machine; its average daily issues of mess equipment were around 1,500.

For small arms supplies, special depots were established at Void and Vaubecourt and later at Parois. These depots issued machine guns, automatic rifles and pistols, either direct to troops, or through the mobile ordnance repair shops. Their functioning was efficient and satisfactory. For artillery, since artillery materiel was almost entirely French, American personnel were added to French establishments in the advanced zone, and with the aid of their liaison the supply system insisted on by the French was rendered workable. As for ammunition the operation and administration of the great network of ammunition stockages, depots, and dumps, in which at one time in the First Army alone over 8,000 soldiers were working night and day, often under artillery, machine-gun, and aircraft bombardment, was entirely the responsibility of the ordnance department. On this supply service depended the activity of the American artillery; and no better commentary on its work is needed than the success achieved by that artillery, which, in the densest concentrations of the entire war, delivered a fire of the utmost intensity with a rapidity and continuity that had been believed beyond the bounds of possibility, to which the constant and never-failing stream of ammunition contributed the essential element.

Repair facilities were provided at the front mainly by the mobile ordnance repair shops, already mentioned. In addition, the machine gun and small arms centers at Void, Vaubecourt, and Parois repaired the guns in which they dealt; and American personnel, especially the personnel of four heavy artillery mobile ordnance repair shops, in conjunction with French *Parcs de Reparation d'Artillerie*, did such work on artillery as could not be done by the light shops.

* * * * * *

SOME OF THE THINGS ACCOMPLISHED

At the cessation of hostilities, the Ordnance Department, A. E. F., had provided among other things in France over 4,000 cannon, and 10,000,000 rounds of artillery ammunition through our depots; 93,326 machine guns, 75,000 automatic rifles, and 600,000 service rifles besides those brought over by the troops who came fully equipped; 1,182,000,000 rifle cartridges, over 300,000,000 8-mm. cartridges, and 176,000,000 pistol cartridges. Including ammunition received directly from the French in the army area, 6,128,635 rounds of 75 mm. had been actually expended and 1,705,000 rounds of heavier caliber (chiefly 155-mm. G. P. F. and 155-mm, 8-in. and 9.2-in. howitzers), as well as 809,929 trench mortar bombs, and 695,670,451 machinegun and small arms cartridges. Nearly 8,400 special motor vehicles (tractors, trucks, reconnaissance cars, etc.) had been furnished for military use. The shops and depots of the department were adequate for any demands that could be foreseen or conjectured. Given the men, it could meet any conditions that could arise.

The preceding brief sketch summarizes the work of the Ordnance Department up to the time of the Armistice, as introductory to the report of operations in following pages, in which the activities of the divisions and sections are presented in greater detail.

Quartermaster Corps

HEADQUARTERS SERVICES OF SUPPLY, A. E. F.,
Tours, France, March 12, 1919.

[Extract]

1. The responsibility for feeding and clothing the A. E. F. - providing the vital energy on which it was to fight - rested largely on the quartermaster corps. The variety of activities of the quartermaster corps is greater than that of any other department of the army.

2. The record of the development of this great supply department of the army in the A. E. F. is one of vast growth and striking comparisons.

3. The quartermaster corps, A. E. F. had fed, clothed and otherwise served through its vast activities an army which at the time of the signing of the Armistice numbered about two million men. The storehouses required to handle these supplies had grown in France along from one medium sized building which had been taken over by the quartermaster corps at St-Nazaire on June 26, 1917, the date of the arrival of the first convoy of American troops, to covered storage of more than 8,200,000 square feet.

4. Projects were under way on that date, too, for provision with full quartermaster supplies of the rapidly expanding American Expeditionary Forces on the basis of an army of 4,500,000 men. On the date of the signing of the Armistice there were 844 quartermaster activities fuctioning in the A. E. F. distributed over a total of 267 localities.

THE DUTIES OF THE QUARTERMASTER CORPS

5. In a general order, H. A. E. F., published on July 5, 1917, the duties of the quartermaster corps were set forth as follows: Transportation personnel and supplies; supply of transportation, repairs, etc; clothing; quartermaster equipment; subsistence; fuel; forage; lights; quarters; camp sites; quarters and offices; pay of personnel and general disbursements; laundries and baths; remounts; claims; salvage; workshops and storehouses, cemeteries; burials; labor; quartermaster personnel.

6. By the provisions of G. O. 31, G. H. Q., published February 16, 1918, revoking G. O. 8, H. A. E. F., 1917, and reorganizing the line of communication under the designation of services of supply, the duties of the quartermaster corps were stated to be as follows: Payment of personnel and general disbursements; quartermaster material, including clothing, subsistence, fuel and forage; transportation of water beyond water point; remount service; laundries and baths; disinfection of clothing; salvage service; Q. M. shops, depots and storehouses; cold storage and refrigeration; graves registration service; inspection of quartermaster activities. To these duties were later added; Sales stores and rolling sales stores for the accommodation of troops at the front (Pars. 3 and 4, G. O. 37, G. H. Q., 1918); Effects depot for handling the effects of those who died in the A. E. F. (G. O. No. 40, G. H. Q., 1918); Garden service (G. O. 34, G. H. Q., 1918), bathing disinfecting stations and laundries for troops in the zone of advance, with exception of disinfection in connection with hospitals (Bulletin 12, Hq. S. O. S., May 20, 1918); organization of railhead supply units (Cablegram from W. D., Aug. 24, 1918); payment of octroi dues to French towns

(Bulletin 66, G. H. Q., September 3, 1918; baggage service (G. O. 62, Hq. S. O. S., December 5, 1918).

7. Army regulations (Par. 1000) states in connection with the description of the duties of the quartermaster corps that it attends to all matters connected with military operations which are not expressly assigned to some other bureau of the War Department.

BEGINNING OF ACTIVITIES

8. The quartermaster activities of the A. E. F. began to function long before G. O. 1, H. A. E. F., dated Washington, D. C., May 20, 1917, was published, Colonel (later Brigadier General) J. M. Carson, Q. M. C, (now acting chief quartermaster, A. E. F.) about the middle of May 1917, had been instructed by the War Department to arrange steamship accommodations for Major General John J. Pershing, Commander-in-Chief of the American Expeditionary Forces, and party, to be landed in Liverpool. The quartermaster personnel of 16 officers, 12 field clerks and 10 enlisted men which accompanied the Commander-in-Chief and which landed in Liverpool on June 7, 1917, had grown until the quartermaster personnel in the A. E. F. on December 15, 1918 consisted of 4,229 officers and 96,541 enlisted men. These figures do not include about 600 officers and 18,000 enlisted men transferred to the M. T. C. and about 300 officers and 13,000 enlisted men transferred to the T. C.

EARLY ORGANIZATION OF THE QUARTERMASTER CORPS, A. E. F.

9. The first office of the chief quartermaster, A. E. F. was opened * * * on June 14, 1917 at 27 Rue Constantine, Paris. The total floor space occupied was about 640 square feet. For several days, because of lack of furniture, the officers conducted their business by writing on papers held in their laps.

10. The first efforts of the Chief Quartermaster were directed to arranging proper sources of information, supply and assistance from the French services, and to these duties he assigned different officers who, with the aid of the French mission, made investigations and reports of various kinds covering such subjects as motor transport, coal and wood, laundries, salvage, graves registration, and baths.

11. To make preparations for the reception of the first American troops to land in France * * * placed in operation the first quartermaster warehouse when the first convoy of American troops arrived on June 16, 1917.

12. On July 1, 1917, Col. Stanley was designated as Chief Quartermaster of the Line of Communications.

13. Col. (later Major General) H. L. Rogers, Q. M. C., who later became Chief Quartermaster, A. E. F., and is now Quartermaster General of the army, arrived in Paris on July 20, 1917. With a view to making recommendations for the location of General Headquarters, A. E. F., Col. Rogers and Major (later Brig. Gen.) F. R. McCoy, of Major General Pershing's staff on August 1, 1917 started on an inspection trip to Vittel, Chaumont (Haute-Marne) and other points in the vicinity.

14. On August 13, 1917, Col. Rogers was announced as Chief Quartermaster, A. E. F. (Par. 3, S. O. 21, H. A. E. F., 1917).

15. One of Col. Rogers' first steps was to call upon the War Department for qualfield quartermasters of the regular army for duty in France. Another activity in which the Chief Quartermaster, A. E. F. was concerned was obtaining necessary transportation, especially motor, of which there was practically none at the time. His office was active in the latter part of August 1917, in preparing the military station at Chaumont.

to which Headquarters, A. E. F., including the office of the chief quartermaster, moved on September 1.

16. One of the pressing problems from the start was the procurement of supplies by purchase in Europe. * * * To keep down competition between various departments a general purchasing board had been established (G. O. 23, H. A. E. F., August 20, 1917). * * *

17. As an indication of the shortage of personnel at this time it may be of interest to note that there were just five quartermaster officers as assistants to the chief quartermaster, A. E. F., when he opened his office at headquarters on September 1, 1917. The records of the personnel branch of the office of the chief quartermaster showed that on September 23, 1917 there were just 153 quartermaster officers in the A. E. F., and of these only 32 were officers of the regular army.

18. A transportation department was established as one of the technical services of Headquarters, A. E. F., by G. O. 37, A. E. F., September 14, 1917. This took over the matter of arranging with the railroads of France for the movement over railroad lines of troops, all classes of freight for the A. E. F., and, later, the handling of freight at the docks.

METHODS OF OBTAINING SUPPLIES

19. A subject of vital importance, and especially to the Quartermaster corps, was that of automatic supply. After several conferences in which the needs of the quartermaster corps, as well as other departments, were considered, and after preliminary cablegrams on the subject, the Commander-in-Chief on September 7, 1917, cabled to Washington: "Have determined to establish in France reserves of all classes of supplies for ninety days to be maintained by monthly shipments, under automatic supply system. This reserve to be based on authorized issues where such issues are regular and on actual periodic consumption of other articles based on British and French experiences during the war." The cablegram described in further detail the basis and beginning of the present system of automatic supply.

20. Quartermaster supplies were procured by three methods - requisition on the United States direct from the office of the Chief Quartermaster, A. E. F., the purchase of supplies in France through quartermaster purchases in the office of the Chief Purchasing Officer, Q. M. C., and the purchase of supplies from the French and British Governments. The saving of tonnage so as not to interfere any more than absolutely necessary with the flow of troops was regarded as of primary importance.

21. In the matter of clothing alone the needs were vastly increased by the new conditions of trench warfare over any demands that had ever before risen in our army, or had been anticipated. It was apparent to the Chief Quartermaster, A. E. F. that it would be impossible to land in France or to produce the clothing to meet immediate requirements unless some system of saving and reconstruction were adopted. It was out of these conditions and necessities that developed that later came to be the great system of salvage conducted by the Quartermaster Corps and some of the results of which are hereinafter summarized.

ORGANIZATION OF OFFICE OF CHIEF QUARTERMASTER, A. E. F. AT HEADQUARTERS, S. O. S.

22. G. O. 31, G. H. Q., published on February 16, 1918, which revoked G. O. 8, H. A. E. F., 1917, and reorganized the Line of Communications under the designation of Services of Supply, defined the duties of the Quartermaster Corps as already described.

23. The Office of the Chief Quartermaster, A. E. F. was transferred from G. H. Q. at Chaumont to Headquarters, S. O. S. at Tours on March 11, 1918, in accordance with the provisions of this order. The office of the chief quartermaster, L. of C., had been moved from Paris to Tours in accordance with a letter from the Commander-in-Chief on January 10, 1918.

24. Following the establishment of the Office of the Chief Quartermaster, A. E. F. at Tours. the organization was as follows:

The Chief Quartermaster, A. E. F.

The Deputy Chief Quartermaster, A. E. F., who, during the frequent absences of his chief on inspection and other important duties, took entire charge and acted in his place. * * *

25. Assistants to the Chief Quartermaster, A. E. F. Besides the Deputy Chief Quartermaster, A. E. F., the Chief Quartermaster, A. E. F. usually had two other principal assistants who were assigned to important duties as occasion required.

(Major General Rogers having been made Quartermaster General of the army on July 22, 1918, left Tours on January 31, 1919 to take up his duties in Washington, and was succeeded by Brigadier General J. M. Carson. Brigadier General John F. Maden, U. S. A., who had been one of Major General Rogers' principal assistants, accompanied him to the United States.)

26. Inspection service, with one officer in charge at headquarters and a varying number of travelling inspectors who inspected and reported upon such matters as supply of divisions, finance, conditions of remount service, bakeries, etc.

27. The work of the Office of the Chief Quartermaster, A. E. F., was divided into nine main divisions, each under a chief. These divisions, with the functions of each briefly stated, were as follows:

28. ADMINISTRATIVE DIVISION, including the handling of all records, mail, telegrams and cablegrams, messenger service, precedent and research, and administrative action on contracts.

* * * * * *

30. SUPPLIES DIVISION: This was probably the most important division of the chief quartermaster's office, the activities being divided into fifteen subbranches. The fifteen branches were: Miscellaneous, clothing, subsistence, bakeries, animal-drawn transportation, traffic, travelling officers, supplies and stationery, fuel, forage, cold storage and refrigeration, administration, garden service, storage and warehousing gasoline and oil.

* * * * * *

31. PERSONNEL DIVISION, including the handling of all matters pertaining to the quartermaster corps personnel in the American Expeditionary Forces and the preparation of priority schedules covering organization of personnel in the United States for shipment overseas; organization of new units to meet conditions in the A. E. F; and distribution of all Quartermaster Corps personnel in the A. E. F., including labor organizations.

* * * * * *

34. FINANCE DIVISION, including the supply to disbursing officers of funds for their disbursements; instruction of finance officers in the nicer legal points of their duties; and the adjustment of a certain class of claims.

* * * * * *

36. ACCOUNTING DIVISION, including the examination and analysis of the accounts (both property and funds) and audit of subsistence returns of all quartermasters in Europe.

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38. SALVAGE SERVICE, including the operation of salvage depots and shops; the operation of rendering plants for the recovery of fats, and kitchen economic activities; the operation of laundries and disinfectors; and finally, the police of battlefields.

* * * * * *

40. REMOUNT DIVISION, including the acquisition by purchase in Europe and by shipment from the United States of animals for the use of the A. E. F. and caring for same.

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41. CONSTRUCTING AND REPAIR DIVISION, including drafting and illustrating for the quartermaster corps; designing of equipment, chevrons and other insignia; map making and drawing up of organization charts.

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42. GRAVES REGISTRATION SERVICE, including the acquisition, maintenance and control of cemeteries; identification of the dead; registry of burials; and correspondence with relatives of deceased soldiers.

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43. All of these divisions and services, as stated in the case of the supplies division, were again subdivided, such division of labor being necessitated by the enormous volume of work involved and the need of having tasks so apportioned as to secure intelligent supervision by commissioned heads of various branches. Many of these officers were men who in civil life were accustomed to handling extensive business operations, and were usually specialists in the branches assigned to them.

44. There was a Chief Purchasing Officer, Q. M. C., A. E. F., whose principal office was located in Paris. His important duties had to do with the purchase of such supplies as could be obtained in Europe, and he had representatives in the larger French cities and in numerous cities in Great Britain, Spain, Italy and Switzerland; his activities extended even into Algeria and Morocco * * *

* * * * * *

46. The Quartermaster Corps was represented in the various sections of the Services of Supply by a chief quartermaster on the staff of the commanding general of the section. Armies, corps and divisions each had their quartermasters on the staffs of their respective commanders. These functioned under G-4 of the general staff in the case of armies and corps and under G-1 in the case of divisions. Regiments had regimental supply officers on the staffs of their regimental commanders.

M. T. C. MADE A SEPARATE DEPARTMENT

47. Under the provisions of G. O. 31, G. H. Q., February 16, 1918, the Motor Transport Service and Transportation Department were established as separate departments of the service of utilities. A Transportation Department had previously been established, as already stated, by G. O. 37, H. A. E. F., September 14, 1917. In the course of the organization of the motor transport service, the Quartermaster Corps transferred to that service about 600 officers and 18,000 enlisted men.

WAREHOUSES AND SUPPLIES

48. The approximate number of days' supplies maintained for the expeditionary forces in the various sections may in general terms be stated as follows:

Base sections	45 days
Intermediate section	30 "
Advance section	15 "
Total	90 days

49. The larger quartermaster depots were those at Gievres, St-Sulpice, Montoir, Montierchaume, Paris and Is-sur-Tille, all of which carried a stock of general supplies such as subsistence, clothing, fuel, forage and miscellaneous stores.

50. Gievres is the largest depot and as a depot project was designed with a view to its being a depot for all branches of the S. O. S.

51. The following is a list of the general storage and issuing depots, with number of buildings and amount of covered and open storage, operating on November 11, 1918:

LOCATION Town	Section	No. of BLDGS.	SQ. FT. COVERED STORAGE	SQ. FT. OPEN STORAGE
Bordeaux	B. S. 2	6	229,264	100,000
Brest	B. S. 5	5	66,146	15,000
Coutras	B. S. 2	7	240,935	
Gievres	Int. Sec.	107	2,423,307	5,745,957
Issoudun	Int. Sec.	12	26,268	370,000
Is-sur-Tille	Adv. Sec.	19	433,333	500,000
La Pallice	B. S. 7	3	25,337	189,276
Le Havre	B. S. 4	10	32,235	4,844
Le Valdahon	Adv. Sec.	3	10,910	
Marseilles	B. S. 6	2	45,305	45,305
Miramas	B. S. 6	9	259,380	99,600
Montierchaume	Int. Sec.	38	880,750	1,449,000
Montoir	B. S. 1	40	1,047,000	184,555
Nantes	B. S. 1	4	130,490	134,500
Nevers	Int. Sec.	7	167,296	262,400
Paris	Dist. of Paris	17	436,296	121,458
Rochefort	B. S. 7	7	123,389	206,668
Rouen	B. S. 4	1	89,308	
St-Nazaire	B. S. 1	7	162,317	
St-Sulpice	B. S. 2	57	1,439,300	900,000
		361	8,268,566	10,328,563

SUBSISTENCE

52. One of the important problems was that of providing rations packed so as to prevent them from being spoiled by moisture, toxic gases and rats, and also in containers suitable for use by troops in rapid advances. For troops on duty in the front line it was recommended that reserve rations be prepared of corned beef in one-pound tins, and soluble coffee instead of roasted and ground coffee. A new ration for the A. E. F. was worked out during the summer of 1918 which went into effect November 1, 1918, as a result of G. O. 176, G. H. Q., October 11, 1918, revoking all previous orders on the ration.

53. The cost of the ration issued to the troops in November 1918, including estimated cost of transportation and storage in the United States, ocean freight, landing, and storage and transportation in France, was $52,500,000, or more than half the cost of the entire army for the fiscal year 1916.

54. BREAD: The daily production of bread in the A. E. F. increased from the first baking of 11,378 lbs. at Dijon on August 3, 1917 to 1,830,000 lbs. on November 30, 1918. On November 11, 1918, there were 69 bakery companies operating in 67 localities in France. A mechanical bakery was placed in operation at Is-sur-Tille on December 1, 1918 with a normal capacity of 650,000 lbs. daily, but which could in case of emergency be increased to 750,000 lbs. a day. Arrangements had been made to establish two more mechanical bakeries similar to that at Is-sur-Tille when the Armistice was signed.

55. GARDEN SERVICE: Reports from garden officers indicate that up to November 15, 1918 approximately 75,000,000 lbs. of vegetables had been produced and at a cost, not counting labor of enlisted men, of about one-third the prevailing prices. Q. M. C. gardens had been under cultivation at 58 different points. With the changed conditions brought about by the Armistice, work was continued at only seven bulk production farms and extensive garden projects are still being operated in connection with various hospitals.

COLD STORAGE

56. There were 17 cold storage plants in operation on November 11, 1918 with a total capacity of 10,374 tons and 15 more projected with an additional total capacity of 15,065 tons. The largest of these cold storage plants in operation was at Gievres, with a capacity of 5,200 tons.

FORAGE

57. The amount of forage landed at base ports between July 3, 1917 and November 11, 1918 was approximately 289, - 299,744 lbs. of hay, 428,366,980 lbs. of oats and 33,612,910 lbs. of bran. This at the cost set down in France was valued at $64,440,391, and was irrespective of purchases made in Europe. Because of the shipping situation the question of forage supply was always serious.

58. The French at one time refused to permit the A. E. F. to purchase forage in the open market but offered to turn over certain monthly credits of hay from their reserves in the rear, this to be returned pound for pound out of amounts received from the United States. By the time the Armistice was signed, although the French had failed to deliver thirty per cent of their contract, the A. E. F. had built up their reserve stock to twenty-one days' supply of American hay.

GASOLINE AND OIL

59. The gasoline and oil branch of the supplies division was responsible for the procurement and delivery of all petroleum oil products, including motor truck gasoline, aviation gasoline, all grades of lubricating oils and greases, special railway oils, greases and other grades of vegetable and animal oils. The policy was to work bulk development of gasoline to the fullest extent practicable, reducing the number of bidons and cans to the minimum. Enormous increases in the use of gasoline and kerosene by the A. E. F. during 1918 are shown by the following deliveries:

1918	Motor	Aviation	Kerosene
January	489,539 gals.	61,280 gals.	24,850 gals
February	581,051 "	52,513 "	40,950 "
March	857,926 "	83,021 "	43,190 "
April	1,317,654 "	123,980 "	37,714 "
May	1,487,557 "	167,842 "	33,738 "
June	2,645,000 "	245,000 "	32,000 "
July	3,110,000 "	350,000 "	50,000 "
August	4,640,000 "	616,000 "	120,000 "
September	6,200,000 "	700,000 "	180,000 "
October	9,675,200 "	1,458,000 "	374,900 "
November	8,937,820 "	696,730 "	255,630 "
December	8,695,430 "	371,470 "	272,620 "

60. The deliveries of lubricating oils increased from 62,650 gallons in January, 1918 to 690,776 gallons in December 1918; castor oil from 2,500 gallons in January 1918 to 150,000 gallons in October 1918; and grease from 87,440 pounds in January 1918 to 503,600 pounds in October 1918.

61. On the date of the signing of the Armistice, seaboard storage stations were in operation at La Pallice, with a capacity of 5,000,000 gallons, and at St-Loubes with a capacity of 1,250,000 gallons. There was an intermediate storage depot at Gievres with a capacity of 2,000,000 gallons. There was a total of 27 storage and distributing stations in operation with 66 additional storage and distributing stations projected.

COAL

62. A total of 1,016,622 tons of coal had been imported from England between October 1, 1917 and October 31, 1918. The shipment of British coal for the A. E. F. had grown from 28,338 tons in October 1917 to 207,630 tons in October 1918. There were eight coal storage yards in the A. E. F. with a total capacity, initial installation, of 475,000 tons, and a total capacity, ultimate storage, of 1,219,000 tons. The ultimate storage space at Gievres was unlimited.

WOOD

63. Because of the limited supply of wood in France, and the extreme measures that the French Government found necessary to conserve its forests, the wood problem was a serious one in the A. E. F.

64. By October 1, 1918, the A. E. F. had obtained 325,000 cords of wood, 250,000 cords of which had been purchased from the French already cut and 75,000 produced by contract labor employed by the A. E. F. It was estimated that 400,000 cords would be

needed by the combatant troops alone for the winter of 1918-19 and to meet this emergency the chief quartermaster, A. E. F. formed an organization known as the fuel wood project advance section to which were assigned no less than 9,500 men, under a competent forestry officer. These men, following closely in the wake of the advancing armies, sometimes working in woods filled with gas, produced in three months' time one-third of the total amount which would have been required for the entire winter involving a troop program of 4,500,000 men.

REMOUNT SERVICE

65. On the last day of December 1918, there were in the Remount Service of the A. E. F. 23 remount depots operating with a capacity of 46,385 animals. In addition to the cavalry, ammunition train, and pack train troops which were attached, there were 43 remount squadrons. The number of animals that had been obtained from the United States and by purchase in France, England and Spain was 242,939.

66. The Remount Service included not only the procurement of animals and maintenance of remount depots but it was finally decided to assign remount officers with combat troops for the purpose of supervising the care and handling of animals. The Remount Service was officially organized and attached to the Q. M. C. by G. O. 39, H. A. E. F., September 18, 1917.

67. Because of the shortage of shipping and scarcity of horses and mules available for purchase abroad, there were times when the American forces were handicapped by a shortage of animals. Purchases of 135,722 animals were made in France, 21,030 in England and 10,462 in Spain. In the fall of 1918, after the successful wiping out of the St-Mihiel salient, Marshal Foch directed that 13,000 animals be turned over direct from the French animals in the field to the United States army to aid in the Argonne offensive.

SALVAGE SERVICE

68. The Salvage Service of the A. E F. was made a function of the quartermaster corps by G. O. 10., G. H. Q., January 16, 1918. The first salvage depot, at St-Pierre-des-Corps, began operations with a personnel of four officers, five enlisted men and six women employees. On February 18, 1919 the total personnel of the Salvage Service exceeded 11,000, besides a field force of from 2,000 to 12,000 enlisted men, according to the exigencies of the service.

69. The total value of the output of the salvage service up to January 31, 1919 was $85,469,573,41 as follows:

Depots and shops	$57,910,204.18
Battlefield recoveries	26,289,906.27
Kitchen economics recoveries	578,975.14
Scrap wool to British, 1,322,373 lbs. estimated at 20 cents a lb.	264,474.60
Scrap sales	92,421.12
Lumber salvaged, 2,848,840 board feet estimated to be worth at European prices for low grade lumber	129,550.20
Rubber salvaged from tires, tubes, gas masks, etc., 2,040,419 lbs. at an estimated value of 10 cents a lb.	204,041.90
	$85,469,573,41

70. The percentage of salvage recoveries from articles shipped to depots requiring both renovation and repair aggregated 91% up to December 31, 1918. The remaining 9% was largely used as raw material in patching, mending, and renovation.

71. The total cost of the operation of the Salvage Service as compared with the value of output of depots and shops was 11%. The percentages as to classes of materials were: Clothing repairs, 5%; canvas and webbing, 11 1/4%; rubber goods, 7 1/2%; leather and harness, 3 1/2%; shoes, 20%; metal, 10%; these figures include all costs of material, rentals, employees' salaries and, in fact, all expenses except depreciation on machinery.

72. The valuation of the output of depots and shops for January 1919 was $10,891,830.17. This included 4,177,034 articles repaired and 4,213,027 shipped, a gain of over 15% in the repairing output over the previous high record of December 1918.

73. The Salvage Service has clothed and otherwise equipped approximately 47,000 German prisoners of war at a saving of about $2,820,000 to the government.

74. The recoveries of the kitchen economics branch alone, up to and including December 31, 1918, aggregated $474,515.12.

75. The battlefield recoveries for the months from October 1918 to January 1919 inclusive, were $26,189,906.27 (estimated).

76. On January 31, 1919 there were 12,667 employees in the depots and shops. Of this number 67% of the day workers were females; of the employees in the metal department 54% were women. This is a striking exemplification of the fact that women have literally taken the place of men in the field of labor in France.

77. The total ground space occupied by the Salvage Service, including the space covered by the 208 buildings in operation, was 257,400 square feet. The actual floor space was 989,860 square feet, of which 223,094 square feet were owned by the United States and the balance leased.

78. To summarize, in the words of Col. T. B. Hacker, Q. M. C., Chief of the Salvage Service: "It is evident that, though an absolute innovation in the United States army, the Salvage Service has already demonstrated the organizing constructive efficiency of the military service. What was in former wars a distinct liability, has developed into a tremendous asset. Tonnage space and raw materials have been conserved and an unlimited field opened for the utilization of by-products heretofore regarded as waste."

BAGGAGE SERVICE

79. The Baggage Service was organized as a branch of the salvage service under G. O. 62, Hq. S. O. S., December 5, 1918. This service was responsible for the movement of all baggage from the time it came into the possession of the Baggage Service, A. E. F. until it was turned over to the owner in France or in the United States, or the D. G. T. on the docks at the port of embarkation.

80. Up to March 6, 1918 the Central Baggage Office at Gievres alone had received 17,000 pieces of baggage and had shipped 23,000 pieces to points in France, Germany and the United States. There were on that date 242,000 pieces in storage at Gievres.

81. The Baggage Service maintains personnel at five embarkation points; assigns zone officers to the various departments of France to locate and dispose of lost baggage; assigns a representative to each home-going organization to supply it with forms and tags, and to give instructions for proper shipment.

82. Inquiries as to baggage flow into the Central Baggage Office at Gievres at the rate of about 600 letters a day. Up to March 6, 1919, the Baggage Service had found 10,125 pieces of lost baggage.

BATHING AND DELOUSING OF TROOPS

1. The Q. M. corps was first chargeable with the operation of disinfecting stations for troops except those in connection with field, camp and evacuation or base hospitals, under the provisions of paragraphs 2 and 3, Bulletin No. 12, Headquarters S. O. S., dated May 20, 1918, and the salvage service was placed in charge, under the chief quartermaster, of these operations.

2. This service was reorganized and extended in November 1918, when Colonel G. H. Gilchrist of the Medical Corps, with the personnel which had operated with the degassing service, under direction of the chief of the Chemical Warfare service was transferred and assigned to duty with the Q. M. corps, per the provisions of General Orders No. 216, Sec. 2, G. H. Q., Nov. 26, 1918. This service brought to the Q. M. corps a trained personnel of officers and enlisted men, together with certain mobile bathing plants which had been operated under their direction in the chemical warfare service. The following is the personnel transferred from the Medical Department to the Q. M. corps under the orders cited in connection with this work:

COMMISSIONED

Colonels, Medical Corps	1
Majors, " "	7
Captains, " "	27
1st Lieuts. " "	4
" " Sanitary Corps	5
2d Lieuts. " "	15
Total Commissioned	59

ENLISTED

Sergeants 1st Class, Medical Dept.	5
Sergeants, Medical Department	12
Corporals, " "	3
Cooks, " "	3
Privates 1st Class, Med. Dept.	13
Privates " "	178
Total Enlisted	214
Grand Total Personnel	273

Since the organization of the delousing and bathing section, its personnel has undergone several changes. These changes were rendered necessary on account of the constant movement of divisions, organizations, etc.

The personnel associated with the work on March 1, 1919 consisted of the following:

Commissioned Officers	282
Enlisted Men	1389

* * * * * *

BATHING FACILITIES REPORTED MARCH 1, 1919

Stationary Baths	545
Portable "	517
Mobile "	21
Total Number of Showerheads	8461

DISINFESTING FACILITIES REPORTED MARCH 1, 1919

Stationary Steam Sterilizers	74
Horse Drawn " "	58
Improvised " "	257
Hot Air " "	79
Total number of men bathed during 10 days Prior to March 1, 1919	828,452
Total number of articles disinfested during 10 days prior to March 1, 1919	1,350,522

Reports from all organizations received up to March 1, 1919, show that less than 2% of the men of the A. E. F. were lousy.

EFFECTS DEPOT

The effects depot, established at St-Nazaire on April 9, 1918, under the provisions of G. O. 40, G. H. Q., American E. F., 1918, received up to March 1, 1919, approximately 40,000 packages of effects of deceased members of the A. E. F., 16,000 of which were forwarded to Hoboken, N. J. The greatest number of packages received on any one day was 2,000 and the largest single shipment was 1,980 packages. Up to March 1, 1919, approximately 37,000 final statements of enlisted men had been prepared for forwarding to the Adjutant General of the Army, and a total of $521,079.00 had been received with the effects of deceased members of the A. E. F. and deposited with the disbursing quartermaster, office of the quartermaster, Base Section No. 1. Approximately 1,000 letters are received daily from relatives of deceased soldiers and from official sources regarding effects, final statements, etc.

GRAVES REGISTRATION SERVICE

The graves registration service, established February 15, 1918, in accordance with G. O. 30, G. H. Q., 1918, was charged with maintaining accurate and complete records with regard to location and identification of graves of all officers and soldiers of the A. E. F., and all civilians attached thereto. More than 1,200 military cemeteries, in which American soldiers are buried are under the control of this service. They are scattered all over France from the historic battlefields of Chateau-Thierry and the Argonne to the base ports on the Atlantic Coast. There are also 85 American military burial grounds in England, a similar number in Italy and Belgium, and a few in the Murmansk regions on the shores of the Arctic Ocean in northern Russia, where the American North Russian Expedition is operating.

Every foot of territory over which the advancing armies progressed is being examined by this service and the American graves identified, photographed and marked with an olive drab wooden cross or a marker bearing the sixpointed star, the Hebrew emblem. To each is fastened the soldier's identification tag, giving his name and army serial number.

OCTROI

The Octroi question is one that has required most delicate handling, the collection of Octroi being a centuries old custom upon which the French towns have been almost entirely dependent for meeting expenses. The British, Belgium and French armies all had paid this tax to the French towns in which they were quartered. In February 1918, Major William E. Hoy, Q. M. C., was directed to visit all municipalities demanding octroi and to negotiate with a view to its cancellation or reduction.

On February 25, 1919, only ten towns were still collecting Octroi from the A. E. F. seven had cancelled contracts giving freedom from the tax to the Americans, twenty-three had voted for the exoneration of the A. E. F. from payment, thirteen had pledged themselves to take similar action, and seven remained still undecided.

FINANCE

The total amount disbursed by the Quartermaster Corps, A. E. F., from the time of the arrival of the first troops in France up to and including February 28, 1919, was approximately $568,444,000.00.

To meet the needs of soldiers who had been wounded and evacuated from the battle-front to our own hospitals and those of our Allies, a system had been adopted whereby service records were to go to the Central Records Office and transcripts thereof were to be furnished hospitals for the purpose of making up pay rolls. Many hospitals called for transcripts of these service records and were advised that it was impossible to furnish them on account of the immense amount of work entailed.

Prior to this, a bulletin (Bulletin 3, S. O. R., February 28, 1918) had been issued authorizing payments of $7.50 per month to soldiers who were separated from their service records at the casual depot at Blois. This plan was generally adopted throughout the A. E. F., and disbursing quartermasters were sent to our own and Allied hospitals to pay this amount in those cases where the conditions merited it. These disbursing quartermasters not only disbursed money to these patients but frequently distributed clothing, tobacco of all kinds, and delicacies, particularly to those in the hospitals of the Allies, with a resulting cheering effect and raising of morale.

This served for a time, until by the provisions of G. O. 126, G. H. Q., August 1, 1918, an individual pay record book, to become effective October 1, 1918, was adopted to meet the needs of all men on active service who were separated from their service records. The adoption of this pay book assisted greatly in relieving the situation.

Later, by Par. 3, G. O. 39, G. H. Q., March 1, 1919, it was possible to pay soldiers all pay due them, including pay for the period back of that which could be covered by the pay book and for which no records were obtainable. By this order, organization and detachment commanders were directed to prepare supplemental service records and pay cards for all soldiers in their commands whose current pay or pay on discharge was being withheld by reason of absence or incompleteness of service records, these supplemental service records and pay cards to be prepared on the strength of the personal affidavits made by the soldier.

To provide for the requirements of home-going troops, Disbursing Quartermasters at St-Nazaire, Bordeaux, Brest, Le Havre and Marseilles have been supplied with American money and are making exchanges and payments just before embarkation. To do this, $11,286,983 in American money was obtained in France and $12,000,000 from the United States. Further arrangements have been made for the shipment of $10,000,000 monthly from the United States for this purpose.

C-in-C Rept. File: Fld. 318: Report

Signal Corps Activities

HEADQUARTERS, SERVICES OF SUPPLY, A. E. F.,
Tours, France, June 23, 1919.

Colonel E. Russel, the Chief Signal Officer, American Expeditionary Forces, with staff of six officers, six enlisted men and two civilian clerks, sailed from the United States on the Steamship *Baltic* on May 28, 1917, with the headquarters contingent of the American Expeditionary Forces, and arrived in England on June 8, 1917. The headquarters personnel left England on June 13 and arrived in France on the same date. The office of the chief signal officer was opened at 64 Rue la Boetie, Paris, but was moved on July 10, 1917, to 10 Rue Ste-Anne.

The first months in France were spent in making studies of signalling methods as developed by the Allied powers, and in making plans, engineering studies and surveys for lines of communication.

On September 1, 1917, the office of the chief signal officer was removed to Chaumont. An administrative division with a liaison section and an office records section was organized, as well as an intelligence division and an engineering division. The photographic activities were centralized at Paris, and the research and inspection division and the meteorological division were later organized with headquarters at that place. The office at Chaumont was soon increased by the organization of a radio division with a radio intelligence section.

On March 19, 1918, the office of the Chief Signal Officer was moved to Tours and in matters of supply was placed under the jurisdiction of the commanding general, services of supply. By letter of March 14, 1918, from the chief signal officer to Colonel George S. Gibbs, the latter was made assistant chief signal officer with station at G. H. Q., A. E. F. A complete reorganization took place within the office of the office of the Chief Signal Officer, embodying results of experience of the previous nine months and providing for the expansion of activities which were expected to follow during the summer. This reorganization remained intact until November 11, 1918, when slight modifications were made by reason of the new conditions imposed by the Armistice.

FUNCTIONS

The functions of the Signal Corps, American Expeditionary Forces, are defined in General Orders 8 and 25, H. A. E. F., 1917, and in General Orders 30, 31, 48 and 152, G. H. Q., A. E. F., 1918.

The work of the Signal Corps, American Expeditionary Forces, in the carrying out of these orders, had been divided in the main into two classes: First, construction, opera-

tion and maintenance of the general system of communication by telegraph, telephone and radio in the services of supply; second, communication by every practicable means, including carrier pigeons and visual signalling, with and between the units of the fighting forces.

The first of these requirements made necessary the provision of a complete and self-contained network of lines of communication between ports, depots, hospitals, aviation centers, training camps and all other places where units or offices of the American Expeditionary Forces were located. This called for close liaison with French and English authorities, for the making of engineering studies and surveys, and for the construction, installation, maintenance and operation of telegraph, telephone and radio systems analogous to the commercial systems of the United States.

The second requirement is concerned with the provision, equipment and training of signal troops and for their technical control in combat. This function includes transmission of military information of all kinds, and especially communications with respect to the preparation for and conduct of active military operations at the front. It includes the interception of enemy communications, location of enemy radio stations whether on the ground or on airplanes.

Besides serving the entire American Expeditionary Forces with its communication system, the signal corps is responsible for the meteorological and photographic services of the army.

ORGANIZATION

The Signal Corps of the American Expeditionary Forces is under the direction of the Chief Signal Officer, A. E. F. The office of the chief signal officer is located at Headquarters, Services of Supply, and on November 11, 1918, included the following administrative and technical divisions:

Executive
Personnel
Records
Engineering
Telegraph and Telephone
Supplies
Radio
Research and Inspection
Photographic
Special Service

The heads of these divisions are directly under the executive officer. It is the duty of the executive officer to coordinate the work of the divisions of the office with each other and to act for the chief signal officer in the absence of the latter.

The representative of the chief signal officer at General Headquarters, American Expeditionary Forces, is known as the assistant chief signal officer.

The chief signal officer has a representative in each base section, the intermediate and the advance section. This representative is known as the signal officer of his particular section. This officer is responsible for the construction and installation of approved telegraph and telephone lines and their maintenance and operation under the regulations issued by the Chief Signal Officer, A. E. F., as well as for the movement of signal corps supplies in his own section.

Each army, corps and division has a chief signal officer, whose duty is to carry out the technical directions of the Chief Signal Officer, A. E. F. and who is responsible for the technical functioning of the signal corps in his respective unit.

Telegraph Battalions: Telegraph battalions are employed under the section signal officers of the services of supply in the construction and maintenance of telegraph and telephone lines. Two telegraph battalions are attached to each army and one to each corps for similar work in the zone of the advance.

A telegraph battalion consists of 10 officers and 212 soldiers divided into a headquarters and supply detail of 3 officers and 14 soldiers, two companies each having 3 officers and 96 soldiers, and 1 officer and 6 soldiers of attached sanitary troops. It is furnished with motorcycles, trailers and trucks and all the implements and materials for constructing telegraph and telephone lines. Since most of the personnel of these battalions had been engaged on similar work in civil life, no very extensive or special training for them has been necessary, aside from that of a military character.

Field Signal Battalions: Each army, army corps and division, has attached to it a field signal battalion, which functions under the supervision of the respective army, corps or division signal officer. The field signal battalion is especially charged with service at the front. It consists of a headquarters and supply section of 3 officers and 29 soldiers, a wire company of 3 officers and 75 soldiers, a radio company of 3 officers and 75 soldiers, and an outpost company of 5 officers and 280 soldiers, making a total of 14 officers and 459 soldiers.

Pigeon Company: An army pigeon company was created by paragraph 1, Cablegram 1181-S (War Dept. Table of Organization 348, June 18, 1918). The table authorized 9 officers and 324 soldiers. All the personnel previously engaged in this service were incorporated into the company, which served both the First and Second Armies, and after the Armistice has supplied service to the Third Army. Owing to the special nature of this service the personnel had to be very carefully selected from among civilian pigeon fanciers. The personnel had charge of the pigeons in actual use as message carriers and also carried on the breeding and training of pigeons behind the lines.

Radio Section: The technical work of intercepting radio, telephone and T. P. S. communication, securing bearings by which the location of enemy stations could be determined and of forwarding this data to the general staff was performed by the radio section, signal corps. Its organization received the approval of the Commander-in-Chief on July 1, 1918. By G. O. 152, Sec. 111, G. H. Q., A. E. F., Sept. 10, 1918, a radio section was to be provided as part of the army signal troops of each army.

Photographic Detachments: The photographic work with the troops was carried on by detachments of one officer and six men attached with armies or army corps, and by detachments of one officer and two men with each division. These detachments were sent out from the photographic laboratories of the Signal Corps at Paris and formed a part of the headquarters section under the chief signal officer of the unit to which they were attached.

Meteorological Section: The meteorological work of the A. E. F. was done by a meteorological section, whose final authorized strength was 49 officers and 404 men. Most of this personnel was divided among the 33 forecasting and observation stations located at suitable points throughout the zone of advance and the S. O. S.

Signal Corps Service Companies: All Signal Corps enlisted personnel not forming part of tactical organizations was formed into service companies, as first authorized by G. O. 25, Sec. II, Hq., S. O. S., June 24, 1918. There were altogether 16 of these service companies, three of which were located in Paris, the others being at the base ports, supply depots and headquarters.

Signal Corps Training: Under the supervision of the 5th Section of the general staff signal schools were established as part of the Army Schools at Langres, Department of Haute-Marne, France. These signal schools were organized by Colonel Carl F. Hartmann, S. C., in accordance with G. O. 46, Section III, G. H. Q., A. E. F., October 10, 1917.

The first course commenced on December 1, 1917. On June 26, 1918, Colonel W. H. McCornack became director of the schools and continued in this capacity until January 31, 1919, when the schools were closed.

The courses held were as follows:

(1) School for Personnel of Mobile Units - 7 courses
(2) Radio Section Operators School - 6 courses
(3) Candidates School - 5 courses
(4) Special Classes - 4 courses

The total attendance at these schools was 239 officers, 515 candidates and 718 enlisted men. Of the candidates 365 graduated. Owing to the signing of the Armistice the successful candidates at the fifth and last course were recommended for commission instead of being commissioned.

In addition to the army signal schools, signal schools were conducted at the I, II and III Corps Schools at Gondrecourt, Chatillon-sur-Seine and Clamecy, respectively.

Signal Corps Replacement Depot: Pursuant to authority contained in a letter from the Commander-in-Chief to the Commanding General, Services of Supply, a signal corps replacement depot was operated at St-Aignan (Noyers) beginning September 10, 1918, under the direction of Colonel Carl F. Hartmann. Previous to that date the 116th Field Signal Battalion had been used as a reservoir for receiving and distributing signal corps troops. On September 25, 1918, the Commanding General, Services of Supply, approved a project for the removal of this depot from the 1st Depot Division and its establishment as an independent command with headquarters at Cour-Cheverny (Department of Loire-et-Cher), reporting directly to the Commanding General, Services of Supply. On October 7, 1918, the signal corps replacement depot commenced operation at the new location.

The principal function of the depot was the vacational classification of all signal corps personnel, commissioned and enlisted, which passed through the area. Very complete records were made of the qualifications of every man so as to facilitate the replacement of specialists at the front and in the Services of Supply.

Up to February 28, 1919, when the depot ceased to operate, 611 officers and 11,573 enlisted men were handled. Of the enlisted men, 4,043 were returned to the United States, the first group, consisting of men of the meteorological service, leaving on December 11, 1918.

Table Showing Personnel by Months

	Service of the Front		Services of Supply		Total A. E. F.		Number of Battalions in A. E. F.			Service Companies
Month	Officers	Soldiers	Officers	Soldiers	Officers	Soldiers	Field Signal	Telegraph	Depot	
1917 June	No division of personnel before the				13	286	1/3	0	0	0
July	establishment of the Line of				24	310	1/3	0	0	0
Aug.	Communications				43	746	1	2	0	0
Sept.	14	226	63	699	77	925	1	2	0	0
Oct.	27	469	90	915	117	1,384	2	2	0	0
Nov.	40	697	152	1,352	192	2,049	3	3	0	0
Dec.	53	1,394	176	1,818	229	3,212	4	5	1/2	0
1918 Jan.	66	1,832	286	1,839	352	3,671	5	7	1/2	0
Feb.	95	2,600	358	1,974	453	4,574	6	8	1	4
March	134	3,437	383	2,107	517	5,544	7	11	1	4
April	188	4,270	370	2,945	558	7,215	8	13	1	4
May	208	5,440	370	3,669	578	9,109	11	14	1	4
June	404	11,844	378	3,916	782	15,760	24	15	3	4
July	553	16,702	400	4,470	953	21,172	32	18	3	13
Aug.	620	19,087	472	5,099	1,092	24,186	37	18	6	13
Sept.	748	21,760	535	6,399	1,283	28,159	43	21	9	13
Oct.	894	26,967	568	6,071	1,462	33,038	48	22	10	13
Nov.	943	25,882	722	8,384	1,665	34,206	48	26	11	15
Dec.	934	24,374	647	8,643	1,581	33,017	47	24	11	15
1919 Jan.	949	21,025	406	6,927	1,355	27,952	41	20	11	17
Feb.	655	18,095	510	7,067	1,165	25,162	36	19	11	18
March	615	15,124	422	5,995	1,037	21,119	30	14	11	18
April	469	8,609	359	5,759	828	14,368	18	13	11	16
May	241	3,940	320	4,141	561	8,081	7	9	11	14
June	172	3,862	264	2,737	436	6,599	7	5	11	11

The figures given under Service of the Front represent the estimated strength of Signal Corps personnel attached to armies, corps and divisions.

The figures given under Services of Supply represent the estimated strength of all other signal corps personnel not included under Service of the Front.

Depot battalions were disbanded immediately upon arrival and were used to supply personnel for S. O. S. and S. O. F. replacements. The number given is the total number which have arrived in the A. E. F.

SUPPLY SYSTEM

Before Establishment of Services of Supply at Tours

[Extract]

Prior to Arrival in France: Before departure from the United States on May 28, 1917, Brigadier General E. Russel (then Colonel), had been designated as Chief Signal Officer of the American Expeditionary Forces and had surrounded himself with a comparatively small staff of signal officers. These officers had made a study of the probable immediate requirements for Signal Corps material in the A. E. F. and left behind them in the United States requisitions to fill those needs. These requirements were based principally upon the need which then could be foreseen for wire lines of of communication across France and for organization equipment to be used as replacements for the army of 30,000 men at that time in prospect. A small part of this material was loaded on the Steamship *Baltic* which carried the Commander-in-Chief and his staff to Europe. During the short stay en route in England, orders were placed there for machine tools and hand tools for the purpose of equipping a signal corps repair shop in France. From this beginning, which was designed to meet the signal supply needs for a force of 30,000 there developed the organization and supply system to supply an actual force of 2,000,000 at the time of the Armistice with 4,000,000 in prospect.

First Organization in PARIS: Upon arrival in France, headquarters were established in PARIS. The first most pressing demands on the Signal Corps were for means of communication which could be leased rather than supplies. It soon developed, however, that the equipment brought to France by the first troops was not suitable for the character of warfare existing at that time and it was evident that large purchases of signal corps material would be necessary from French markets in order promptly to equip our forces for trench warfare. A supply division was therefore established in the office of the chief signal officer in Paris, and a purchasing and disbursing section was a most important section of that division. At the same time more detailed studies of the needs for wire communication in France were made by the engineering division and it became necessary for the supply division to place further requisitions in the United States for line construction material as well as telephone and telegraph equipment. For the most part, delivery of all organization equipment as well as other place, where it was to be used. Consequently, there was no need for signal corps depots during the first two months of operations in the A. E. F.

I Signal Corps Depot: During the month of August 1917, the first need for a signal corps depot developed. Material was beginning to arrive from the United States as the result of the requisitions which had been left there and it was also considered desirable to accumulate, if possible, a stock of the organization equipment being purchased in France for the purpose of a reserve. After a survey of the probable zone of American field operations, the base ports to be utilized, and the lines of communication between the I Signal Corps Supply Depot was established at Nevers (Nievre), where a suitable warehouse with terminal facilities was rented for the purpose. This point was selected

because of its central location, its situation on the main line of rail communication between base ports and the probable zone of operations, its good terminal facilities, and the favorable labor market in this town of 30,000 people. Following the establishment of this depot, all material received at base ports, as well as that purchased in France which was not needed for immediate issue, was stored there. All requisitions for signal corps material passed through the supply division at Paris and upon approval of the chief signal officer issues were directed from Nevers.

Removal of Headquarters to Chaumont: In September 1917, the Commander-in-Chief with his staff moved from Paris to Chaumont. The supply division was included in this move with the exception of the purchasing and disbursing section which remained at Paris. This section thereafter was directed by the chief signal officer of the line of communications, the latter organization having succeeded General Headquarters at Paris. This arrangement was not ideal, but it was considered most undesirable to remove from Paris the purchasing and disbursing section, since practically all its dealings were confined to departments of the French Government, manufacturers, and individuals located in Paris. The supply division which had removed to Chaumont continued its function of controlling issues from the depot at Nevers.

Concentration of Supply Organization at Nevers: By January 1918, the volume of supply had increased to such an extent that it was difficult to exercise from Chaumont or Paris the necessary control over issues from the depot by reason of the uncertain French postal service. It was concluded, therefore, to concentrate at the depot at Nevers the whole of the supply organization with the exception of the purchasing and disbursing section which remained at Paris, and a representative in the office of the chief signal officer at Chaumont for purposes of liaison. Thereafter, requisitions from all organizations and other institutions went directly to the depot and were disposed of there by the officer in charge, acting under authority of the chief signal officer. Likewise the officer in charge of the depot prepared requisitions both on the United States and the purchasing officer to maintain his stock.

First Advance Supply Depot: In January 1918, an advance signal corps depot was established at Is-sur-Tille. It was designed to meet the demand for a source of signal supply in closer proximity to the organizations in training. A stock was transferred to this depot from Nevers, which included not only organization equipment but such line construction and other signal material as was commonly in use in training areas. This stock at the advance depot was maintained automatically by the depot at Nevers between maximum and minimum limits which were prescribed for each authorized item of stock to be kept there. Issues from the advance depot within the allowances prescribed by tables of equipment were made upon application to the officer in charge of the depot without other authority. Issue of all other material was made from this depot upon direction of the chief signal officer at Chaumont, who was in close touch with the needs for the training areas in that whole locality.

Character of Stock first Accumulated: Prior to March 1918, the greater part of the original requisition left in the United States for line construction material had been received at the depot at Nevers and issued to telegraph battalions engaged in construction work along the line. Frequent additional requisitions had been made to the United States for all classes of signal corps material, but sufficient time had not elapsed for such material to arrive in France by March. At this time the stock at the depot consisted principally of line construction material not yet issued and French organization equipment which had been purchased in France and stored for future issue.

FROM THE ESTABLISHMENT OF THE SERVICES OF SUPPLY TO THE ARMISTICE

Organization at Tours: Early in March 1918, the organization of the Services of Supply for the whole A. E. F. was undertaken, with headquarters at Tours. The Services

of Supply included all staff departments heretofore existing whose functions were primarily supply, those established staff departments whose functions were of a technical nature, and the several technical services which had grown up to fill special needs arising from this war. The signal corps being both a technical and a supply service was included in this organization. The chief signal officer removed from General Headquarters at Chaumont to Headquarters, Services of Supply, at Tours about the middle of March 1918, and organized his force along somewhat different lines and a larger scale than had existed before. The Services of Supply absorbed the hitherto existing organization known as the line of communications, which had removed its headquarters from Paris to Tours only a few weeks previously. Lieut. Col. C. H. Corlett, Signal Corps, was named as director of supplies in this new organization and charged with the responsibility for organizing a supply system on a broad basis. Up to this time the Signal Corps had been occupied primarily in its technical functions, the small number of troops in France having made unnecessary an extensive supply system. It was foreseen that the rapid increase in the fighting forces would demand a proportionate growth in the signal supply system, and it was not too early to organize that system on a proper scale. In order to concentrate control of signal supply, the organization which had been set up at the depot at Nevers was removed to Tours and combined with the supply division there. This left at the depot the usual stock records, returns, etc., but removed the clerical work connected with the handling of requisitions and correspondence pertaining thereto. After this combination, the depot issued nothing except upon direction of the office at Tours and had no responsibility concerning the maintenance of its own stocks.

Requirement and Procurement activities: One of the most evident needs in the new supply organization was seen to be the determination of requirements for signal supply. No supply system could fulfil its functions if the requirements were not foreseen well in advance and with reasonable accuracy. The long distance separating the theater of operations from the source of supply in America made it essential that the requirements be known several months in advance. Even the European market was in such a state of demoralization as the result of three years of war, that it was impossible to obtain deliveries in large quantity of such few items as the market afforded within several months time. The determination of requirements fell into two distinct classes; namely, the requirements for organization equipment, and the requirements for communication systems outside of mobile organizations. The first named of these requirements could be based only upon approved tables of equipment for organizations and the schedule of troop movements to France. Difficulty was encountered in the matter of equipment tables because none existed at this time for units larger than a division, and many of the smaller units which had only recently come into existence were without such approved equipment tables. Likewise there was difficulty in the schedule of troop movements because it changed so rapidly and always to a larger figure. It was necessary, therefore, to include in the estimate for requirements, a large safety factor to care for possible further increases in the troop schedule, as well as for organizations in the embryo state. Among these latter organizations may be mentioned those of the air service and the tank corps whose signal requirements were most important, but were likewise most difficult to foresee. In April, 1918, a careful study was made of signal requirements for organization equipment which included not only initial equipment, but the estimated replacements necessary. The question of replacements was troublesome because our own experience in this war had not been sufficient at this time to show us what replacements would actually be required. The best that could be accomplished in this respect was to use the replacement data which our Allies had collected and which was readily available to us. It turned out, however, that our replacements were very much heavier than those of our Allies, largely due to the fact that the transportation facilities in our own army were so limited that organizations frequently were forced to leave their equipment

behind in changing station. After compiling all the data that could be obtained on the subject of requirements, the results were embodied in two requisitions which were forwarded to the United States by courier in May 1918. One of these requisitions was compiled on a monthly basis with the intent that the stated quantities would be shipped to France each month for an indefinite period. The other requisition was the ordinary lump requisition which was intended to provide us with the necessary reserve stock and to fill urgent needs which existed at that time.

The requirements for communication systems in rear of the armies were determined by the engineering division and made available to the supply division for the purpose of placing the necessary requisitions. The situation in this respect was not so difficult as in the case of organization equipment because the requirements did not follow so closely the troop schedule. Certain lines of communication and certain centers, developed as necessary for a force of comparatively small size, could be continued to serve a much larger force without proportionate increase in the material involved.

The officer in charge of purchasing and disbursing, whose office had been maintained at Paris upon the removal of the Chief Signal Officer to Chaumont, became under this organization a part of the requirement and procurement section of the supply division. He was also made a member of the general purchasing board as the representative of the Signal Corps. This general purchasing board was created to eliminate competition between the various departments of the A. E. F. in their buying in Europe. Although some delay occurred in purchasing through the machinery of this board, the financial savings undoubtedly justified its existence. Moreover there was a disposition shown on the part of the board to allow the Signal Corps a great deal of latitude in its negotiations with French manufacturers, so long as there was no possible competition with other departments.

On account of the insufficient tonnage available for shipments from the United States, it was necessary to canvass the European market very carefully for equivalent material which might be obtained here to meet our requirements. A great deal of the material of this nature was controlled directly by the French Government, as the outgrowth of their previous experience in the war. Consequently, it was necessary to deal mainly with the French Ministry of War in negotiations for such purchases. The largest purchases made by the signal corps in Europe were for radio material which had not yet been developed for quantity production in the United States and for field glasses and watches which likewise could not be obtained in sufficient quantity from the United States. In our negotiations with the ministry of war we were sometimes informed that the particular material we wanted could not be obtained because it did not exist in France. To assure ourselves that this was the true condition, a representative was sent into the manufacturing districts of France to investigate markets and stocks there. In some cases he found just the stocks we were looking for, which had not come under governmental control. Wherever such stocks were found and reported to the ministry of war, authority was given for their purchase, but it required continuous investigation on our own account to locate these possible sources of supply. The metal market was very closely controlled in France, and we were able to obtain hardware needed for line construction work, only by trading iron telephone poles, which we had in stock, to the mills in return for the hardware needed.

Depot Section Activities: The depot section was responsible for the storage and issue of all signal corps material in France, and while en route between base ports and intermediate or advance depots. It exercised control over the stock at all signal corps depots in France, and established a system of records whereby the status of stocks in all depots was a matter of record, not only in the depots concerned but also in the office of the chief signal officer, A. E. F. Daily reports were received from all depots covering changes in the status of stocks and the balances resulting therefrom. Knowing the status of stocks in all depots at any time it was possible to direct issues

on requisitions from the depot where the stock was known to exist. There was no system of monthly or bi-monthly inventories from depots as a basis of issues. Running inventories were maintained at all depots, but only as a check against the daily balances shown on the stock records. Consequently issues were never directed from depots unless the material was shown as available there by the stock records and the confusion arising from back orders and consequent delay was avoided. This system was understood to be unique in the A. E. F. and was commented upon most favorably by representatives of other supply departments at headquarters, S. O. S., who had occasion to examine it. Major C. H. Whitesell, signal corps, was in charge of the depot section from March 1918 to May 1919 and is responsible for much of its success.

At the time the supply division was organized at Tours, only two signal depots were operating, namely the General Depot at Nevers and the Advance Depot at Is-sur-Tille. By June 1918, the volume of material being received at the general depot from base ports and from sources in France was such that congestion resulted there. It was not possible to obtain additional space at Nevers for depot use and it was necessary to look elsewhere for a new depot site. At this time a construction project was under way at Gievres, which was intended as a general storage plant. Arrangements were made to obtain there the open storage space required for the signal corps as well as the necessary covered storage space, and construction was begun in June. As soon as the first building was ready for occupancy, shipments were made there direct from base ports and such shipments to Nevers were terminated. Thereafter both depots functioned as storage and issue depots, but the stock at Nevers was not replenished. In August, 1918, the remaining stock at Nevers was shipped to Gievres and the former depot closed. Thus Gievres became the main signal corps storage and issue depot in France, under the name of Intermediate Signal Corps Supply Depot No. 2. In the summer of 1918, two base depots were established, one at Montoir, near St Nazaire, and the other at St-Sulpice, near Bordeaux. These depots were established to take care of the signal corps supplies received through these ports, but which could not be transported at once to interior depots for lack of rolling stock. Moreover, in many cases the stock at interior depots was sufficient in some respects and deficient in others. It was therefore desirable to have base depots where receipts could be sorted and only these needed at once at interior depots forwarded. In this way, the best use was made of the limited transportation available, congestion was avoided at the interior depots, and two new issue depots were made available to supply the demand for signal material arising in the western part of France.

The following statement of receipts and issues at two of the principal depots are typical of the volume of business transacted during the busiest season:

GIEVRES				
			1918	
	Sept.	Oct.	Nov.	Dec.
Carloads material received	392	279	300	312
Carloads material shipped	246	248	240	24
Less than car lot shipments made	1088	408	180	322
IS-SUR-TILLE				
Carloads material received	121	130	136	89
Carloads material shipped	112	148	81	43
Less than car lot shipments made	200	224	98	7

Channels for Requisitions and Supply: The channels for requisitions and supply were essentially those prescribed by G. O. No. 44, G. H. Q., A. E. F., March 23, 1918. The only essential variation from that scheme was made after unsatisfactory results had been obtained by the method which prescribed approval of requisitions by G-1 of the division and corps and G-4 of the army. It was found that those officers were not in sufficiently close touch with signal corps needs to intelligently pass upon such requisitions. Consequently, an arrangement was perfected between signal officers of divisions, corps and armies, whereby signal requisitions would pass through their offices rather than G-1 and G-4 as prescribed in the order. No attempt was made to prohibit the flow of requisitions through the prescribed channels, but another channel was created which gave so much better results that it was almost universally used thereafter. There were a few cases where requisitions did not receive the approval of the army signal officer and were later submitted successfully through the channel prescribed, but those cases were too few to warrant any serious attempt towards their prohibition.

Repair Shops and Salvage Operations: It has been previously recorded that machine and hand tools were purchased in England by the chief signal officer en route to France, for the equipment of a repair shop. That shop was established at the depot at Nevers about January 1, 1918. This shop was used principally for the repair of apparatus received which had been damaged in transit or for making modifications as recommended by the inspection department. There was no considerable amount of equipment returned from the field for overhauling. When the depot at Nevers was closed, the shop equipment was moved to the depot at Gievres and combined with additional equipment in a larger shop at that place. In connection with this shop, there was also a battery charging plant capable of charging 2,500 portable accumulators of all types at one time. As time went on, this shop at Gievres assumed a greater importance by reason of the continually increasing quantities of signal corps equipment received from the field for overhauling. This was particularly true for the period following the Armistice. The following statement of the value of Signal Corps equipment passing through the shop at Gievres up to March 30, 1919, indicates the volume and importance of those operations at that point:

Item	Total Returned as salvage	Total Orig. Cost of salvaged matl.	Amount of salvaged material repaired	Total Cost repaired matl.
Accumulators	10,000	$300,000.00	5,000	$150,000.00
Buzzers, Service, Model 1914	1,050	39,375.00	1,000	37,500.00
Charging sets	105	73,500.00	100	70,000.00
Chests, tool	60	600.00	57	570.00
Flashlights	1,445	722.50	1,400	700.00
Glasses, field	1,365	40,950.00	1,300	39,000.00
Mis. SC apparatus	9,662		9,200	
Radio pack sets	32	20,480.00	30	19,200.00
Radio sets, misc.	1,261	18,915.00	1,200	18,000.00
Swbds, camp, 40 line	21	8,400.00	15	6,000.00
Swbds, telephone, monocord	210	12,600.00	200	12,000.00
Swbds, telephone, misc.	21	1,890.00	20	1,800.00
Test sets	168	3,360.00	160	3,200.00
Telephones, 1375-B	3,150	84,420.00	3,000	80,400.00
Telephones, field, camp	525	19,030.00	500	17,300.00
Telephones, misc.	630	18,900.00	600	18,000.00
Tools, misc.	1,837	2,296.25	1,750	2,187.50
Wire, misc., feet	7,201,200	108,018.00	7,201,200	108,018.00
Wire carts	60	72,000.00	57	68,400.00

Total value of material received for salvage	$825,456.25
Total value of material repaired and returned to service	652,275.50
Total value of material scrapped	173,180.75

A similar repair shop and charging plant was established at the Advance Depot at Is-sur-Tille in the early part of 1918. This shop, however, was on a smaller scale than the one at Gievres and was finally closed shortly following the Armistice. No shops were maintained at other signal corps depots, although such salvage operations as were possible without the use of machine tools and power equipment were carried on. These operations consisted mainly in the recovery of the various types of wire.

Personnel: The personnel of the supply division, including those at base ports, depots, the disbursing and purchasing section at PARIS and in the office of the Chief Signal Officer, S. O. S., comprised 74 officers, 924 enlisted men and 13 civilian clerks at the time of the Armistice. In addition to this personnel, a considerable quantity of both enlisted and civilian labor was employed intermittently at depots as required.

Depot Capacity

	STORAGE SPACE	
	Covered	**Open**
Signal Corps Advance Depot No. 1, IS-sur-TILLE, Cote d'Or	70,000 Sq. ft.	250,000 Sq. ft.
Signal Corps Intermediate Depot No. 2, GIEVRES, Loir-et-Cher	100,000 " "	600,000 " "
Signal Corps Intermediate Depot No. 3, MONTIERCHAUME, Indre	25,000 " "	0 " "
Signal Corps Base Depot No. 4, MONTOIR, Loire Inferieure	50,000 " "	75,000 " "
Signal Corps Base Depot No. 5, St-SULPICE, Gironde	52,250 " "	75,000 " "
Signal Corps Photographic Depot No. 6, PARIS, France	6,200 " "	0 " "
Signal Corps Radio Depot No. 6, Orly Field, PARIS	2,200 " "	0 " "
Army Park A, Toul, MEURTHE-et-MOSELLE	7,500 " "	40,000 " "
Army Park B, Lieusaint, SEINE-et-MARNE	9,000 " "	12,000 " "
Army Park C, PAROIS, Meuse	8,000 " "	15,000 " "
Total Covered Storage Space	330,150 " "	
Total Open Storage Space		1,067,000 " "

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TELEPHONE AND TELEGRAPH SERVICES

GENERAL

It has been the function of the signal corps to provide adequate facilities for the transmission of communications the nature and importance of which could not be transmitted through the mails or courier system. The means used to the greatest extent in

providing this liaison system were the telephone and the telegraph. The operations consisted of two phases, one for the requirements in connection with the creation and the administration of the machinery for supplying the combat units, and second for the liaison between the command and the adjacent combat units.

The provision of telephone and telegraph service for the American Expeditionary Forces presented a problem of considerable magnitude on account of the location of the combat units with respect to the ports of entry from which they were supplied. The provision of facilities for the general command and administration up to the combat units was based originally on the use of the French system existing at the inception of the American Expeditionary Forces. General conditions known in the office of the Chief Signal Officer of the army at Washington relative to the scope and extent of the French system indicated that certain additional lines would have to be constructed by the American Signal Corps. Accordingly, conferences were held in the office of the Chief Signal Officer of the Army in Washington and a hypothetical net was worked out on which the original orders for materials and apparatus were based.

Upon the arrival of the American command in France the immediate problem was to establish adequate means of telephone and telegraph communication between the units located at Paris and Nevers, the former place being decided as the point of command for the American Expeditionary Forces. The Chief Signal Officer, American Expeditionary Forces, proceeded to establish relations with the French authorities to the end that existing facilities would be used as required, to the extent which they were available.

It developed in the early conference that the long duration of the war with its demands on the Allied manpower and raw materials, and the already heavy traffic on French facilities, would preclude the securing from that system of any considerable portion of the facilities required. Accordingly, tentative plans for the basis of ordering materials and apparatus were completed to cover a flexible and extensive all American system. The American system was designed to supplement and reinforce such facilities as could be secured from the French system. Cordial relations were established with the military and civilian telephone and telegraph authorities of France and England and advantageous arrangements were made in which the American Expeditionary Forces were to be provided with means for telephone and telegraph communication of urgent military importance to the extent that the existing French and British systems would permit.

Comparisons between the continental and the United States standards of telephone and telegraph systems and devices were made and as a result any extension to the existing systems was made on the basis of American standards throughout, employing those items of equipment or apparatus which were standard in American practice and which would involve the least difficulty with respect to manufacture and transportation. Likewise the methods of liaison within the combat units of the French and British armies were minutely studied and standards of equipment and materials were decided which would employ the most efficient means of communication taking into consideration the habits of the American Expeditionary Forces in the use of the telephone and telegraph as a means of liaison. These standards continually have been revised to meet the ever increasing difficulties and changes in conditions.

BEGINNING OF A TELEPHONE AND TELEGRAPH SYSTEM

The French telephone and telegraph system was used exclusively in the early stages. The I Signal Corps telephone office was opened at Paris on June 15, 1917. From June to August small telephone systems were established at the various base ports in France. The I Signal Corps telegraph line to be put into operation in Europe was leased from the French between Paris and Nevers and was equipped with French instruments remodeled by

signal corps personnel for the American type of operation. This telegraph line was opened August 9, 1917. The signal corps system was expanded until offices for telephone and telegraph service were in operation ar the American Headquarters at Paris and Cosne, Vierzon, Dijon, Nantes and Bordeaux. It soon became evident that on account of the limited wire facilities in the French system, the signal corps of the United States army would have to build an extensive system of communication and accordingly plans were formulated for the construction of a pole and wire line from the first base port, St-Nazaire, to the rear of the zone of combat operations which would eventually be occupied by the United States army.

It was foreseen at this time that available signal corps personnel should be brought to France ahead of the combat units to which they would later be assigned. Accordingly requisitions for personnel were placed and the first telegraph battalions arrived in France on August 20, 1917. They were assigned to duty in the construction of the above mentioned line, the initial portion being between Dijon and Gondrecourt. The arrival of additional signal corps personnel and the construction of the necessary facilities over and above those which the signal corps were able to obtain from the French system were completed as rapidly as supplies and available personnel would permit.

The first extensive signal corps telephone exchange was installed in France at the new General Headquarters of the American Expeditionary Forces at Chaumont. It was put in operation on September 1, 1917, and provided services to the various offices as rapidly as they were occupied.

Combat divisions of the American army began to arrive in their divisional training areas in France in the latter part of December 1917. Telephone and telegraph lines were extended to these areas for the purposes of general command and supplies administration. At the same time the liaison nets for training purposes were established within the training areas.

During October 1917, it became evident that the volume of communication between the War Department at Washington and the American Expeditionary Forces was increasing to such an extent that the existing facilities across the English Channel were rapidly becoming inadequate. Accordingly the Chief Signal Officer, American Expeditionary Forces, visited England in November 1917, and perfected arrangements for the laying of a four conductor cable across the channel and for the necessary telephone and telegraph lines in England. Pending the carrying out of these projects, immediate arrangements were made for one telegraph line from London to Paris, where it connected with the already established signal corps system to Chaumont. The signal corps service over this system was inaugurated from Chaumont to London by General Pershing, who sent the first official message, to the American Ambassador at London. The special American cable was laid across the channel and connected to the signal corps office in Paris and London by the leased land lines on February 25, 1918. Arrangements were also made in November 1917, with the Western Union Company under which that company reserved part of their system from London to New York for official American Expeditionary Forces communications, thereby giving direct service between General Headquarters, American Expeditionary Forces, and Washington, D. C.

E. F. M. Cable Service: Shortly after the arrival of the Chief Signal Officer, American Expeditionary Forces, in France, he took steps to organize a cable service at reduced rates for the interchange of communications between members of the American Expeditionary Forces and their relatives and friends in America. Official announcement of this service was made in a memorandum June 17, 1917, Headquarters American Expeditionary Forces, signed by Brigadier General (then Colonel) Russel. On account of cable congestion between London and the United States it was necessary to suspend this service on October 25, 1918.

THE COMPLETED SYSTEM

The completed telephone and telegraph system of the American Expeditionary Forces at the signing of the Armistice consisted of a means of liaison between all units of the American Expeditionary Forces. For purposes of description it may be divided into four parts; namely (1) net for the general command, administration, and services of supply; (2) net for the command, administration, and supply within the combat zone; (3) special net for the transportation service; and (4) net for the United States navy in France.

(1) The net for the general command, administration and services of supply: The meager wire plant available in the French system for the use of the American Expeditionary Forces necessitated the construction of standard American pole and wire lines from General Headquarters at Chaumont to the Headquarters of the Services of Supply at Tours, to the training areas in the vicinity of Chaumont, to the headquarters of the First Army at Couilly, and to the headquarters of the Second Army at Toul. Also, American-built lines were necessary to connect the headquarters of the services of supply with the base ports at Brest, St-Nazaire and Bordeaux, and a second line from Tours to Chaumont by way of Paris. The connection between the headquarters services of supply and the Headquarters of Base Sections Nos. 3, 4, 6 and 7 consisted of lines leased from the British and French civil systems.

The lines built by the Signal Corps were so planned and routed as to provide direct connections with the signal corps system for a large majority of the American Expeditionary Forces units in France. In order to provide adequate service over the leased lines it was necessary to take over from the French civil authorities the maintenance of these lines. The result of this operation was highly successful, but in spite of the careful attention to these lines it has been impossible to secure the high degree of efficiency from them as has been secured from the American constructed lines in France.

At all centers of activities in the American Expeditionary Forces, except the very smallest, local telephone installations were made and telegraph offices were opened. For the very small units connections were made to the long line system where practicable, otherwise connections were made with the French and British civil and military systems.

The plan covering the signal corps system in France has continually had as its basis and fundamental principle that whatever facility was put in it should be of such a character as to provide the greatest amount of service commensurate with the expenditure of material and labor and tonnage required. To this end the lines constructed were so equipped, operated and maintained as to obtain a maximum efficiency. For example, four single wires between Tours and Chaumont were equipped and operated to provide three telephone circuits and 16 telegraph circuits. These practices permitted the utilization of a minimum of tonnage from the United States, and the result throughout has been a flexible system whereby telephone communications over small copper wires have been made possible throughout the American Expeditionary Forces, a result over similar distances not having even been approximated in the French system. For example, the long line system consists of copper wire approximately 2-1/2 mm. in diameter, whereas the longer lines in the French civil system consist of wire approximately twice this diameter.

The latest developments in the art of printing telegraph terminal apparatus have been utilized in the telegraph system. There were two primary considerations in the adoption of this highly useful instrument; namely, (1) that another type of special personnel could be utilized and to that extent reduce the requirements for Morse telegraph operators, the total requirements for which otherwise would have been such as to seriously interfere with the means of communication in the United States which was so

necessary to the prosecution of the war; and (2) it also provided another factor of flexibility in that there were two distinct ways of transmitting telegraphic communications. This type of operation had been installed between Chaumont and London, Chaumont and Tours, Tours and London, Chaumont and Paris, and Tours and Paris. The telegraph operating forces at the points of origin and destination of the larger volume of telegraphic traffic were of the highest type and the most expert operating staffs that have ever been collected. Likewise, in the telephone service women highly trained in switchboard operation were brought from the United States to serve at the larger centers. These women, to a large extent, were able to speak French and this made it possible to secure the maximum efficiency in the combined use of the French and the American systems. Their work had been one of the main factors in the success of the telephone service for the American Expeditionary Forces.

(2) Net for Command, Administration, and Supply in the Combat Zone: The telephone and telegraph net in the combat zone was maintained under the most severe conditions. Due to the customs of the personnel of the American Expeditionary Forces as regards the use of the telephone service for administrative purposes, the nets in the different units had to be of considerable extent. They provided connections from the army command at army headquarters to the command and administration centers throughout the armies to the most advanced posts on the fighting front. These nets in many cases were constructed, operated and maintained under the most trying circumstances. In comparison with the French and the British systems they were the most complete in the Allied forces.

(3) Special Net for the use of the Transportation Service: Special telephone and telegraph lines were equipped and turned over to the Director General Transportation, American Expeditionary Forces, for use in connection with the administration and operation of that department in moving A. E. F. personnel and freight over French railroads. These lines extended from the headquarters of the services of supply to the principal base ports and up to the railheads in the combat zone. Special Signal Corps personnel was detailed to the operation and maintenance of these lines.

(4) Net for the use of the United States Navy in France: For the use of the United States navy a special telephone and telegraph net was provided by the signal corps, United States army, between London and the navy stations along the coast of France. This net was made possible by the use of existing French lines where they could be secured by lease and throughout the other sections by the construction of standard American lines. Local telephone and telegraph systems were installed where required at the larger centers, bases of operation, and observation points extending along the coast of France from Le Havre on the north to Cap Ferret, south of Bordeaux. This system provided an adequate and a most satisfactory means of communication for the United States navy, a fact to which the commanding officers of the navy have attested many times.

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MAIN LINES IN OCCUPIED AREAS, AS OF MARCH 1, 1919

	KM. U. S. Wire	KM. French Wire	KM. German Wire
General Command Net for Interallied Command:			
(a) Battle line to French frontier		928	
(b) French frontier to bridgehead		1,240	
U. S. Army Occupation Circuits:			
(a) Battle line to French frontier	210	807	4,091
(b) French frontier to bridgehead			8,910
	210	2,975	12,001
Grand Total		16, 186 km.	

SIGNAL CORPS POLE AND WIRE PLANT, AS OF OCTOBER 31, 1918

Pole Lines erected:	
(a) Long line	3,200 km.
(b) Local	300 "
	3,500 km.
Wire plant:	
(a) Long line system:	
(1) Wire on poles built by signal corps	45,000 km.
(2) Wire strung by signal corps on French pole lines	5,200 "
(3) Wire leased from French and operated by signal corps	32,800 "
	83,000 km.
(b) Combat lines largely on signal corps pole lines and buried system	62,500 km.
(c) Local lines and cable system	57,000 "
Grand Total	202,500

TELEPHONE SYSTEM, AS OF OCTOBER 31, 1918

Telephone Central Offices:

(a)	Semi-permanent signal corps system	273
(b)	Combat signal corps system	123
	Total	396

Telephone Stations:

(a)	Semi-permanent signal corps system	9,268
(b)	Combat signal corps system	3,064
(c)	On systems other than signal corps but under supervision of signal corps	2,522
	Total	14,854

TELEGRAPH SYSTEM, AS OF OCTOBER 31, 1918

Offices:

(a)	Semi-permanent signal corps system	134
(b)	Combat signal corps system	64
	Total	198

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SIGNAL CORPS IN COMBAT

FUNCTIONS

The function of the signal corps in combat is the provision of wire and radio command communication systems for armies, corps and divisions, the provision of communication by all forms of visual signalling and by carrier pigeons, besides the operation of earth telegraphy, listening stations, intercept stations and gonio stations. It operates a meteorological service and is charged with the making of a photographic record of operations.

The signal corps is responsible for the supply of signal material to its own troops and to all combat organizations in which it is required, including the air service, artillery, tank corps, chemical warfare service and antiaircraft artillery. For this purpose it maintains army parks and corps and division dumps which are supplied from signal corps depots in the services of supply.

The staff of each army, army corps and division includes a chief signal officer who is responsible for the technical functioning of the signal corps in the command.

Each army, army corps and division has attached to it a field signal battalion. Its functions in the division are given in General Orders No. 30, Section VII, G. H. Q., A. E. F., February 15, 1918.

Two telegraph battalions are assigned to each army and one to each corps for the construction and maintenance of wire lines.

The operation of listening stations, intelligence and control intercept stations, and goniometric stations was carried on by a radio intelligence section until the

authorization of the radio section by the Commander-in-Chief on July 1, 1918. This became the army radio section on the organization of the First Army. (G. O. 152, Section III, G. H. Q., A. E. F., Sept. 10, 1918.) With the organization of the Second Army the radio section base was established, absorbing the army radio section, and supplying detachments to each army for the operation of the service.

The pigeon service was, in its final form, operated by an army pigeon company (see pigeon service). Detachments from this company operated with corps and divisions.

The meteorological section of the Signal Corps furnished data to the artillery, air service, chemical warfare service, and to sound ranging units. Observation stations were maintained by the personnel of this service in army and corps areas.

The photographic service supplied photographic detachments to armies, corps and divisions for the record in moving and still pictures of all phases of activity in preparation for and during combat.

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C-in-C Rept. File: Fld. 332: Report

Renting, Requisition, and Claims Service

HEADQUARTERS, SERVICES OF SUPPLY, A. E. F.,
Tours, France, March 7, 1919.

[Extract]

1. Since March 18, 1918, the Renting, Requisition and Claims Service has provided the billeting areas and supervised the quartering of the United States forces in France. It has also, for an equal length of time, had complete charge of the renting, leasing and requisitioning in France of all lands and buildings required for every department of the American E. F. In addition, since April 18, 1918, the date on which the President signed the necessary enabling legislation the Claims Department of this service has investigated, assessed and settled in accordance with the law and practice of the country in question, all the claims of inhabitants of France or any other European country not an enemy or ally of an enemy for injuries to persons or damages to property occasioned by the presence of American military forces.

2. In each phase of its work the R. R. and C. Service has been an important factor in achieving a practical cooperation between the Commander-in-Chief and the governments of the countries in which the expeditionary force has operated. It has had also, especially in France, another duty to perform. Its billeting officers have entered daily the peasant's cottages and the most beautiful chateaux; its Renting and Requisitions Department has dealt with great landed proprietors and with the largest business firms; its Claims Department has adjudicated between the United States Government and more than two thousand French, British and Italian citizens. The manner, therefore, in which the R. R and C. Service had done its work has necessarily had a deep effect upon the popularity today of the American E. F., and on the reputation which it will eventually leave behind it in Europe.

3. The Headquarters of the R. R. and C. Service, which had been under the command of the Commanding General, S. O. S., and has been located at Tours since it was first established, is divided into three distinct departments respectively under the control of the Chief Billeting Officer, * * * the Chief Renting and Requisitions Officer, * * *

and the Chief Claims Officer, * * * all, in turn, under the immediate command of the Director of the R. R. and C. Service, * * * An R. R. and C. Officer attached to the British Claims Commission, an R. R. and C. Officer attached to the Director General of Transportation also report in person to the Director of the R. R. and C. Service.

4. There have been several organizations of the service in the field, but it has been always based upon a progressive system of territorial control and responsibility. France is now divided into an Advance Section, an Intermediate Section, seven base sections, the District of Paris and the Arrondisement of Tours (see attached map and chart). England and Italy also each comprise a base section. On the staff of every section commander is a Section R. R. and C. Officer under whom serve District R. R. and C. Officers, Zone Majors and Town Majors. The Commanding General, S. O. S., under authority conferred upon him by G. O. 78, G. H. Q., A. E. F., has also designated an officer of each division as a Division R. R. and C. Officer. These officers are on the staff of the divisional commander. They, too, have the same jurisdiction as Zone Majors and are regarded as Zone Majors serving with troops.

5. The maximum personnel employed in R. R. and C. work has been: Officers 561; field clerks 45; enlisted men organized into 52 R. R. and C. Companies 1065; civilians employed as clerks and bi-lingual stenographers 55. Approximately 2,200 officers have also acted as Zone and Town Majors.

6. Early in the war the experience of both the British and the French Governments demonstrated the expediency of grouping in one service the billeting, renting and claims departments of the military forces. The experience of the R. R. and C. Service has confirmed the efficiency of this organization, but it has also shown that it is an arrangement which throws heavy responsibilities and a wide variety of duties upon the R. R. and C. Officers in the field. In order, therefore, to equip them better for this work it has been, since July 1918, the aim of the service to bring all R. R. and C. field officers to headquarters for a week of instruction. This instruction has principally consisted in lectures; by officers of the French Mission upon French law and practice, by the Director of the R. R. and C. Service on the organization and operation of the service as a whole, by the chief billeting officer on the problems and procedure of billeting, by the chief renting and requisitions officer upon putting through requisitions and drawing up leases, by the chief claims officer upon the investigation and settlement of claims, especially personal injury and fire claims which have frequently proved complicated and litigious and have in one or two instances involved the formidable sums of more than a million francs.

BILLETING

Billeting may be defined as the location of men, animals and material in houses, factories, stables or any other kind of shelter belonging to private individuals, communes, departments or to the state. The principal function of the Billeting Department of the R. R. and C. Service in to provide for and to supervise the billeting and quartering of United States forces in France (G. O. 50, 1918). The American E. F. has been empowered, under the French law, to exercise in the same manner as the French army, the right to billet and quarter troops upon the inhabitants of France.

It is the duty of the billeting section of the R. R. and C. Service to organize and install all billeting areas for the use of United States troops. This consists of making a careful survey of the area, sending officers into the area to actually secure the billets, billeting troops upon their arrival, keeping proper accounts of all billets occupied, preparing the billeting distribution list, seeing that they are forwarded to the proper disbursing officers for settlement and, finally, when an area is no longer

desired, seeing that R. R. and C. activities in the area are properly completed, the inhabitants satisfied, and all claims for billets settled.

Per G-1, S. O. S., September 5, 1918, a Renting, Requisitions and Claims Company, Army Service Corps, is allotted for each divisional and training area, and has a total strength of 45. Its personnel is composed of: 5 commissioned officers (to be attached unless commissioned in the army service corps), 11 noncommissioned officers, 10 privates first class, and 19 privates. The 5 commissioned officers consist of one captain who acts as a zone major, and 4 lieutenants who act as assistants to the zone major. The 11 noncommissioned officers are: 4 sergeants, one of whom is designated as interpreter, 2 as billet wardens, one as a stenographer; and 7 corporals, who act as clerks and billet wardens. 10 privates first class act as billet wardens, and 19 privates should be carpenters able to make small repairs * * *

The following procedure is adhered to in preparing a billeting area:

The Chief Billeting Officer is notified through G-4, S. O. S., that a billeting area has been designated and a board convened for the purpose of making a reconnaissance of this area. The board then proceeds to the designated area and remains during a stated period of time in the execution of its duty. A general description of the area under consideration is drawn up under various headings and a billeting survey for each town recommended as suitable or billeting is made on printed forms, the board simply filling in statements under the various printed subject heads. A map 1/200,000 or 80,000 of the area to be studied is attached, all of the towns covered or referred to by the billeting surveys being underscored. A proposed plan of installment, with list of cantonments is also furnished for all organizations of the unit for which the area is selected. On the basis of a tentative plan the actual number of billets required in each town is stated. A detailed description of storage for the Quartermaster Corps and the ordnance is made and a report of hospital facilities, giving capacity, location and address is given. A report is also drawn up on all unloading points, and railheads, the capacity and the condition of all sidings, the entraining and detraining points for troops with the capacity of sidings and the time allowed for their use. A station list designates the nearest station to all towns.

The Town Major on entering a commune receives from the Mayor, or draws up with the Mayor's help, a billeting list. He then visits, with the mayor himself or some municipal official designated by the Mayor, every potential billet. Each billet is marked by chalk with a serial number. The number of officers, men and horses that can be lodged there is also chalked on the front door and the billet is located by its serial number on the Town Major's communal map.

The American Expeditionary Forces have had at their disposal at one time or another in France 127 areas. Of these 37 were never completely organized or occupied which means that 90 areas have at one time or another been surveyed, organized and occupied by United States forces. These areas have been classified as follows:

Infantry divisional training areas
Field artillery training areas
Organization and training centers
Replacement depots
School areas
Rest camps and embarkation centers

The size and extent of an area depends entirely upon the purpose for which it is intended to use it, i. e., for an infantry divisional training area, field artillery area, replacement depot, etc., The average infantry divisional training area has a capacity of approximately 1,200 officers and 30,000 men, and comprises usually about 30 communes.

Since the organization of the R. R. and C. Service, more than 1,500,000 American troops have been billeted in France and the payments for these billets have aggregated more than 42,000,000 francs.

RENTING AND REQUISITIONING

On August 28, 1917, General Pershing, by letter requested the benefits of the law of military requisition. On November 17, 1917, *Le Sous-Secretaire d'Etat de l'Administration Generale de l'Armee* granted in a letter to General Pershing to the American E. F. the right of military requisition with certain limitations.

From the date, however, of the arrival in France of American troops the French military authorities have requisitioned property on behalf of the United States Forces.

On February 13, 1918, *Le President du Conseil Ministre de la Guerre,* by letter, requested of General Pershing the appointment of American officers to negotiate with Colonel Peria, the French Controller, for the purpose of establishing an American organization to settle indemnities for all requisitions theretofore made and to take care of current requisitions. This letter was referred to General Kernen, C. G., S. O. S. Major Klein was detailed from G. H. Q. for the purpose of assisting in the organization of this service and was sent to the British General Headquarters to make a study of the system in use there. Upon his return to Hq. S. O. S., and after discussion and consideration of the proposed organization with Colonel John A. Hull, Judge Advocate, Major Hugh A. Bayne, J. A., and Major Arthur D. Hill, J. A., a plan was submitted on March 19, 1918, for the proposed organization of a requisition and renting commission. This proposal was formally submitted by General Kernan to Colonel Hull, Judge Advocate, on March 20, 1918, for recommendation and return. On March 21, 1918, Colonel Hull returned the papers with an indorsement recommending approval of the plan. Thereupon the papers were forwarded by General Kernan to the C-in-C, recommending that the proposed order be published with the exception that the title of requisition and renting commission should be changed to renting and claims commission and that the requisition service and the claims commission should be combined in one service (exc. 6 and 7)

At G. H. Q., A. E. F., the matter was again thoroughly discussed and considered by General W. A. Bethel, J. A., Col. Hull, Major Klein and Major Burkham and also by the French Controller, Colonel Peria and Major Michel-Levy of the French Mission representing the French Government. On March 30, 1918, G. O. 50 was issued by G. H. Q., A. E. F.

The renting for the American E. F., until the organization of the R. R. and C. Service, was done mostly by representatives of the Quartermaster's Department, in the Zone of the Army, Major E. E. Davis being in charge and Major Woodruff Leeming in the S. O. S. The Engineers, Medical Service, Service of Utilities and the Aviation Service also had representatives functioning in the matter of leases and rental agreements. It was for the purpose of coordinating this work and centralizing responsibility that the subject of renting was included as one of the functions of the R. R. and C. Service.

The Renting Department of the R. R. and C. Service has been in charge of the acquisition of all American E. F. installations in France since the R. R. and C. Service was organized in March 1918. It is also endeavoring to regularize the occupation of properties acquired before the organization of the service.

In the case of requisitions, the procedure has always been to endeavor first to leave the required property, and, if it proved impossible to lease it, then to request that it be requisitioned by the French authorities for the American army. The possibility of occupying the country by amicable agreement is always exhausted before resorting to the right of requisition.

A form of lease in both French and English is employed. (See R. R. and C. forms) This form is acceptable to the American E. F. authorities and was drawn up with a view to

protecting the interests of the United States Government. It has also been approved by the French War Department and all the French regional authorities are furnished with copies of this form and are instructed to assist in the protection of the American E. F. Furthermore, an agreement has been executed with the French authorities whereby all public property of the French Government occupied by the American E. F., was to be held rent free.

The work done by the Renting Department for the Medical Department is an instance of the large transactions involved in acquiring installations for the whole American E. F. Prior to the signing of the Armistice, accommodations for more than 300,000 hospital beds had been acquired including the acquisition of 83 hotels at Vichy and all the important hotels embraced in the "Riviera Hospitalization Project."

An average of twenty-five of the largest hotels and buildings were acquired at: Chatel Guyon, Royat, La Bourboule, Mont Dore, Vittel, Contrexeville, La Baule, Quiberon, Pouges-les-Eaux, and Paris.

In Blois, Bordeaux, Lyon, Pau and Lourdes important buildings have been acquired.

Large tracts of land for hospital and construction purposes were also taken over for the American E. F. at: Savenay, Mars, Mesves, Beaune, Allerey, Reignac, Montoir, La Souge and Avoine.

The Renting and Requisition Department is charged with the acquisition of all lands and buildings in France for all services. This includes warehouses, remount stations, salvage depots, etc., for the Quartermaster Department; Aviation Fields and Schools for the Air Service; locations for Engineer Projects, Motor Transportation Service and D. G. T.; prison enclosures, and schools for the P. M.; ammunition dumps and depots for the ordnance, locations for the signal corps, as well as all quarters, training fields, rifle ranges, artillery firing fields, headquarters and office buildings, etc.

The following figures are taken from a report dated February 26, 1919.

(a)	Total number of leases as per annexed schedule	3,584
(b)	Total cancellations	795
(c)	Total monthly rental	Frs. 2,559,543.59

The Requisition Department has acquired for the American E. F., large tracts of land, e. g., at: Gievres, Montoir, Bassens, St-Sulpice, Talmont, Pont Nuzion, Is-sur-Tille, Chateau-Roux, and the large artillery instruction centers.

It is the function of this branch of the service, not only to acquire such properties by requisition, in order to authorize their occupation and use, but also to assist the French authorities in the preparation of the preliminary requisition papers, such as the Requisition Order, *Etat-des-Lieux and Plan Parcellaise.* This department also fixes the amount to which each individual property owner and tenant is entitled for property destroyed, crops damaged and loss of occupancy. In the settlement of our large projects, the number of owners and tenants interested, frequently number between two to fifteen thousand. The claim of each must be settled and there is no appeal for a property owner or tenant against the American Government from the allowance fixed by the R. R. and C. Representative.

The service is not only charged with negotiations relating to price and settlement thereof, but also with the preparation, execution and distribution of leases and the preparation and execution of *Etat-des-Lieux* at the time of the commencement of the American E. F. occupancy (very frequently a detailed statement of more than 100 pages), at the conclusion of American occupancy the service is again responsible for the preparation and execution of *Etat-des-Degradation and Constatation of Damages* and the investigation and settlement of all claims for damages arising out of occupancy of real properties. A claim for damages is usually made on the surrender of each installation and very frequently, especially in the case of large hotels or buildings, the amount claimed aggregated hundreds of thousands of francs. In order to protect the interests of the

American E. F., a unified system of values of lands, properties, building materials, crops, etc., has been prepared and a corps of experts has been organized and is in effective operation.

The Renting and Requisition Department has acquired installations for the American E. F., in more than 70 departments in France, its functions involving the acquisition of public properties as well as private properties. In doing this work it has been the aim of the department to protect the interests of the United States and at the same time to arouse in no way the ill-will of the tenants and owners of the property.

The representatives of this department, on the surrender of installations on which the American E. F. have made improvements that the French Government desires to take over, prepare, in conjunction with French officers, the *Etat-des-Remise*, showing the damage done to the property by the American forces, and negotiate and agree upon the value thereof. They also make an inventory of improvements made by the American E. F. and come to an agreement with the designated French officers as to the percentage of depreciation of such improvements.

In addition, representatives of this service are assisting officials of the United States Naval Forces in France in the disposition and settlement of installations originally acquired for the naval forces in France.

The work of this department is now being organized along the same line in Luxembourg, Belgium and Holland. * * *

CLAIMS

The preliminary basic studies on the question of claims in Europe against the United States Government for injury to persons and damages to property through the acts and omissions of members of the American military forces were made by Brigadier General Walter A. Bethel, Judge Advocate, A. E. F., assisted by Lieut. Colonel Robert Burkham, who made a thorough study of the British and French procedure.

In view of the French law and practice, which permit recourse against the state for the acts of its servants, it was realized that many such claims would grow out of the presence in France of a large American Expeditionary Force. At the same time there was no legal provision by which the American Government could give compensation for tortious acts committed by military or other officials.

On June 22, 1917, the Judge Advocate, A. E. F., submitted a memorandum to the chief of staff on the subject of "Claims by the inhabitants of France for damages caused by the American Military Forces." In this memorandum the necessary enabling legislation was recommended to preserve the good name of the United States and to prevent its military operations from being hampered by the ill-will or lack of confidence of the French population. This suggestion was in accordance with the action of the British Government which, although the English law regarding the nonliability of the sovereign is the same as that which prevails in the United States, had accommodated itself to the French customs by establishing at G. H. Q., B. E. F., a claims commission.

This report was approved by the Commander-in-Chief and on June 23, 1917, it was forwarded to The Adjutant General of the Army with the earnest recommendation that the proposed legislation be enacted as early as possible. No legislation, however, was enacted and by November 1917, a number of claims had accumulated and the French authorities began to make representations as to the need of some action. On December 4, 1917, therefore, the opinion of the Assistant Comptroller of the Treasury, who has just arrived in France, was sought as to whether or not under the special circumstances of the case payments for damages caused by American troops in France could not be made. On January 3, 1918, the Assistant Comptroller of the treasury rendered an opinion to the

Commander-in-Chief holding that there was no legal method by which the Government of the United States could pay these claims.

On January 14, 1918, the Judge Advocate, A. E. F., again addressed the Commander-in-Chief on the subject of claims recommending that a cable be sent to The Adjutant General of the Army urgently calling his attention to the necessity of legislation on the subject. The cable as suggested was sent on January 18, 1918. On March 22, 1918, General Pershing again cabled the War Department asking to be informed "what progress had been made in the enactment of legislation authorizing the settlement of claims." On April 8, 1918, another cablegram on this matter was addressed by the Commander-in-Chief to the War Department. It read in part, "pending claims have become so urgent that the French Government suggests that it might indemnify claimants with a view to reimbursement by the United States."

On April 14, 1918, the War Department replied that the act had passed the House on April 8 and the Senate on April 9 and only awaited the President's signature. On April 18, 1918, the President approved the bill which reads as follows:

AN ACT TO GIVE INDEMNITY FOR DAMAGES CAUSED BY AMERICAN FORCES ABROAD

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, that claims of inhabitants of France or of any other European country not an enemy or ally of an enemy for damages caused by American military forces may be presented to any officer designated by the President and when approved by such an officer shall be paid under regulations made by the secretary of War.

Section 2. That claims under this statute shall not be approved unless they would be payable according to law or practice governing the military forces of the country in which they occur.

Section 3. That hereafter appropriations for the incidental expenses of the Quartermaster Corps shall be available for paying the claims herein described.

Section 4. That this statute does not supersede other modes of indemnity now in existence and does not diminish responsibility of any member of the military forces to the persons injured or to the United States.

The term claim has been held to include all demands originating in injuries to persons or real or personal property as well as demands based upon the unauthorized taking or use of either real or personal property. The act relates only to "claims of inhabitants of France or of any other European country not an enemy or an ally of an enemy," but business, charitable or educational corporations domiciled in France have been held to be an inhabitant of France within the meaning of the law. The Government of France, however, is not an inhabitant and claims made by it have not been included within the act. The Assistant Comptroller, however, has ruled that a commune is an inhabitant of France, within the meaning of the act and cases of damages to communal property have therefore been paid.

On May 25, 1918, General Order 78, G. H. Q., A. E. F., was issued. The effect of this order is to vest exclusive jurisdiction on claims for damages to property or injuries to persons in the Claims Department of the Renting, Requisitions and Claims Service. The Claims Department in exercising this jurisdiction has investigated up to March 1, 1919, approximately 25,000 cases out of which a total of 13,882 live damage claims were received and acted upon.

In the main these claims are for losses sustained through damage done by troops to buildings in which they were billeted, for thefts and other wrongful acts committed by

United States soldiers, for fires in premises occupied by troops, and for automobile accidents resulting in injury to persons and property.

An R. R. and C. Officer in the field was originally precluded, under the provisions of G. O. 22, S. O. S., from settling claims involving; injuries to persons, damages caused by A. E. F. vehicles, damages caused by fire, claims involving a consideration of whether or not the damage was due to an act of war. If the claim did not belong to one of these excepted classes it could be settled by a zone major up to 250 francs and by a Section R. R. and C. Officer up to 500 francs. However, in January, 1919, G. O. 22, S. O. S., was amended to give Section R. R. and C. officers and zone majors authority to settle all classes of claims within their jurisdictional limitation.

But the fact the Congress had provided for the payment out of public funds of claims for damages caused by American military forces has not in the words of the act superseded other modes of indemnity now in existence nor diminished the responsibility of any member of the military forces to the persons injured or to the United States. The Claims Department consequently has not been able to pay any claim in which it was practicable for the injured party to secure redress through the 105th A. W. One of the duties, therefore, of the department has been to pass upon the practicability of the 105th A. W. and to serve as an office of record for all claims paid under its provisions.

In all, that is both under the act and 105th Article of War, 843.202.51 francs have been disbursed. Of this sum there has been paid out under the Act 714.412.92 francs, and under the 105th A. W. 128,789.59 francs. These payments represent 12,324 disposed of claims. Of these 7,121 were miscellaneous, 2,716 for damages to billets by troops occupying them, 2,401 automobile accidents and other personal injury cases, 86 fire claims. Out of the total number of disposed of cases 7,238 were paid, 2,868 were rejected, 842 were settled by the army making repairs on the spot, and 1,376 by payments made by troops.

In addition there are pending today a number of large claims. One claim, still the subject of investigation and evaluation, involves more than 2,000,000. francs. It is for damages caused by a forest fire near Bordeaux which it is alleged was started by American artillery practice firing at Camp de Souge.

The following statistics of receipts, dispositions and payments illustrate in further detail the work of the department.

RECEIPTS

	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.
Total No. of claims	610	1535	2094	1725	1706	2509	3703
Total No. of possibles	420	595	470	451	637	569	415
Total No. of claims and possibles	1030	2130	2564	2176	2343	3078	4118

DISPOSITIONS

	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.
Cases settled under act	154	871	1123	970	1116	1313	1691
Cases settled under A. W. 105	30	87	174	111	188	166	620
Cases settled by repairs	16	82	100	113	160	283	88
Total cases settled	200	1040	1397	1194	1464	1762	2399
Total cases denied	45	191	354	412	409	620	836
Withdrawals consolidation, etc.							334
Total	245	1231	1751	1607	1873	2382	3569

(a) Voluntary payments by troops included for first time in this report.

The first aim of the Claims Department is, and always has been, the doing of justice, in an orderly and legal manner. This has also meant at the same time a large saving of public funds. The following figures, taken from the report for February 1919, show the relation between the claims presented to the department and the total sum awarded in payments:

February 1919

PAYMENTS

Month	Act.	105th A. W.	Total
August	14,662.78	3,554.57	18,217.35
September	84,376.92	6,099.45	90,476.37
October	88,153.18	9,917.41	98,070.59
November	109,760.02	6,453.89	116,213.91
December	123,383.46	18,690.91	142,074.37
January	147,356.24	17,612.23	164,968.47
February	146,720.32	66,461.13 (a)	213,181.45
Total	714,412.92	128,789.59	843,202.51

	Paid	Claimed
Headquarters	18,862.70	98,481.75
Field	127,857.62	388,260.86
A. W. 105	66,461.13	94,461.43
	213,017.80	531,204.04

The work of the department is not limited to adjuticating damages caused by members of the army. By virtue of a decision of the Assistant Controller of the Treasury in France and of arrangements made with the naval authorities it also investigates, assesses, and settles many claims against the navy and a naval officer is attached to headquarters.

The decisions of the Claims Department are final. No machinery for appeals from its rulings has been established. The courts of France are not open to persons who assert claims against the American army or government.

From the beginning the question of claims has proved a delicate and difficult problem. When the authority to make payments was finally obtained the department was laced with many unsettled liabilities and impatient claimants. Units had scattered; evidence was difficult to collect. The moral responsibilities were wide. The legal restrictions were binding - American public funds, disbursed by American officers in accordance with French, English and Italian law.

War Risk Insurance

HEADQUARTERS SERVICES OF SUPPLY, A. E. F.,
Tours, France.

The War Risk Section was created by General Order No. 5, G. H. Q., American E. F., dated January 7, 1918. Its primary function was to administer throughout the American E. F. the operations of the War Risk Act, passed by Congress on October 26, 1917, entailing the execution of insurance applications and requests for allotments and allowances. The volume of work involved in carrying out the provisions of the War Risk Act throughout the American army resulted, according to latest reports, in the writing of nearly forty billions of dollars worth of insurance and the execution of nearly four million applications for allotments and allowances. A large part of this work was accomplished by the War Risk Section.

An office had been established in November 1917, by Captain S. H. Wolfe, at No. 1, Rue des Italiens, Paris, under authority of G. O. No. 56, G. H. Q., November 8, 1917. Assisting Captain Wolfe were eight officers and some fifteen enlisted men. They were seriously handicapped by insufficient information regarding the act and regulations, lack of equipment, inadequate office accommodations and insufficient personnel.

Without blanks and in fact without even having received a copy of the act this small group of officers and men secured nearly one hundred million dollars worth of insurance, principally over the counter at Paris headquarters, and disseminated information on a wide scale among the soldiers of their rights and privileges under the War Risk Act. Blanks were improvised and printed in Paris for this purpose.

In the meantime an overseas detachment was organized in Washington under the direction of Major Willard D. Straight, A. G., composed principally of men who had been especially trained at the Bureau of War Risk Insurance for this particular work.

The detachment arrived in Europe on Christmas Eve, 1917, and by New Year's Day plans were completed for the organization of the War Risk Section. General Order No. 5, G. H. Q., January 7, 1918, which created the War Risk Section as a branch of the L. of C., provided that the section would have general supervision and direction of all war risk operation and personnel throughout the American E. F. It provided for a field force known as the Advance Group to be attached to the Headquarters Advance Section, the personnel of which was to cover operations of the War Risk Section in all the various units in the zone of advance and limiting the permanent personnel of this force to two officers and eight enlisted men per combat division. The order also provided for the establishment of a branch office at the headquarters of each replacement and base division and at Headquarters, Base Section No. 3, London, limiting personnel at each branch office to two officers and eight enlisted men. The headquarters office of the War Risk Section in addition to performing its supervisory function was also charged with all war risk operations in the L. of C., with special troops on detached service and with forces not specifically provided for. The organization and maintenance of all branch offices and field forces, as well as their general direction was vested in the Chief, War Risk Section. Major Willard D. Straight, A. G., was assigned to duty as chief, and instructed to report to the Commanding General, L. of C., for duty.

The operations of the War Risk Section were further directed by Section 2, Pars. 1 and 2, General Order No. 25, G. H. Q., February 9, 1918, which provided for the issuance to the American E. F. of all instructions and information in regard to war risk operations in the form of war risk circulars prepared by the War Risk Section and issued by

the Commanding General, L. of C. The order also provided that upon the arrival of divisions in France the officers and enlisted men constituting the war risk personnel should be detached from division headquarters when the division was assigned as a combat division and directed them to report to the Chief, War Risk Section, for duty.

More than 100,000 soldiers were in France and England at the time Major Straight's detachment arrived. The Act required that all insurance on these men must be written before February 12, 1918. These soldiers were quartered in hundreds of small towns scattered throughout the whole of France. The weather was bad and transportation diffculties seemed insuperable. He immediately organized field parties and as army transportation was not immediately available, he secured automobile transportation from the Red Cross and other assistance from the Y. M. C. A. for the distribution of war risk forms and literature. By February 12 these field parties had succeeded in reaching all of the units at that time forming the American E. F. In less than six weeks this little party working in the midst of winter in a strange land and under most difficult conditions succeeded in interviewing personally every organization and in writing nearly one billion dollars of insurance. In spite of all the difficulties confronting them the average amount of insurance per man and the percentage of the men who took out policies constituted a record which has not been equaled in the U. S. or in the A. E. F. Many organizations insured to 100% and in the majority of instances to over 90% of their strength. The average policy per man insured was nearly $9,000. The field parties also supervised the execution of Allotment Forms 1-B giving information as to dependents, for all enlisted men in the American E. F.

Despite the fact that every officer and man of the American E. F. was given ample opportunity to secure insurance was being written on the lives of soldiers who were arriving in the American E. F. Apparently the fact that they were getting nearer the scene of action and also having experienced the hazard of crossing the ocean and the danger of submarines made them more conscious of the value of this government war risk insurance.

In order to give every soldier a chance to increase his insurance to the maximum amount, war risk officers were stationed at Bordeaux, La Pallice, St-Nazaire, Brest, Cherbourg, Le Havre, Southhampton, Winchester, Romsey, and Liverpool. These stations covered practically every entrance whereby soldiers arrived from the United States, and with the cooperation of the debarkation and rest camp authorities it was possible, personally, to interview every soldier arriving in Europe whose eligibility period had not expired and who had not taken out the maximum amount of insurance prior to leaving the States. There were comparatively few soldiers arriving who had been in the service less than 120 days (period of eligibility for taking out insurance) and who had not taken out the full $10,000. In spite of this fact nearly one-half billion dollars of insurance was written at the base ports and at rest camps by the war risk personnel, composed in most cases of but one officer and one or two men at each station. It was only by close checking and following up of all eligible soldiers from camp to camp that this was accomplished. For example: A convoy arriving at Liverpool would be met at the docks by a war risk officer who would secure at once from the organization commanders a list of all men still eligible for insurance and who had not taken out the maximum amount. The troops would be marched at once to Knotty Ash Rest Camp near Liverpool and were scheduled to leave there the following morning at six o'clock. All night long the war risk personnel at Knotty Ash Camp would be interviewing soldiers whose names appeared on the list secured that day. In many cases it was found impossible to complete the task. However, the organizations were scheduled to arrive the following night at Winchester or Romsey Rest Camps and telegraphic lists of all men or organizations not already covered were sent at once to the war risk officers at these camps. When the organizations arrived the war risk officer was ready to write up the balance of the men. If the organizations embarked before he could finish his task the same

shuttle-cock system was worked and immediately after their departure advice was received by wire by war risk officer at Le Havre or Cherbourg, for which points troops leaving Southhampton usually embarked. It was very seldom indeed, that any soldier entitled to additional insurance was not given full opportunity to avail himself of his privilege. It sometimes happened that large replacement units arrived direct at points in France and were sent immediately to replacement depots without sufficient time being given at port of debarkation for the war risk officer to operate. In such cases the war risk officer stationed at replacement and casual depots performed the same function, thus preventing any soldier from claiming after his eligibility had expired, that he had not had the opportunity given him in France to take out the full amount of insurance.

Major Straight having been ordered to the Staff College for duty, Major Henry D. Lindsley was placed in command of the section as chief on February 15, 1918.

Because of an Act of Congress, which extended the time during which officers and enlisted men of the American E. F. could apply for the maximum amount of insurance, was authorized, the new date being set for April 12, 1918, another campaign was organized, in order that the entire personnel of the American E. F., which at that time had increased considerably, should be covered and given every opportunity to benefit to the fullest extent by the provisions of the War Risk Act. Field parties were again organized and put in charge of competent officers and enlisted men in order that all units wherever located might be reached and the proper opportunity given them to benefit to the fullest extent by the provisions of the War Risk Act.

Between the date of February 12, 1918, and April 12, 1918, there was written, principally on newly arrived organizations, approximately $232,288,500 additional insurance, making a total of $1,233,400,000 insurance written in the American E. F. by the War Risk Section to that date.

The writing of this insurance was, of course, only a part of the work. The administrative headquarters organization of the War Risk Section, though seriously handicapped by lack of trained personnel, was gradually being perfected at Tours, where the headquarters was installed early in March. Four main departments were organized: Allotment Department, in charge of First Lieutenant Ernest Angle and later Captain John W. Barton; Insurance Department, in charge of Captain S. Z. Rothschild; Legal Department, in charge of Major William J. Mack, and Correspondence Department, in charge of Captain Leon L. Lewis. The rapid growth in the volume of business passing through the War Risk Section made it necessary to secure much larger personnel than that which had been originally planned and strenuous efforts were made to secure properly fitted men to replace those who had been transferred out on the completion of the first insurance campaign in February. Some additional officers and men were sent from the U. S. and others were secured from the casual depot at Blois, but for several months the section was constantly operating under the handicap of insufficient personnel. To some extent this difficulty was alleviated by the employment of French civilians of whom there were at one time about eighty employed at headquarters offices. Up until October, however, there was at no time more than 150 officers and men stationed at headquarters of the War Risk Section. This small organization handled all correspondence passing between members of the American E. F. and the Bureau of War Risk Insurance, which by order of General Headquarters were not sent through military channels but were mailed direct from the organizations to the War Risk Section and from the bureau to the section.

On July 1, 1918 a very important amendment to the War Risk Act became effective, doing away with the complicated system of figuring allotments according to the size of family and amount of soldier's pay, and stipulated that from July 1 all compulsory allotments would be in the sum of $15, irrespective of amount of allotment or amount of the soldier's pay, and that all voluntary allotments were allowances were claimed and

properly payable would be in the same amount, except where there was a combination of compulsory and voluntary allotment in which case the latter was fixed at $5 per month. This amendment which was intended to simplify the work of the organization commanders and of the bureau and to facilitate prompt and accurate payment of allotments and allowances constituted such a violent change from previous practice and procedure throughout the American E. F. that for a while the whole work of the war risk personnel in the field in the American E. F. was concentrated on disseminating the information of the new procedure and untangling the mix-ups which had occurred as a result of improper understanding of the amendment by the organization commanders. A new field force was therefore established consisting of war risk officers known as Travelling Adjusters, who went from regiment to regiment and division to division explaining the new provisions of the act and straightening out all difficulties in the administration which they encountered. In addition articles were prepared, and published from time to time in the Stars and Stripes, explaining matters about which there seemed to be more or less general misunderstanding. Frequent bulletins and general orders were issued from G. H. Q. and war risk circulars published from time to time explaining every problem which arose. Because of dissatisfaction both at home and in the American E. F., as a result of delay in payment of government allotments and allowances to the soldiers' dependents and allottees, G. O. No. 127, G. H. Q., dated August 21, 1918, was issued requiring a thorough canvass and checking of all war risk allotment records throughout the American E. F. and personal interviews with all men whose allotments were not being paid. As a result of this order there were received at headquarters of the War Risk Section, several thousand complaints of nonreceipt of the allotment and government allowance and this section was able to render much valuable service to the Bureau of War Risk Insurance in adjusting cases of delayed payments, refunds to soldier of amounts improperly deducted from his pay, and cases where soldier had made claim for exemption from payment of compulsory allotment and had been charged over a period of many months for the amount of the allotment pending report from the bureau of action taken.

Early in November, 1918, Colonel Henry D. Lindsley returned to the United States in order to make a special report to the War Department and to the War Risk Insurance Bureau on a number of very important war risk matters affecting the American E. F.

Shortly after arrival in the United States, Colonel Lindsley was appointed Director of the Bureau of War Risk Insurance, being immediately discharged from the army to accept this new position.

Immediately upon assuming his duties as director he placed Captain Barton, who had been in charge of the Allotment Department of the War Risk Section, in charge of a special division in the bureau to adjust outstanding overseas complaints and at the time of the Armistice these were being rapidly settled.

A great deal of correspondence from soldiers' dependent relatives living in England and Italy made it necessary, early in October, 1918, to establish branch offices at London and Rome. The chief effort in these countries was to provide temporary relief to the thousands of dependents residing in those countries who for some reason or other had not received their checks from the bureau. Arrangements were made with the American Red Cross whereby on recommendation of war risk officer stationed at London loans were made to these dependents pending receipt of allotment check. In Rome the branch office operated in close liaison with the *Italian Commisariato d'Immigratione.* The chief function of the war risk officers in this connection in both Italy and England was to ascertain whether an allotment had in fact been made by the soldier and in the event it had not been so made to endeavor to persuade him to provide for the support of his dependents. In England the war risk officer also advised the Red Cross when checks were finally received and assisted in collecting from the allottees the advances made. Great credit is due the American Red Cross for the painstaking, unselfish work done by the local chapters in investigating claims and in alleviating much suffering that would

otherwise have occurred. American Consuls and their wives also assisted notably in this branch of the work, especially in Ireland.

Although the field work of the section which during the entire period of its operation secured $1,620,438,000 of insurance and assisted in execution of 200,000 Forms 1-B stands out as the sensational feature of war risk operation in the American E. F., the real value of the section consisted in the tremendous mass of routine work which the section took off the shoulders of the Adjutants throughout the army. This routine correspondence reached stupendous totals as the army in France became rapidly larger. For example: The daily mail reached as high an average as 12,000 letters a day. The allotment department alone checked and forwarded to Washington over 200,000 Forms 1-B and the work of the insurance department was in like proportion. Owing to the removal of all war risk records to Washington complete figures of work done up to November 11, 1918, are not available but it is known that from April 12 to August 10, 1918, this section handled 146,503 outgoing and 63,324 incoming pieces of mail. It distributed to various organizations of the American E. F. 460,000 insurance and allotment blanks. Its allotment department handled 137,679 individual papers. Its insurance department handled 163,072 individual papers. There were filed with its records department 568,775 documents. Nor was August 10, 1918, the high water mark. The volume of correspondence relative to the adjustment of family allotments and government allowances and changes in insurance showed rapid increase in proportion to the augmentation in the number of troops in the American E. F. From August 10 each week showed an increase in volume of correspondence of more than 15% over that of the preceding week.

Though under ordinary circumstances the signing of the Armistice would have made but little difference in the work of the War Risk Section, the peculiar situation existing in the affairs of the Bureau of War Risk Insurance, the resignation of officials previously in charge at Washington; the selection of the Chief of War Risk Section as a new director of the bureau and the necessity of providing for him in reorganizing the bureau and adjusting the thousands of cases of complaints which had arisen, personnel thoroughly familiar with the practical operation of the War Risk Act in the army organization, made it desirable that the director should have with him in Washington the officers and men who had been working under his direction in the American E. F. and that the records accumulated at Tours by that personnel be shipped to Washington and consolidated with the records of the bureau. Plans were there perfected as soon as the Armistice went into force to return all records of the War Risk Section to the bureau and to transfer as much of the personnel as could be spared to Washington for duty in the bureau. Major Geo. V. Triplett, Jr., as Chief of the War Risk Section, after the Armistice, proceeded to wind up the work of the War Risk Section in the American E. F.

General Purchasing Agent

HEADQUARTERS, SERVICES OF SUPPLY, A. E. F.,
Paris, France, February 28, 1919.

From: The General Purchasing Agent and Chairman of the General Purchasing Board, American E. F.

To: Major General James G. Harbord, Commanding General, Services of Supply, American E. F.

[Extract]

In compliance with your instructions I submit a report of the activities of the General Purchasing Agent and the General Purchasing Board of the American Expeditionary Forces, covering the period from the beginning of operations to the present time. Preceding the report and as indicating the viewpoint from which it is proper to consider the operations reported in their relation to the supply situation in Europe and in the United States during the war, the following observations are pertinent.

From the middle of June 1917, when the work of the A. E. F. in France was inaugurated, until December 31, 1918 (the Armistice having been declared November 11, 1918), is approximately eighteen months. The detailed tonnage figures attached hereto, which have been continuously and carefully estimated, show that during that period approximately 10,000,000 ship tons (40 cu. fit. equals one ship ton) of material were acquired in Europe for the use and maintenance of the American Army, being approximately 555,000 ship tons of material per month. This material was secured on the continent and in England through the operations of the General Purchasing Board and the General Purchasing Agent under the supervision and with the cooperation of the Allies, France and Great Britain. The record of trans-Atlantic shipments from the United States to our army show that during these eighteen months to December 31, 1918, it was only possible to send to the A. E. F. 7,675,410 ship tons or 426,000 ship tons per month, based upon army transport figures showing an average of 56.43 cu. ft. per 2,000 lbs. received from the United States. Owing to the lack of ships during the first seven months of the existence of the A. E. F. in France, from June to December 1917, inclusive, a period when it was charged with the necessity of founding a base and line of communications in such a way as not only to provide for current arrivals but the eventual care of an army of millions, only 484,550 ship tons were directly received from trans-Atlantic shipment. It is a commentary not only upon the supply emergency under which the A. E. F. continually labored, but as well upon the splendid effort to alleviate that condition made by the War Department, that during the thirty days preceding the Armistice nearly twice as much material was shipped to the A. E. F. from America as it received from there during the entire first seven months of its existence. From June 1917 to May 1918, inclusive, the first year, the A. E. F. received from America 2,156,238 ship tons of supplies. From June 1, 1918, to the declaring of the Armistice, five months and eleven days, it received from America 4,059,695 ship tons. It will be noted that the success of the shipping program in the United States was such that in the last five months preceding the Armistice nearly twice as much tonnage was shipped from America to the A. E. F. as had been shipped the entire preceding year.

In military and industrial efforts in the A. E. F. there were occasional failures as there were in the United States. Mistakes occurred here and there, as always in a great and complex enterprise, but to the observing officers of the A. E. F. experiencing analogous difficulties in their own work of war preparation, the gathering of the American army, the industrial devotion to military preparation once the war was declared, and the efforts of the different departments of the government, all challenged the highest admiration. No matter how great or how successful were the activities in military preparation of the domestic industries and governmental departments of the United States, so long as ships were lacking, the A. E. F. could not be largely supplied from across the ocean. The efforts put forth by the United States in the shipbuilding program, with results just beginning to be greatly felt at the close of the war, coupled with the other great efforts in preparation for a long war, made the United States potentially the most powerful military nation on earth and so recognized. The greatness of scope in its undertakings and the immensity of the field requiring coordination made inevitable a certain delay before our nation reached its real military stride. History will probably show, when our home achievements in military preparation are compared with those made by any other nation during the first twenty months of the war, considering our condition of preliminary unpreparedness, that our record has been surpassed by no other nation, and the Armistice date on which the war ended should not justly be allowed to obscure the results obtained because they could not all be in evidence at the front. The knowledge of their existence, however, had a tremendous effect at the front. This preparation and potential power of our nation was at once the rock upon which a stronger morale of our noble Allies was based, and upon which the morale of Germany broke. To the A. E. F. in France was given an environment in which its efforts could be more immediately felt along the actual fighting front. More tonnage was not sent from America for the use of the army because the ships did not exist with which to transport it.

But war once entered upon, conscription having been immediately put into effect, a national program of industrial and financial devotion to the purposes of war adopted, including absolutely essential financial aid to our Allies, our nation succeeded in its greatest supply effort beside which all others seem small and from which directly resulted Allied victory, the supply to France of over two million soldiers, than whom no finer or braver body of troops ever existed. The world has not seen in its history such a quick organization and transfer to a field of conflict over such a distance of a force such as was gathered in the United States under the supervision of the War Department during the last two years.

In the emergency situation constantly confronting the supply officers of the A. E. F. it was a source of regret from every standpoint that greater recourse to American products in supplying our army could not be had, but there were not sufficient ships to make such a course possible. Operations were primarily governed by military exigencies. Charged with the conviction however that the first question of importance at all times in order to gain victory was the provisioning, arming, maintaining and caring for American troops in the fighting line, the supply procurement service of the A. E. F. while subordinating ordinary business considerations to this question of proper supply, endeavored at the same time to apply as safeguards the checks, regulations and restrictions of normal business organization where these did not involve a diminution in supplies of first military emergency.

The record of the A. E. F. up to the date of the Armistice, November 11, shows that it had sufficient supplies to enable it to exist and function. It was not over-supplied. The fact alone that the American Nation was operating under a program proposed by the Commander-in-Chief and ratified by the government, providing for the existance of an

army in France by June 1919 of four million men, alone justifies every possible purchase of supplies and material which were secured in Europe for the purpose of saving tonnage from America. The supply requirements of the A. E. F. at all times preceding the Armistice, based upon the four million man program, were so enormous that the question of whether or not these men could have been supplied by the utmost exertion, both in Europe and in the United States, was a matter of such doubt that in resolving it in the affirmative last June, when he determined that so far as he could accomplish it the war should be brought to its climax in the fall, the Commander-in-Chief made the most vital, dangerous, important and successful decision of his entire military career.

The strenuous activity of the supply procurement agencies of the A. E. F. from their very inception, in seeking European sources of supply proved of invaluable assistance when at the crisis of the war military exigency demanded the heavier use of Allied shipping to transport men from America at the expense of supply shipments. At the time of the Armistice on November 11, 1918, Germany beaten to her knees threw up her hands in unconditional surrender. Up to that very time in view of the four million man program, the General Purchasing Agent and the General Purchasing Board were bending every energy toward supply procurement in Europe so as to make possible its completion. In demanding this program on the part of the United States none realized so well as the Commander-in-Chief the risk which he took in connection with ship shortage in the coming months, considering the enormous increase in the demand for supplies incident to the accession in France of several hundred thousand troops per month. With that foresight and caution which he always combines with energy and courageous decision, he called into conference with him in June, 1918, the heads of the services, including the General Purchasing Agent, and explained the overwhelming necessity for the most strenuous supply procurement, construction and transportation efforts in Europe if the American program, which he regarded as absolutely essential to an early victory be successfully carried out.

From the higher standpoint of history, when truth and justice are not befogged by partisan, personal or business considerations, the question which will be considered is not for instance whether the lack of ships prevented the A. E. F. from properly patronizing American business institutions in securing so much of its necessary supply in Europe but whether notwithstanding its great effort to secure supplies from Europe it had sufficient on hand and under arrangement at the date of the Armistice, to have enabled the American government, if the war had continued, to carry out the four million man program by June, 1919, without having troops in the line improperly fed, clothed and armed. The Commander-in-Chief, the Commanding General, Services of Supply, concurring, decided that with his supply organization functioning as it was in the A. E. F. and with the great and successful efforts being made by the War Department to supply an increasing number of ships, there would result the accomplishment of this almost superhuman task. Notwithstanding the inevitable and natural criticism incident to the close of any war, every patriotic and right-thinking American may find great pride in the thought that the American war preparation, of which the A. E. F. was but a part, in spite of mistakes which were inevitable and experiments which often failed, considered as a whole and measured not only by results but by the methods insuring them will stand in history both from a military and business aspect as one of the greatest organized efforts ever put forth by any nation.

The General Purchasing Agent therefore in presenting the following report and with full realization of its public import, submits these observations with it, hoping to induce in its consideration by others that high perspective gained only by keeping in mind the great preponderating and continuing element of military necessity and emergency involved in all procurement matters of the A. E. F. from the smallest to the largest transaction. Whatever success has resulted from the efforts of the General Purchasing

Agent and the General Purchasing Board has come because they have never lost sight of the military aspect of supply procurement while they endeavored to apply as far as consistent with this fact every available device of normal business organization designed to prevent competition, in buying check extravagance and safeguard honesty.

These supply procurement activities are not properly to be considered from the primary standpoint of the obligations and conventional methods of ordinary commercial transactions. Had the General Purchasing Agent retarded the supplying of military needs in an endeavor to fully comply with the checks and safeguards of normal business, he and his board would properly have been swept out of existence within a month. At the same time he feels that the record of this office and this following report will show that every effort was made to apply these safeguards where it could be done without interfering with matters of military exigency.

In the consideration of the question whether or not the A. E. F. should buy articles in Europe or requisition them from the United States, the probable time which would be consumed by securing them from the United States by requisition was a most important element. Probably many articles could have been more cheaply procured in the United States even taking into consideration the high cost of freight to France if it had been possible to wait the requisite time for ship tonnage to carry them. The question of priorities and relative necessities in the matter of use of the limited tonnage was such that the advisability of purchases in the United States as distinguished from purchases in Europe was controlled by the continuing tonnage emergency.

GENERAL PURCHASING BOARD AND GENERAL PURCHASING AGENT, A. E. F.

The plan for the creation of the Office of the General Purchasing Agent and the General Purchasing Board was conceived by General Pershing, Commander-in-Chief, American Expeditionary Forces. In general it may be stated that the department of the administrative staff under the General Purchasing Agent was the result of a supply emergency existing at the time its creation, which has continued throughout America's participation in the war. The plan originated by General Pershing to cope with the chaotic conditions first existing in the matter of supply requirements of our army in France, resulting from the independent action of the separate services, owed much to its eventual effectiveness to its simplicity. Foreseeing the necessity for the continued extension of central authority in supply procurement, General Pershing did not attempt in the first order constituting the G. P. A. and the G. P. B. to fully define their duties. As is often the case in the unusual environment created by war, the establishment in any new organization which functions satisfactorily results naturally in an increase of authority and jurisdiction extending far beyond the original purposes for which it was created. In this particular case, the G. P. A. was designed at first to be simply a coordinator of purchases. He did not possess, nor has he exercised, the power of direct purchase, but his power of direction and veto over the purchasing activities of the army and his contact with the chiefs of the purchasing services and our Allies, resulted in the evolution in him of large powers over the general policy of supply procurement.

Coincident with the assumption of the power of coordination, he inaugurated under the direction of the Commander-in-Chief, in order to save trans-Atlantic tonnage, a system to supplement the supply procurement activities of the independent services in Europe and superimposed this organization upon the separate services in such a way as to expedite rather than interfere with their functioning.

The fact that the G P. A. was the only executive officer of the Administrative Staff, with headquarters for the most part in Paris, resulted in his being us d by the C-in-C and the C. G., S. O. S. as their agent in Allied inter-army and intergovernmental supply negotiation. Again, from time to time, the arising of acute emergencies

in connection with the affairs of the army led to the placing upon him of certain specific tasks by the C-in-C and the C. G., S. O. S., because his juxtaposition to the authorities of the French and English governments facilitated interallied negotiations by him in Paris as compared with the inconvenience of negotiation at Chaumont and Tours. So peculiarly has the work of the Office of the G. P. A. and the G. P. B. been the result of emergencies created by the new conditions of interallied military endeavor, that since the signing of the Armistice its demobilization has been proceeding rapidly. Its whole system was, in effect, a device superimposed upon the regular army organization.

Attached to this report of the G. P. A. are the separate reports made to him by the chief purchasing officers of the services and the chiefs of the bureaus of his office, comprising his organization. Instructions by the G. P. A. to the chiefs of the bureaus in his office were given to confine their reports to the smallest limit consistent with giving an idea of the general scope and accomplishments of their respective work. Since the prime responsibility for the consummation of purchase transactions is with the independent services, subject only for coordination purposes to the control of the G. P. A., the record of aggregate financial transactions and the details of purchases properly rest in the files of the respective services of the army. The compilation of these will probably be contained in the report of the Chief Finance Officer of the A. E. F. Such references to costs as are made in the reports filed herewith are only designated to throw light upon the general procurement effort of the A. E. F. The reports attached hereto of the officers assigned to the G. P. A. are manifestly a better source of information for the details of the operation of his office than a recapitulation of them by the G. P. A., who will therefore largely confine himself to general statements. Since the business of the G. P. A. under the emergencies of war was in a constant state of evolution and readjustment certain organizations were formed and operated for a time by the G. P. A. which were afterwards transferred to other jurisdictions. In such cases a report from the organizations are included among the attached reports and indicate the time of their transfer to other authority. This is the case with the report of the labor organization which was formed by the G. P. A., under G. O. 5, S. of R., March 4, 1918, and carried on by him until September 1, 1918, when it was transferred to the Army Service Corps. Likewise, upon the organization of the Finance Section of the A. E. F., the Board of Contracts and Adjustments, established by the G. P. A., February 14, 1918, was transferred to the Chief Finance Officer in December 1918; as was also the Bureau of Accounts and the Financial Requisition Officer created under the G. P. A., July 12, 1918.

It is the desire of the G. P. A. in this general report to make clearly evident the fact of the importance in the success of supply procurement in Europe of the continued existence of the right of independent purchase by the different services subject to coordination by his central authority. Without the authoritative pressure direct and without delegation from those at the point of necessity upon those responsible for the satisfaction of the need, which was secured by a coordinated system of purchase by the different services, the supply results of the A. E. F. could not have been accomplished. While in the results showing tonnage purchased by the independent services as represented on the G. P. B. there are included such supplies as were brought to the attention of the separate services by the superimposed organization of the G. P. A. in neutral and Allied European countries, yet the bulk of these supplies would have been secured without the assistance of the organization of the G. P. A., although at higher prices and under greater difficulties. In other words, in the judgment of the G. P. A. the important element in the success of the American army in France in supplying itself was the pressure put by the independent chiefs of the services upon their own supply agents in their efforts to carry out the military procurement program imposed upon the chiefs by

the C-in-C and supplemented by the pressure of the G. P. A. and the C. G., S. O. S. The designation in orders of the Chairman of the G. P. B. as the G. P. A. of the A. E. F. makes it all the more important for him in this report as a matter of plain justice to again emphasize the fact that all purchases were consummated by the independent services and not by himself as an individual officer. The results obtained were through the members of the G. P. B. representing the independent services, supplemented, expedited and coordinated by the superimposed organization of the G. P. A. As a matter of fact, when General Pershing, acting in an environment of acute emergency, conceived and created the G. P. B. and the Office of the G. P. A. he established an interdependency and mutuality of interest in an effort for a common result which made close cooperation and complete understanding on the part of both necessary to success on the part of either.

The G. P. A. therefore names here some of the different chiefs of the independent purchasing services reporting to him as members of the G. P. B. at different times as the ones in his judgement largely responsible for the trans-Atlantic tonnage saved through purchases in Europe.

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The following is a classification of the authority and functions of the G. P. A. and the G. P. B.

First, Coordination of Purchases: The supply division of the A. E. F. being composed of eight independent services, each possessing its own appropriation from Congress and authority to make purchases for its own department, General Pershing, in order to coordinate the procurement activities in Europe of these independent bodies, in G. O. 23, G. H. Q., August 20, 1917 (attached hereto as an appendix), established in Paris a General Purchasing Board composed of eight independent offices of the independent services and appointed as Chairman of the Board the General Purchasing Agent to whom these officers reported for duty. As emphasized before, the G. P. A. possessed no authority to make purchases under the law, but exercised the power of control and veto of purchases, and to this effect all orders before being placed by the different purchasing departments of the A. E. F. were required to be submitted to the G. P. A. for approval. The G. P. A. was likewise designated as the representative of the C-in-C in liaison with the various Allied governments and purchasing agencies in matters involving economic and other questions of supply and labor.

Second, Supplemental Organization of G. P. A. to Increase Procurement of Supplies in Europe: In addition to the control and approval of purchases, the G. P. A. was also charged with the work of locating supplies in Europe with a view to saving tonnage from the United States. Upon the first day of his appointment he commenced the formation of this organization. Under it he maintained representatives in France, Great Britain, Spain, Portugal, Italy and Switzerland, through whom passed all purchases made by the A. E. F. in those countries and to whom all purchasing officers of the A. E. F. reported when assigned to those countries for procurement. These representatives worked in close cooperation with the chief purchasing officers of the Allied countries and with our diplomatic agents and representatives of the War Trade Board, and in this manner were able to secure supplies which in many cases would otherwise have been unobtainable. Their duties were also to furnish reports of available supplies, copies of the forward requirements of the A. E. F. having been furnished them as rapidly as possible as a basis upon which to figure requirements in advance of the receipt of requisitions. Purchases were made by these representatives only on orders from the chiefs of the various services forwarded to them with approval through the Office of the G. P. A. These representatives of the G. P. A. were designated as General Purchasing Agents for

the respective countries in which they were located, with the exception of France, and an organization partly military and partly civilian in each country built up under them. The agency in Great Britain was established by General William Lassiter a short time prior to the appointment of the G. P. A., and this organization was transferred to the jurisdiction of the G. P. A. In the Allied countries the representatives of the G. P. A. dealt with the representatives of the governments, and orders were handled in conformity with the regulations and agreements imposed by the governments, both as regarded requisitions upon the governments and purchases in the open market. In neutral countries purchases of supplies and commodities for which export permits were obtainable were made from individuals and firms.

The G. P. A. sent experts to adjoining countries to investigate the textile industry, the question of raw materials, timber. lumber, horses and mules, tinned food supply shipping facilities, etc. His representatives in conference with the officials of the *Ministere de l'Armement*, through the *Comite Technique Permanent d'Etudes Franco-Americanies*, studied the industrial situation in France in relation to the question of importing raw materials for manufacturing in France with the object of saving tonnage from the United States and utilizing the available local labor. These efforts met with considerable success in connection with the manufacture from tin plate and from other raw material, cylindrical and other bulky articles.

As a result of the efforts of the G. P. A. and the G. P. B. under the above two classifications of duties, and with the cooperation of the French and British governments, there were secured up to the date of the Armistice for the American army in Europe, as before stated, approximately ten million ship tons of material and supplies.

Third, Bureau of Foreign Agencies: Supervision and control of orders sent to foreign countries was effected not only through the purchasing agents for the different countries, but through the Bureau of Foreign Agencies in the Office of the G. P. A., which was charged with the direction and supervision of European purchasing agencies outside of France. * * *

Fourth, Purchase by Category Department: In order to more effectively and intelligently control purchases, to prevent competition between services and to secure the business advantages incident to large transactions, the G. P. A. initiated and secured the promulgation of G. O. 41, S. O. S., of September 2, 1918, establishing categories of supplies used by more than one service and authorizing the G. P. A. with the approval of the C. G., S. O. S. to designate specific services to purchase such supplies for all other departments. Under this arrangement only one department of the A. E. F. was authorized to secure any one class of supplies, except in case of extreme emergency, when the purchase was required to be certified by some responsible purchasing officer. * * *

Prior to the establishment by order of the machinery for categorical purchases and under the pressure of a great emergency in connection with machine tools, since the lack of ships prevented the shipment of tools from the United States for almost one full year, the G. P. A., in the early period of the existence of the A. E. F., established a Machine Tool Section in his office, which, under the authority of the Q. M. C., located, negotiated and distributed among the supply services of the A. E. F. for the equipment of repair shops, all machine tools obtainable in Allied and neutral countries. Prior to September 1, when the Machine Tool Section was transferred to the Ordnance Department, more than 5,000 machine tools were procured and transferred by that Section of his office. This work, initiated in November 1917, at the suggestion of Lt. Col. Drake, saved, in the judgment of the G. P. A., the mechanical situation of the A. E. F. It was these machine tools which enabled the A. E. F. to repair the damaged Belgian locomotives secured by the G. P. A. as a cession from the Belgian government, which not only resulted in a large saving of tonnage but furnished the A. E. F. with absolutely essential locomotive power impossible at the time to be obtained elsewhere. The G. P. A. also en-

deavored from time to time to secure the interchange of surplus stocks of materials between the different departments, and in other ways to induce the heads of the independent services to think in terms of the army as a whole instead of in terms of eight separate services. Even when purchases by category were effected the division of stocks into the eight separate custodianships of the different services resulted in a failure to secure the most economical use of existing supply.

When one service, through foresight and in order to carry out its program of accomplishment, was possessed of a surplus of supplies which could be diverted to the satisfaction of the acute necessities of another service, the machinery of transfer was extremely cumbersome and the opposition to its exercise on the part of the heads of the services extremely embarrassing.

Fifth, Statistical Bureau: The rapid development of the need for procuring supplies in Europe in order to save tonnage from the United States necessitated the creation of a bureau for collecting, classifying and analyzing the requirements of the supply departments of the A. E. F. The Statistical Bureau was established on December 3, 1917. * * * To this bureau was assigned the work of collecting and compiling, on the basis of the forecasts issued by the supply departments, information regarding material procurable in France and adjoining European countries. The bureau likewise maintained a record of all purchase orders which passed through the Office of the G. P. A. and, upon the establishment of the Metal Control Bureau, of the metals consumed in filling such orders.

Preparation of Supply Forecasts of the A. E. F.: As has been before stated, the work of organization of the C. P. A.'s Office and the G. P. B was progressive. While early appreciation was had of the objects which it was desirable to obtain in the way of coordination with the French and the English governments and of the activities of our own supply services, the army was handicapped in its early stages by a great lack of personnel accompanied by a constantly expanding program of supply procurement. It was very difficult to secure the preparation of the quarterly forecasts of the requirements of the army outside of the forecasts relative to food and clothing. The estimate of future requirements for construction purposes was especially difficult, as construction programs were constantly being enlarged or altered. However, by constant cooperation between the services and the G. P. A. the quarterly forecasts became progressively more fixed. * * *

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Sixth, Bureau of Purchase Program and Classification: After the promulgation of G. O. 41, S. O. S., the work in connection with forecasts of requirements and purchase classifications rendered advisable withdrawing this work from the Statistical Bureau and creating a special bureau to handle it.

For carrying out the supervision of the category system of purchasing, provided for in paragraph 3 of G. O. No. 41, Hq., S. O. S., September 2, 1918, the Bureau of Purchase Program and Classification was established in the Office of the G. P. A. and was further charged with the supervision of the compilation and classification of consolidated lists of requirements as shown on the quarterly forecasts of the supply services of the A.E.F The duties of the bureau comprised likewise the recording of data and information obtained from the Allied governments and from purchasing officers in Europe regarding available supplies in Europe and the standardization of descriptions of supplies requisitioned by the A. E. F., for the purpose of compiling a supply catalogue including the names and types of similar articles used by the French and British armies.

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Seventh, Control Bureau: Through the Control Bureau, Office of the G. P. A., passed for approval all purchase orders and requisitions upon the Allied governments, with the exception of certain small local purchases made by supply officers outside of Paris. An examination of orders was made by this bureau with the object of preventing competition between departments for the limited quantities of merchandise available, and the consequent payment of unduly increased prices. Through this bureau was maintained a liaison with the French Mission established in the headquarters of the G. P. A., under which the approval of the French government was given to all transactions save those involving very small amounts, and in this way gave French governmental protection to the A. E. F. against the payment of exorbitant prices. No requests for purchases by the A.E.F. were authorized by the French government at prices higher than those actually paid by that government for similar material, except in very rare eases of special emergency. When the prices asked seemed exorbitant to the French Government it would itself requisition the material at the fair price and turn it over in the form of a concession to the A. E. F. Under this arrangement no purchase exceeding the amount of five thousand francs could be made by the A. E. F. without the approval of the French Government.

Eighth, Wood Section (under Control Bureau): The supervision and correlation of all purchases of lumber and lumber products in Continental Europe having been delegated to the G. P. A. by G. O. No. 8, S. O. S., of April 8, 1918, this bureau was established for the control of wood procurement both in the open market and through, and with the collaboration of, the French and other Allied purchasing and distributing agencies. A liaison service was organized between the Wood Section and the *Inspection Generale des Bois* (Wood Service) of the Ministry of Armament. * * *

Ninth, Metal Control Bureau (under Control Bureau): At the request of the Ministry of Armament, based upon the fact that the purchasing departments of the A. E. F. had been steadily exceeding, through their purchases in France, the monthly allotment of metals assigned to the use of the A. E. F. by the Metallurgical Section of the Ministry of Armament, the Metal Control Bureau was organized on June 28, 1918. The duties of the bureau comprised the examination and approval of all purchases of metal goods and equipment, both with regard to weight of metal and prices, as well as the preparation, for transmission to the United States, or orders for metal for distribution among all departments to meet their manufacturing needs in France. A liaison service was organized between the bureau and the Inspection des Forges, of the French Ministry of Armament.

Tenth, Central Printing Office (under Control Bureau): The difficulty of procuring the large quantities of printed matter and stationery necessary for the various departments of the American E. F. and the rapidly increasing prices of such work occassioned by constant canvassing of the market by purchasing departments, brought about the establishment on December 1, 1917, under the G. P. A. of a central printing plant. This plant handled a large percentage of the printed matter for the various staff departments. It was transferred, by recommendation of the General Purchasing Agent, on October 21, 1918, to the Chief Quartermaster.

Eleventh, Procurement of Civilian Manual Labor for A E. F.: The responsibility for the procurement, organization, transportation, maintenance and discipline of civilian manual labor in Europe for the A. E. F. (other than labor procured locally through the French regional authorities) having been delegated by G. O. No. 5, Hq. Service of the Rear, March 4, 1918, to the General Purchasing Agent, the Labor Bureau was established and the G. P. A. was designated as the sole agent through whom negotiations with the French authorities in relation to such labor should be conducted. The bureau was operated as a subdivision of the G. P. A. until it was transferred on September 1, 1918, by G. O. No. 38, Hq. S. O. S. to the Army Service Corps.

The recruiting of civilian labor under G. H. Q. was found impracticable since G.H.Q. was removed from first contract with the labor supply, and for the reason that all

labor contracts required careful coordination with and supervision by, the French government. At the time this work was started an acute need for civilian labor existed in the A. E. F. So great was the pressure of the necessity for construction work along the Line of Communications that combat troops needed at the front were engaged in large numbers in manual labor. The labor organization was under the necessity of furnishing men immediately. * * * The French government rendered invaluable assistance in the work, and through negotiation with them as well as by the quick institution of labor recruiting agencies throughout Europe, the labor organization was enabled to furnish men almost as fast as they could be used. In the very early stages of the labor organization the demand for labor was such that men were furnished in advance of thorough organization into labor units, but the situation was rapidly adjusted, and during the months preceding June, 1918, the labor organization furnished sufficient men to release for the early and important American offensive efforts, a number of combat troops equal to a full division. Upwards of 1,300 commissioned and noncommissioned officers were detailed to the Labor Bureau of the G. P. A. in connection with the militarizing and organizing of civilian labor. With the cooperation of the State Department, and as a result of visit to Italy by Lt. Col. Cutcheon of the staff of the G. P. A., 3,500 miliarized laborers were received from that country. A Women's Division of Labor Bureau was established. After the first heavy pressure for workmen in the first six months had been relieved by the bureau and the civilian labor properly organized, the C. P. A. recommended that the control of the labor organization be transferred more directly to the S. O. S. and incorporated in the Army Service Corps. On September 1, 1918, the G. P. A. transferred to the Army Service Corps the control of the organization consisting at that time of over 29,000 employees properly officered and organized. Among the nationalities employed were French, Spanish, Portuguese, Italian, Belgian, Greek, North African, Senegalese, Chinese, and Maltese. Great credit should be given to the officers of the Labor Bureau for their energetic and intelligent work. Many difficult situations arose which were successfully adjusted, and a high degree of organization was effected. From September 1 to November 11, under the jurisdiction of the Army Service Corps, the Labor Battalions were so increased that at the time of the Armistice the total number of laborers, men and women, employed by the labor corps was 42,000. Including replacements, the total number of laborers procured up to this time was over 85,000. * * *

The procurement of labor presented the same difficulties as the procurement of supplies. There was a great dearth of manpower in Europe owing to the large armies maintained by the Allies. The character of the labor secured was often poor and the sources of supply widely scattered, and in many cases difficult of access. Constant questions involving the domestic labor policy of France, local labor laws and customs were before the G. P. A. and labor organization for adjustment and settlement.

The form of the organization which was devised for handling labor was determined by contact with an actual situation. At the time it was initiated the need of immediate labor relief was so acute that we were ordered not to halt recruiting pending the detail to us of sufficient officers to promptly handle it and the assignment of central depots for its assortment and intelligent distribution. This of necessity involved the bureau in temporary embarrassment in connection with post commanders when it at first sent labor to them improperly organized, but this difficulty soon vanished as officers were furnished us to more completely man the battalions. The fundamental principle underlying the whole system was a central responsibility for recruiting, care, transportation, maintenance and discipline. One reason for this central responsibility was because the French demanded an organization which they could hold to account for the keeping of the agreements which in recruiting all labor it was necessary for the A. E. F. to make with the French government. It was also necessary from many other standpoints. The exist-

ence of an independent central control was not only not inconsistent with the military system as organized, but essential to its proper working. The organization was charged with the duty of keeping the labor battalions in the requisite condition to do their work when during the hours of labor they were turned over to the local military authorities. * * *

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Twelfth, Technical Board: In order to coordinate, develop and utilize to the fullest extent the electrical power facilities in France, and to control the procurement in Europe of supplies and equipment which are component parts of power plants, the Technical Board was created as a subdivision of the Office of the G. P. A. by G. O. No. 8, S. O. S., April 8, 1918. To this board were assigned experienced electrical engineer officers, who maintained close contact with the electrical power requirements of the A. E. F. and with the available facilities throughout France, and were able to give comprehensive advice to the construction forces on all matters pertaining to light and power.

The Technical Board appointed by the G. P. A. * * * As epitomizing the extremely important work of the board, the magnitude of which can be only understood by reference to the report of Major Jackson attached hereto, I quote the following from the report of Lt. Colonel F. E. Drake to the G. P. A.

> Officers of thorough experience and of various lines of technical activity were assigned to duty with this board and the activities were spread to all departments of France where troops or units were stationed. The acquisition of power apparatus was supervised by this board as well as the unification of projects, until at the signing of the Armistice, there were more than 300 different places in France where power or lighting, having a total energy involved of more than 75,000 hp., had been effectively supervised and controlled by this board.
>
> The activities in detail which are extremely interesting will of necessity be of great importance to future military operations requiring similar services, so that the history of the operations of the Technical Board as being prepared and submitted in formal report by its chief engineer, will become an important document.
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Thirteenth, Board of Contracts and Adjustments: The Board of Contracts and Adjustments was established under G. O. 29, G. H. Q., Feb. 14, 1918, in the Office of the General Purchasing Agent to prepare contracts and agreements between the different departments of the American E. F. and corresponding departments of the French or British governments, to advise officers charged with the handling of contracts and the obligations accruing therefrom, and to aid in the adjustment and settlement of outstanding obligations resulting from agreements of the United States with foreign governments.

The need of the existence of a Board of Contracts and Adjustments became evident to the G. P. A. very early in the administration of his office. It was again the ever existing emergency confronting the A. E. F. which required the temporary establishment of a legal department concerning itself largely with the interarmy and intergovernment business passing through the hands of the G. P. A. Having recommended the establishment of such a board to the C-in-C, and having received authority to proceed with its organization, the G. P. A. was concerned with the necessity of securing a man of commanding

ability and legal experience to place at its head. He had not then met Lt. Colonel Cutcheon but was acquainted with his high standing as a lawyer. At that time Colonel Cutcheon was engaged in organization work of the Red Cross in Washington. The C-in-C, at the instance of the G. P. A. having offered him a captain's commission he accepted the same and came to Europe in February 1918. To him upon his appointment the G. P. A. turned over the organization of this most important business, giving him unlimited discretion as to mode of procedure and in the selection of the board and its assistants. * * *

Fourteenth, Financial Requisition Officer: On July 12, 1918, the Office of Financial Requisition Officer was created in the Office of the G. P. A. General Order No. 41, Headquarters, S. O. S., September 2, 1918, changed the system of requisitioning, receipt and disbursement of funds in the A. E. F., and put into operation a new method, effective as of October 1, which provided that funds "be credited by the Treasurer of the U. S. to the Financial Requisition Officer, A. E. F. upon approval of his requisitions, based upon estimates submitted by disbursing officers and forecasts received from the various departments." The order directed that fixed credits be established in the name of the Financial Requisition Officer in depositaries designated by the latter, these credits to be maintained by transfers from funds to his credit with the Treasurer of the United States, that individual balances to the credit of disbursing officers in the depositaries be discontinued, and that the latter draw checks against the credits of the Financial Requisition Office in the depositaries up to the limit of authorizations given them by the latter. The new system was designed to free the large sums of money which had in the past remained for considerable periods unavailable owing to the fact that the moneys received could be used only for disbursement under the particular appropriations under which they were requisitioned, the unused balance of one disbursing officer not being available for use by another.

This office should not be confused with the disbursing officers of the various corps who made the actual payments of money. The financial requisition officer afforded simply a convenient method of securing funds for the disbursing officers and reducing the surplus funds needed to provide for an emergency.

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Fifteenth, Bureau of Accounts: The Bureau of Accounts was organized under G. O. No. 4, Headquarters, S. O. S., March 23, 1918, for the purpose of recording, compiling and furnishing information and statistics with respect to claims, contracts, arrangements for replacements and other obligations existing between the United States and European countries.

The Bureau of Accounts was established by the G. P. A. on April 27, 1918, and functioned under him until its transfer to the Office of the Finance Officer of the A. E. F., November 8, 1918. * * * This bureau functioned under great difficulty with insufficient personnel, but, notwithstanding, the results obtained were most creditable.

Sixteenth, Bureau of Reciprocal Supply: As a result of the demands for replacement of raw materials made by foreign governments and private firms and corporations arising out of the manufacture of articles of equipment for the A. E. F. in European countries, the Bureau of Reciprocal Supply was established by G. O. No. 152, G. H. Q., September 10, 1918, in the Office of the G. P. A., for investigating all replacement claims pertaining to articles for military supply and for recommending to the C. G., S. O. S., the means of their adjustment. The bureau was authorized to negotiate with the War Industries Board and the Director of Purchases in Washington the necessary purchase priorities for such materials and to arrange with the C. G., S. O. S. for the allotment of the A. E. F. tonnage needed to transport them to France.

* * * This bureau was successfully engaged in some very important negotiations but its late formation and the declaration of the Armistice made its field of activities limited.

Special Activities of the G. P. A.: The activities and negotiations of the G. P. A. which became necessary as a result of the new environment of Allied warfare in which each army was placed cannot be adequately covered here. A preport of daily activities, by order of the C. G., S. O. S., was made by the G. P. A. from March 10, 1918, to December 31, 1918, * * * These activities like the Office of the G. P. A. and G. P. B. had no precedent.

Starting with the detail of a few officers the G. P. A. commenced his duties. When in considering that part of the business of the army which passed through his hands he realized that our foreign environment and relation to our Allies required new departments of activity in the existing army organization to provide for the proper conduct of its business, he suggested their formation and when authorized they were placed under his jurisdiction. This fact and the fact of his location in Paris is responsible for the creation of so many departments of activities with such widely divergent fields, as, for instance, the Labor Bureau, the Technical Board, the Board of Contracts and Adjustments, and the Bureau of Accounts. The first request for activity in September 1917, outside of prescribed lines, which was the precursor of many others, was the order of the C-in-C to organize the transport of coal from England in view of an acute crisis existing at that time in the coal supply of the A. E. F. A plan was devised, afterward passed upon by an army board and confirmed by the French government, for the shipment of coal from English to French ports by American transports and the exchange for coal from French mines in the interior in an amount equal to that unloaded from England at the French ports, thus saving domestic transportation in France of the army supply of coal. * * *

After the immediate pressure of the coal situation was over the work and organization passed to the regular channels of the army. Again where in the activities of a separate service of the army there were special occasions and matters in which inter-allied cooperation was needed, the service of the G. P. A. was invoked either to expedite or to supervise for the time being the special activities of the separate services. The fine understanding which grew up between the G. P. A. and the able and efficient independent heads of the separate services was such that so far from being made to feel unwelcome in such special work of this nature as was imposed upon him by the C-in-C and the C. G., S. O. S., the G. P. A. met on their part a cooperation in the common effort and spirit of teamplay which facilitated in every way his special efforts. As coming direct from civil life into the army organization the G. P. A. desires to record here his appreciation of the freedom from smallness and jealousy on the part of the chiefs of the services in connection with what was at timee clearly an invasion of individual authority and perogative none the more welcome because it had behind it the pressure of acute military emergency. In some instances where special duties were imposed upon him, such as recruiting organizing, transportation and militarizing civilian labor, the G. P. A. was compelled to use almost entirely the machinery of an independent service which was possible only through the most complete cooperation and understanding with its chief. An example of this was the use by the G. P. A. of the financial machinery of the Engineer Department in connection with the recruiting of the civilian labor force of the American army in France. * * *

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Estimate of trans-Atlantic Tonnage Saved: From the very first the Office of the G. P. A. thought largely in terms of tonnage to be saved. From the beginning, in constant cooperation with the chiefs of the services, it gave every attention to making

estimates of tonnage purchased on this side as accurate as possible. The G. P. A. believes that the estimates of tonnage purchased in Europe as given in the report of Captain Newman attached hereto are very conservative. In regard to purchases in England, while purchases were consummated by agencies of the British government for the purpose of securing coordination and protection against excessive prices, the purchasing agents of the independent services under the supervision of the Purchasing Agent in England, were very active in searching out supplies which at their instance were secured for the A. E. F. by the British government. Special acknowledgment is due the British govern - ment for its invaluable service to the A. E. F. in this connection. The figure used in the introduction to this report of approximately 10,000,000 ships tons of material procured in Europe up to November 11, 1918, is fixed at that sum based upon the following report of tonnage saved up to December 31, 1918. In the period between November 11, the date of the Armistice, and December 31, 1918, there were practically no orders placed, the principal activities of the services being directed toward the cancellation of previous order. Allowance in the estimate of tonnage has been made for cancellations since the Armistice. In the judgment of the experts of the G. P. A.'s office, * * * the figure of 10,000,000 ship tons up to November 11 fairly represents the net tonnage procured.

CHARLES G. DAWES,
Brigadier General, Engineers.

Final Report of the Adjutant General, General Headquarters American Expeditionary Forces

Chaumont, Haute-Marne.

FROM: The Adjutant General, American E. F.

TO: The Commander-in-Chief, American E. F.

1. Herewith is submitted the Report of the Adjutant General, American Expeditionary Forces, from May 28, 1917, to April 30, 1919.

ROBERT C. DAVIS,
Adjutant General.

[Extract]

On May 28, 1917, the White Star liner *Baltic* sailed from HOBOKEN. Among the passengers were General Pershing, Commander-in-Chief of the American Expeditionary Forces and his personal party. Almost as soon as the ship had cleared, active work was begun upon the detailed organization of the force which was to represent the United States in Europe. Colonel Benjamin Alvord had previously been designated, May 26, 1917, Adjutant General, American Expeditionary Forces. Having landed at LIVERPOOL, the party arrived in LONDON on June 8 and proceeded at once to PARIS where on June 13, 1917, offices were opened at 31 Rue Constantine. This was the first location of the office of the Adjutant General, American Expeditionary Forces, in Europe.

During the ocean voyage certain elements of organization had been determined. For example, in the keeping of records it was decided to employ the numberical system instead of the duodecimal system. A code office had been organized and the first coded message dispatched from the Commander-in-Chief in London to The Adjutant General of the Army, June 8, 1917. The Orders Division, with a typewriter, mimeograph machine, and three field clerks, had begun to function.

Up to approximately the end of July, 1917, the work of the Adjutant General's Office, American Expeditionary Forces, was practically that of an adjutant's office. The fact that the American Expeditionary Forces was to operate more than three thousand miles from central authority made necessary a much more detailed and extensive organization than in the Armies of the other Associated Powers. The British War Office in London was only one night's courier trip from British General Headquarters in France; it was possible always to telegraph and often to telephone from Montreuil to London. French General Headquarters was even closer to the Ministry of War.

The offices of the Adjutant General at 31 Rue Constantine, Paris, were as large as could be allotted from the floor space at the disposal of the Expeditionary Forces. The difficulties of securing the supplies necessary even for the beginning of an office of record was great. Filing cases were almost impossible to secure. Stationery was provided largely from the supply brought with the party, but when this was exhausted the scarcity of paper in France was felt. Much of the correspondence of the office had at first to be carried on in French with the French authorities.

The internal organization of The Adjutant General's Office included at its inception a Records Division, a Code Office, a Reserve Corps Division and a General Miscellaneous Division. On July 28, 1917, a suggested scheme for the work of the

Statistical Division was received from Washington, embodying enumeration of principles but but leaving the details to be worked out later. The memorandum provided for an Information Section of the Adjutant General's Office, which was intended to furnish information as to the health, welfare, and safety of members of the American Expeditionary Forces. It was early recognized that the office of the Adjutant General must be a clearing house for all information with respect to each member of the American Expeditionary Forces. To this end it was provided in general that the Information Section should, first, prepare and forward all lists of battlefield casualties; secondly, prepare data as to wounded, seriously ill, dead of wounds, and sick in hospital; thirdly, maintain touch with all officers and enlisted men; and, fourthly, operate an inquiry bureau for prisoners of war in accordance with Article 14 of The Hague Convention. After a study of the British system of keeping the record of casualties and changes of status, the Statistical Division in the Adjutant General's Department was organized.

From the very beginning, it was evident that whatever plan was adopted for the Adjutant General's Office must be capable of indefinite expansion. Furthermore, it was recognized that the chief function of the American Army was to fight. Yet the distance from home and the exigencies of intercontinental communication made it imperative not only that the office of the Adjutant General in France should be able to function with practical independence, but also that it should provide with the utmost accuracy all data necessary concerning individuals in the American Expeditionary Forces. Although most of the military activity in the summer of 1917 on the western front was confined to position warfare, it was thought that more mobile conditions must sooner or later be met. Difficult as communications were in trench warfare from the firing line back to any office of administration or record, it would increase a hundred fold as the distance grew between the point of origin of reports and the point of their receipt and final use. At the same time, it was important that no report should be demanded from the commanding officer of any unit which was not essential for operations or record. Organizations must be relieved of every line of clerical work which was not of primary importance. Such were the problems involved in the organization of the Adjutant General's Office.

It is proposed, first, to present certain stages in the evolution of the organization of the Adjutant General's Office and its policies; secondly, to discuss certain questions of growth and relationship; and, finally, to treat in rather more detail each of the divisions of the office.

The first formal step in the organization of the Adjutant General's Office in the American Expeditionary Forces was taken July 5, 1917, by publication of General Orders No. 8, containing tables showing "the present distribution of staff duties of the headquarters of the American Expeditionary Forces." The object of these tables was "to form a basis of coordinated action between the several staff departments" of the command. They were prepared after a comprehensive study of the staff organization in the British and French Armies, with the intention of adapting the requirements of modern field conditions to the staff system of the United States Army. In other words, the tables were intended for a guide not only for General Headquarters, but also for organzations in the field; the relations thus established would be coordinative in their effect upon the whole command.

Under Table IV, Technical and Administrative Services, is to be found a brief summary of the Adjutant General's Department. The items falling under this head are as follows:

Commissioned personnel and enlisted personnel division
Returns, strength report division
Correspondence Division
Administrative orders
Routine matters of staff departments

Statistical division
War prison barracks
Captured property
Returns of prisoners
Prisoners' inquiry office
Recruits
Muster rolls
Disposal of records of smaller units
Channel of correspondence
Records
Postal affairs
Printing Office
Y. M. C. A.
Etc., etc.

It is to be noted that these headings present an adaptation of the functions of the Adjutant General's Office in Washington. Points of difference are slight; generally speaking they are raised by the contact between peace time administration and the administration of an army in the field. The provisions, then, of Table IV, General Orders No. 8, coordinate the functions of the Adjutant General's Department with those of the chiefs of the other technical and administrative services of the general staff. The internal organization of the Adjutant General's Office emerges as a result of the distribution of these functions among its several divisions.

On August 22, 1917, the following was the organization of the office:

Miscellaneous Division---All matters not specifically assigned to other divisions, especially relating to staff corps, movement of troops, etc.

Enlisted Men's Division---Recruitment, enlistment, transfers, furloughs, discharge, assignment, retirement, and miscellaneous matters relating to enlisted men.

Officers' Division---Assignment, station, duty, travel, promotion, leaves, efficiency reports, identification books, and miscellaneous matters referring to officers.

Reserve Corps Division---Examinations and report thereof, appointment and calling into service, enlistment, offers of service, requests for transfer from other armies.

Property Division---Supplies, blank forms, books.

Orders Division---Printing, filing and indexing all orders issued and received.

Correspondence Division---Stenographers for memoranda and confidential correspondence.

Statistical Division---Casualties, reports and inquiries relating to casualties and whereabouts of officers and men, effects of deceased, returns.

Cable and Telegraph Division---Sending cables and telegrams, filing and indexing cables.

Mail and Record Division---Receiving, filing, indexing, mailing and messenger service.

The organization as it was put into operation was capable of almost indefinite expansion, but the office was centralized entirely upon the Adjutant General in person, who was in charge of the Miscellaneous Division. It was evident that with growth must come decentralization.

The work of certain divisions was mainly traditional. Thus, for instance, the Enlisted Men's, the Officers', the Reserve Corps, the Orders, and the Mail and Records Division could be patterned largely upon corresponding divisions in the office of The Adjutant General of the Army. On the other hand, the Property Division would be called upon ultimately to supply blank forms not used in the United States but employed solely in the American Expeditionary Forces.

The Statistical Division, though previously established by General Orders No. 2,

General Headquarters, American E. F., June 26, 1917, and further mentioned in General Orders No. 8, was a statistical division only in name. It had begun with personnel of one army field clerk, who maintained a roster and station file, and on the arrival of the 1st Division toward the end of June two more civilian clerks were added to the personnel. It was thus a long way from the immense organization into which it later developed. The Miscellaneous Division would naturally, with perfection of organization, grow less miscellaneous and more routine. Such was the organization of the Adjutant General's Office when on September 1, 1917, General Headquarters moved from Paris to the Caserne Damremont, Chaumont, Haute-Marne.

Upon arrival at Chaumont, the Adjutant General's Office was installed in Building B of the Caserne. Its functions, although increasing, remained in principle unaltered until the publication of Memorandum No. 129 [not printed], November 19, 1917. Paragraph 2 of that memorandum provides that "hereafter all papers arising from the technical service; viz, Quartermaster Corps, Medical Corps, Corps of Engineers, Ordnance Department, Signal Corps, Air Service, General Purchasing Board, Gas Service, Transportation Department, Line of Communications, Provost Marshal General, Field Ambulance Service, Auditors, Red Cross, Y. M. C. A., War Risk Bureau, upon subjects connected with the Administrative Section, General Staff, and Coordinative Section, General Staff (G-1 and G-4), will upon receipt be opened and recorded in the office of the Adjutant General and will be sent directly to the proper section of the General Staff for action." The memorandum continues:

> The Chiefs of the services enumerated will take up all questions on the subject, except those in which the policy has been fixed, directly with the chiefs of these two sections of the General Staff. In handling subjects with these sections, each proposition will, as far as practicable, be submitted in the form in which it is desired to have it issued. By this procedure, full advantage will be taken of the technical knowledge of the different services; and action by the General Staff on the problems submitted will then be taken with a view to their effect upon other services, upon the general policy and upon the military operations in contemplation. The responsibility for the technical accuracy and sufficiency of the project rests with the chief of the service concerned.
>
> * * * * * *
>
> 5. In order to keep the chiefs of other General Staff Sections and the chiefs of the technical services fully informed as to current actions, copies of all papers will be furnished to the chiefs of those sections and services, which might have an interest therein.
>
> 6. The Adjutant General's Office will be the office of the permanent record of those two sections, and copies of all papers arising therein will be sent to that office for record.

The significance of these provisions is to be found in the fact that through them the General Staff and the Adjutant General's Department became even more closely coordinated. The office of the Adjutant General became the receiving and distributing point for matters or communications received by or sent from the different sections of the General Staff. Thus in coordinating, executing, recording, and distributing directly to the General Staff sections, the Adjutant General's Department initiated an entirely new phase of administration in the United States Army.

About January 1, 1918, when the American Expeditionary Forces numbered approximately one hundred sixty-five thousand men, practically the peacetime strength of the United States Army, the organization of General Headquarters was subject to severe scrutiny with a view to decentralization. The ultimate results of the study, modified by

discussion and coordination is to be seen in Table III of General Orders No. 31, 1918, which contained under heading of Administrative Services the functions of the Adjutant General's Department:

Routine administration
Records
Administrative orders
Commissioned personnel
Enlisted personnel
Reserve Corps examination and appointments
Returns, muster rolls, strength reports, and statistical reports
Office supplies and blanks
Printing
Circulation permits and identification cards for individuals
Returns of prisoners
Prisoners' inquiry office
Recruiting
Correspondence

Important as the differences between these provisions and the provisions of Table IV, General Orders No. 8, 1917, may seem, a study of the two orders will indicate that, in general, the principles of the earlier order are mainly reinforced, not altered.

So far as the Adjutant General's Office is concerned, the provisions of General Orders No. 31, 1918, remained practically unaltered until the publication of General Orders No. 231, December 18, 1918. Between the dates of issue of these two orders, however, certain change had taken place in the internal organization of the Adjutant General's Office. On May 1, 1918, the undersigned became Adjutant General, succeeding Brigadier General Benjamin Alvord, who, owing to ill health, was relieved. General Alvord had laid a solid foundation on which the Department could be raised to any required height and credit is due him for his splendid foresight, which created an organization capable of being expanded to meet so many difficult and unprecedented problems. On May 21, 1918, a large proportion of the Statistical Division was removed to Saint-Pierre-des-Corps. General Orders No. 100, June 20, 1918, effected certain changes in details of operation of the Statistical Division. Between spring and autumn in 1918 lay a period of intense activity for the Adjutant General's Office, a period of expansion and growth.

With the signing of the Armistice hostilities ceased but the work of the Adjutant General's Department was augmented. Matters of administration received more emphasis. For some time the matters of promotion, demotion, decorations, and assignments had been handled first in the office of the Secretary of the General Staff and later by the Personnel Bureau. The function of the Personnel Bureau, however, was in the main arriving at decisions; recording was done and all necessary action was taken in the Adjutant General's Office. Indeed, the line of demarkation between the Personnel Bureau and the Officers' Division of the Adjutant General's Office was indistinct. The Commander-in-Chief, therefore, reached the decision that the Personnel Bureau should be administered by the Adjutant General, and on November 23, 1918, it became the Personnel Division of the Adjutant General's Office. This change was formally confirmed in Section I, General Orders No. 221, December 1, 1918.

The Personnel Bureau, before it became the Personnel Division, was charged with replacement in field grades. Under the provisions of General Orders No. 231, December 18, 1918, the Combat Officers' Depot was established at Gondrecourt (Meuse), and replacement of officer personnel passed to The Adjutant General. A series of reports, for a time periodic, later occasional upon call, showed the existing vacancies to which each officer could be assigned. With the resumption of promotion which, under instructions from the Adjutant General of the Army, had been closed since November 11, 1918,

coordination of vancies, replacement, and promotion became an accomplished fact.

On December 31, 1918, the organization of the Adjutant General's Office stood as follows:

The Adjutant General, American Expeditionary Forces
- Deputy Adjutant General, American Expeditionary Forces
  - Divisions:
    - Officers
    - Personnel (after November 23, 1918)
    - Enlisted
    - Miscellaneous
    - Statistical
    - Records
    - Code
    - Cable
    - Mail
    - Orders and Printing
    - Permits
    - Postal Express Service and Motor Dispatch Service

The organization indicated above is capable of indefinite expansion. It is probable that it is sufficiently elastic to provide for whatever contingency might arise during the time the American Expeditionary Forces remain overseas.

So much for policies as shaped and influenced by the growth of the American Expeditionary Forces. It is necessary now to turn to certain miscellaneous matters of expansion which may in part impinge upon questions of policy but which more properly belong to the physical changes of the Adjutant General's Office.

The beginning of 1918 saw the development of a plan which gave distinct identity to each soldier of the United States Army in spite of duplication of names, the system of army serial numbers. This device, originated in the Statistical Division, has unquestionably been of paramount importance in identification in reports of casualties and status. The Motorcycle Dispatch Service was on January 7, 1918, increased. Bulletin No. 15, published February 27, 1918, prescribed the method of distributing orders and printed documents with the sending out of which the Adjutant General's Office is charged. On March 18 the offices of the Adjutant General were moved from Building B, Caserne Damremont, to Building A. On the same date the technical services were removed to Tours and the Line of Communications became the Services of Supply. About the first day of May, an adapted system for classification of personnel was adopted and placed under the control of the Statistical Division. This system was further revised during the ensuing months.

The enormous increase of work and the immense physical expansion of the Statistical Division, coincident with the growth of the American Expeditionary Forces, demanded new accommodations for that Division. It was at first believed that the hospital sight south of Chaumont, later occupied by Base Hospital No. 15 and subsequently by Base Hospital No. 90, would adequately accommodate the Statistical Division forces, but it was finally decided to leave that location for hospital purposes and buildings at Saint-Pierre-des-Corps, near Tours, were adapted to the needs of the division. It was then that the division began to develop into an organization which was to the American Expeditionary Forces as the sensory nervous system is to the human body. But, by the first of the summer, it was discovered that the accommodations at Saint-Pierre-des-Corps were rapidly becoming insufficient. There was need of still more room. A French barracks was made available at Bourges and the question whether the Central Records Office and the Central Post Office should be located there or whether certain activities of the Services of Supply should be moved from Tours to that point was finally decided in favor of the former. Request was made to the War Department for additional men with clerical experience but every available space had to be used in transportation of

fighting men. For similar reasons it was impossible to take potential fighting men from combat divisions. Recourse was had, therefore, to wounded of Class C and the lower grades of Class B, and, in addition, the British War Office furnished a force of some two hundred and fifty members of the Woman's Army Auxiliary Corps, which was later increased to five hundred. Early in the spring of 1919, some 4,500 officers and men and 500 W. A. A. C's were on duty in the Central Records Office.

On the very day the American forces with the French Army began their counteroffensive in the Chateau-Thierry Salient, the courier service was extended to include the whole of the American Expeditionary Forces and the United States. The summer saw further developments and improvements. On October 25, statistical officers became known as personnel adjutants.

The cessation of hostilities brought immediately the problem of demobilization. The Officers' Division undertook to send back to the United States as casuals such officer personnel as could be relieved from duty with the American Expeditionary Forces. The Personnel Division was charged with the classification of officers who desired full and immediate separation from the service, prompt separation from the service and subsequent appointment or reappointment in the Officers' Reserve Corps, and officers desiring appointment, if opportunity permits, in the Regular Army, and an immense amount of clerical work was involved. From November 11, 1918, until April 30, 1919, the general outlines of policy and organization in the Adjutant General's Office, with the exception of those affecting the Personnel Division, remained in principle unchanged, although exigencies of administration demanded frequent minor changes as need arose.

Before entering in detail the discussion of the developments of the various divisions, attention should be given to the relationship of the Adjutant General's Office, American Expeditionary Forces, to the office of the Adjutant General of the Army, to the General Staff, to other administrative and technical services, and to the office of adjutants general of subordinate organizations.

The Property Division founded in September, 1917, has among its functions the distribution of blank forms originated by the Adjutant General, American Expeditionary Forces, and The Adjutant General of the Army. Bulletin No. 15, General Headquarters, American Expeditionary Forces, September 27, 1918, provides the method of distribution of orders, etc. Among the material enumerated may be mentioned War Department general orders and bulletins, monthly extracts, opinions of the Judge Advocate General, general courtmartial orders, war risk circulars, special regulations and changes, and compilations of War Department general orders and bulletins and their changes. In short, the office of the Adjutant General, American Expeditionary Forces, acted as a channel for the dissemination of information and orders from The Adjutant General of the Army. In addition, correspondence, often heavy before the Armistice, has increased with the cessation of hostilities.

It has been previously stated that the relation of the Adjutant General, American Expeditionary Forces, to the General Staff was unprecedented. The Adjutant General's Office relieved certain sections of the General Staff of many routine administrative matters and thus left them free to determine and shape policy. As soon as such policies became fixed the Adjutant General's Office was charged with their detailed execution. The Adjutant General was custodian of the records of the General Staff and was charged with the mechanism of handling papers and telegrams received and sent. Thus his office in closeness and cooperation and in its functions, some original, some delegated, became in effect a Section of the General Staff.

Headquarters in the American Expeditionary Forces under the control of General Headquarters were organized on the principles laid down first in General Orders No. 8, 1917, later amended by General Orders No. 31, 1918. It follows, therefore, that, in the main, the functions of the adjutants generals in armies, corps, and divisions, Advance General Headquarters, the Services of Supply, base sections, and other similar units

were identical with those of the Adjutant General's Office at General Headquarters. Adjutants general of army corps gradually took on administrative functions which might not, theoretically, be expected to pertain to them. Especially was this true of the Adjutant General of the II Army Corps, which was attached to the British Sixth Army. The Adjutant General of the Third Army dealt with a large number of unusual problems because of the functions of the Army of Occupation. Certain sections of all these offices were authorized to communicate directly one with another on routine business; thus, for instance, the Central Records Office telegraphed directly to, say, a division headquarters and in general, regardless of precedent, in order to expedite business, the most direct and simple procedure was authorized.

Miscellaneous Division: The Miscellaneous Division, instituted immediately after the arrival of General Headquarters in Paris, June 13, 1917, is the normal channel of the Adjutant General's Office through which papers pass to and from sections of the General Staff. Through this division go all drafts of general orders and bulletins and all matters of policy affecting the American Expeditionary Forces.

The Miscellaneous Division consists of four sections. The Troop Movement Section receives, consolidates, and disseminates information to all officers concerned bearing upon the arrival and departure of troops in the American Expeditionary Forces. A daily list showing changes of station of all units is compiled each twenty-four hours. The Indorsement Section is concerned with indorsement, letters, memorandums, and bulletins. The work of this section has always been exceedingly large, and since the signing of the Armistice it has greatly increased. Among matters administered by the Indorsement Section are indebtedness of organizations, claims for lost or damaged property, and civilian personnel, including travel orders, discharges, appointments, etc. The Army Field Clerk Section has charge of the entire personnel of army field clerks in the American Expeditionary Forces, including the appointment, assignment, promotion, and discipline of some 1,854 clerks. Prior to July 9, 1918, this section prepared the payrolls of all army field clerks on duty at General Headquarters. The section maintains their records.

Officers' Division: The Officers' Division, which began operations in Paris, deals with all correspondence received in the Adjutant General's Office relating to officers. Until a permit office was established in November, 1917, officers' identity cards were issued by this division. On September 6, 1918, the division absorbed the Reserve Corps Division. It was reorganized and divided into three sections, to deal with correspondence, promotion, and appointment. The Correspondence Section handles transfers, details, assignments, travel, certificates of service, discharge and elimination, examination for promotion and appointment in the Regular Army, return to the United States, discharge in Europe, and personal effects of all officers.

The Promotion Section deals with promotions, notifications of appointment, securing and forwarding letters of acceptance and oaths of office, leaves of absence, and questions of rank and status. Before November 23, 1918, the Promotion Section worked in close cooperation with the Promotion Section of the Personnel Bureau. Between December 15, 1917, and November 14, 1918, 11,249 officers were promoted under the provisions of War Department General Orders No. 132, 1917, and No. 78, 1918. On August 19, 1918, commanders of army corps and separate divisions were authorized to promote officers within their commands and to announce such promotions in orders, under the provisions of War Department General Orders No. 132, 1917. Upon receipt, however, of War Department General Orders No. 78, that authority was withdrawn, September 2, 1918. During the period in which this policy was in force 780 officers were promoted by corps orders. In addition, 5,621 officers of the A. E. F. were promoted on War Department orders. The total number of officers promoted in the Expeditionary Forces on all orders up to November 14, 1918, when promotion was suspended, was 17,640. Officers were promptly notified of a promotion and directed to forward letters of acceptance and oaths of office. Promotion was resumed on February 12, 1919, but it was handled thereafter by the Promotion

Section of the Personnel Division.

The Appointment Section is concerned with original appointments from the ranks and civil life, examinations and notifications of appointments, securing and forwarding acceptances and oaths of office, wound chevrons, service chevrons, campaign badges, indebtedness, property returns, and family allotments. The following original appointments were made to include November 14, 1918.

	SOLDIERS	CIVILIANS	
Appointed by War Department orders based on recommendations from these headquarters	4,019	872	
Appointed by A. E. F. Orders:			
General	1,498	2	
Graduates of candidates schools A.S.O.T.C. in U.S.	7,215	1	
Totals	12,732	875	
GRAND TOTAL			13,607

Between November 14, and February 12, there were no appointments and upon resumption of the work it was handled in the Personnel Division

On January 2, 1919, a circular letter was dispatched in accordance with instructions from the War Department (Cablegram A-2345, December 23, 1918) requesting from all commanders recommendations of soldiers eligible for appointment in the Officers' Reserve Corps. Similarly general instructions were sent out on March 12, 1919, calling for list of graduates of candidates schools who desired appointment as temoorary second lieutenants. Approximately 4,000 such appointments had been made up to April 30, 1919. In addition, 3,471 officers holding temporary commissions have been examined to determine their fitness for permanent appointment. All completed papers have been forwarded to the Adjutant General of the Army.

The Division has cooperated with the office of the Inspector General in disposing of cases involving claims and debts of commissioned members of the command.

The desires of temporary officers for immediate separation from the service has resulted in a daily average of 290 applications being received since January 1, 1919. Of these, eighty per cent have been favorably considered and handled by returning officers to the United States as casuals for discharge, by discharging them in Europe, or, in cooperation with the Personnel Division, by transfer to units designated for early return to the United States. Some 290 officers have been ordered discharged in Europe and approximately 2,750 have been returned to the United States as casuals to be discharged.

Personnel Division: On November 23, 1918, in accordance with verbal instructions of the Commander-in-Chief, the Personnel Bureau became part of the Adjutant General's Office, thereafter known as the Personnel Division.

Certain alterations were made in the method of keeping the records. The personnel file was absorbed by the Adjutant General's Record Division. The only records retained in the Personnel Division were copies of telegrams sent and certain files of important cases pending. Since the Division was now a part of the Adjutant General's Office, the practice of requesting the issuance of orders by the Officers' Division was discontinued and the Personnel Division wrote and issued all orders with which it was concerned.

The work of the Personnel Division includes transfers, replacements, decorations, demotion and eliminations, adjustments of personnel for discharge or appointment in the

Regular Army, promotion, and, since March 1919, original appointments.

The Transfers and Assignments Section of the division was concerned with officer replacements in Staff, Infantry, Field Artillery, and other services. After the signing of the Armistice, it was charged with control of replacements not only in field grades, but of all officer personnel. Infantry officer replacements were sent out on orders issued by the Personnel Division. Officers of Field Artillery were assigned or relieved upon recommendation of the Chief of Artillery; but about the middle of December, he practically relinquished control of officers in the Coast Artillery Corps, but with the understanding that the general policy should be to retain in France all Regular officers of the corps and to return to the United States for discharge all temporary officers whose services were not required by the Commanding General, Services of Supply. Replacements for other services were assigned directly or indirectly upon recommendation of representatives of Chiefs of Services in the Fourth Section of the Central Staff.

Before discussing the internal organization of the Personnel Division, it is necessary to turn to the provisions of General Orders No. 231, G. H. Q., American Expeditionary Forces, December 18, 1918, which established a Gondrecourt (Meuse) "a depot for the reassignment of surplus combat officers and for the reclassification of officers." The salient provisions of this order were as follows: The Casual Officers' Depot at Blois continued to function only as a replacement depot and reclassification camp for the Services of Supply. Replacement of commissioned personnel passed from the control of the 1st Section, General Staff, to the Adjutant General. Replacement requisitions for officers, instead of being required periodically from combat organizations were required whenever a vacancy occurred. This provision made it possible to utilize to the full the officer personnel remaining in the American Expeditionary Forces. In addition, army commanders were directed by this order to send to Gondrecourt all surplus officers in their commands. Requests for officers to be ordered from the depot to combat organizations were to be submitted to the Personnel Division, which controlled the flow of officers from Gondrecourt to organizations. In this connection, it may be stated that when the depot was first organized it became necessary to coordinate the flow of replacements from the rear to the Third Army in Germany by suspending temporarily replacements from Gondrecourt and permitting the Commanding General, Services of Supply, to send forward the officer replacements which he then had available. The reclassification of officers proceeded at Gondrecourt through the agency of two boards, senior and junior, appointed by General Headquarters special orders. The system of reclassification was further amended and stablized by the provisions of General Orders No. 231, G. H. Q., American Expeditionary Forces, 1918. The great advantage gained by the establishment of the Combat Officers' Replacement Depot lay in the exercise of the functions of replacement, demotion, and supply of officer personnel through one agency, the Personnel Division, which coordinated and controlled the situation.

As far as practicable, all officers were returned to their old organizations and, under the provisions of Section II, General Orders No. 23, G. H. Q., American Expeditionary Forces, February 2, 1919, officers evacuated from Services of Supply hospitals were returned directly to their old organizations. The Combat Officers' Replacement Depot ceased operations on April 30, 1919.

The Decorations Section of the Personnel Division is divided into two subsections. The American Decoration Section deals with recommendations for the Medal of Honor, Distinguished Service Cross, and Distinguished Service Medal; the Foreign Decoration Section handles all matters pertaining to decorations by Governments of the Associated Powers.

Under the provisions of General Orders. recommendations for American decorations are forwarded by commanding officers through division headquarters. When a recommendation for a Medal of Honor is received, it is passed to the Board of Awards for consideration. If, in the opinion of the Board, the case is worthy of the award, it goes

through the hands of the Chief of the Decoration Section to the head of the Personnel Division. The Adjutant General presents the case to the Commander-in-Chief, who either disapproves it or directs that the nomination be cabled to the War Department, where final decision as to the award is made. Upon the receipt of a recommendation for the Distinguished Service Cross, it is passed upon by the Board of Awards and either approved or disapproved. Such action is reviewed by the Chief of the Decoration Section and doubtful cases are considered by the Chief of the Personnel Division, the Adjutant General, etc. Recommendations for the Distinguished Service Medal are passed upon by the Board for Decorations, which consists of six general officers and is entirely separate and distinct in personnel and function from the Board of Awards. The action of the Board for Decorations is reviewed in all cases by the Commander-in-Chief. It should be added that officers serving on the Board of Awards have been chosen with a view to former service with combat organizations in the American Expeditionary Forces. Both during the time when decorations were administered by the Personnel Bureau, and after they came under the administration of the Adjutant General, the officers selected for the Board of Awards had served with combat organizations in some of the heaviest fighting done by the American Expeditionary Forces. The majority of them had previously themselves been decorated and many had been wounded in action.

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When a proposition to decorate American officers or soldiers is received from representatives of an Associated Power, it is handled by the Foreign Decorations Subsection. Propositions may be with or without citations. The Chief of the Sub-section is responsible for the preparation of all papers relating to such matters for submission to the Commander-in-Chief, in whom rests decision. The proposition returned by the Commander-in-Chief is then forwarded to the respective mission at General Headquarters. In from five to eight weeks the de,oration arrives or word is received that the proposed recipients should report at a certain place at a certain time to receive their decorations.

* * * * * *

The provisions of General Orders No. 231, G. H. Q., American Expeditionary Forces, 1918, amended in part General Orders No. 131, G. H. Q., American Expeditionary Forces, 1918, respecting the reclassification of officers, but the essential features of the former continued.

The process of reclassification of officers at the Combat Officers' Depot, Gondrecourt, was an extension of the system in operation at the Casual Officers' Depot Blois, when the Personnel Bureau became a part of the Adjutant General's Office. Under orders issued previously to General Orders No. 231, 1918, division commanders were empowered to order officers whose services were unsatisfactory to report to commanding generals of army corps. With such officers were sent papers showing their service, deficiencies, and qualifications. If the army corps commander could utilize the services of these officers he assigned them to duty with organizations under his control; if he found it impossible so to utilize them, the officers were ordered to report to the Commanding General of the Army for duty, or to the Commanding General of the depot at Blois for reclassification. With the establishment of the Combat Officers' Depot at Gondrecourt, the procedure up to this point remained unchanged, but officers were sent there instead of to Blois. At both depots sat boards before whom the officer appeared for examination to determine his suitability and fitness for service. Officers undergoing reclassification were permitted to summon witnesses and secure depositions under oath. The Board having heard testimony and considered each case in all its phases,

found the officer either fit or unfit to hold a commission, and recommended disposition according to the evidence presented. Such recommendations were of three classes: First, that the officer forfeit his commission, if a temporary officer, or revert to his rank in the permanent establishment, if a Regular officer, or that, if his offense was subject to disciplinary action, he be returned to his organization for trial by general court-martial; secondly, that he, having been found fit for some other duty, be transferred to the Services of Supply, in case his deficiencies lay in his handling of men during combat or training; and thirdly, that the officer, if found efficient, be ordered to report to the commander of a combat organization for duty, generally with a different unit from that with which he had previously served. Proceedings of all such boards for efficiency are carefully reviewed by an advisory board of three officers sitting at General Headquarters, at first in the Personnel Bureau later in the Personnel Division, who approve or disapprove the proceedings and recommend action by the Commander-in-Chief. At Gondrecourt the accommodations for officers were exceptionally well arranged and cared for. Every effort was made to provide the officers with ordinary comforts, to maintain their self respect and to enable them to prepare and present their cases, with or without counsel, fully and convincingly. The total number of cases for reclassification handled to April 30, 1918, is 1,024.

On November 27, 1918, the following cable instructions were received form the War Department:

> Pershing Amexforce
>
> Paragraph 1. Instructions issued to all commanders in the United States require officers to be discharged in the following order when not longer needed: First, officers desiring full and immediate separation from the service, Second, officers desiring prompt separation from the service and subsequent appointment or reappointment in the Officers' Reserve Corps and whom commanding officers recommend for such appointment. Third officers desiring appointment, if opportunity permits, in the Regular Army, whom commanding officers recommend for such appointment. It is desired that so far as practicable you readjust assignments and duties of officers in such manner as to retain in Europe as many as possible of the officers desiring appointment in the permanent establishment and believed qualified for same . . .
>
> HARRIS.

Reports from organizations received under these instructions were filed by organizations. As divisions or other units were ordered to the United States, those officers who had signified their desire for appointment in the Regular Army were transferred to divisions selected to remain in France, and officers who desired full and immediate separation from the service were transferred to home-going divisions. By May 1, 1919, approximately 1,334 officers desiring appointment in the permanent establishment and 1,478 desiring discharge had been so transferred. Some difficulty was experienced because certain officers who had expressed their desire for service in the Regular Army later changed their minds and indicated their wish to remain with their divisions and to return to the United States. In most cases orders previously issued were revoked and the officers were thus accommodated; so far as practicable, the personal desires of these officers have been followed, with the two limitations of the possible renewal of hostilities and the good of the service.

When the Personnel Bureau became the Personnel Division of the Adjutant General's Office, the records on promotions remained intact. Under instructions from the War Department, promotions and original appointments had closed on November 14, 1918. Previously to that date decisions were made in the Personnel Bureau, while orders were issued in the Officers' Division, but with the transfer of the Personnel Bureau, it was possible to make preparation for handling both branches of the work in the Promotions

Section of the Personnel Division, should the restriction upon promotions be at any time removed.

Authority again to commence promotion in temporary rank was received January 27, 1919. The general provisions were made that the object of all such temporary promotions was to treat the American Expeditionary Forces as a living organization and not to reward past meritorious services. Already, under instructions issued from these headquarters, boards of officers convened at headquarters of divisions and similar organizations had selected a cadre of officers who would have been promoted if instructions to the contrary had not been received from Washington, and the recommendations of these boards were first considered when promotion was resumed. On February 11, promotion started. Later under the provisions of General Orders No. 64, April 11, 1919, and General Orders No. 67, April 18, 1919, promotions were in full force under the provisions made by the War Department.

Authority to resume original appointments was received on March 10, 1919, and the first appointments were made two days later. Except in the Quartermaster Corps, where examinations were required, appointees were graduates of the Army Candidates' School. Such appointments were made to officer properly combat and other organizations, whose ranks had been depleted by casualty, details to schools and educational institutions, transfers to the United States for discharge, etc.

From February 11 to April 30, 1919, 8,928 promotions and 3,165 original appointments were made.

Enlisted Division: In accordance with a memorandum of August 22, 1917, the Enlisted Division was organized as a separate unit of The Adjutant General's Department and the following duties devolved upon it: Recruitments, enlistments, transfers, furloughs, discharges, assignments, retirements, and miscellaneous matters, all pertaining to enlisted men. Though the great mass of work under these heads has been handled in accordance with well established procedure in force in the office of The Adjutant General of the Army, an exception is to be noted in the matter of discharge.

On January 15, [1919,] the War Department issued instructions which permitted the discharge of officers and soldiers, and authorized the Commander-in-Chief to take action in all cases arising in the American Expeditionary Forces under certain conditions. These conditions received wide publicity in the United States, with the result that a great influx of applications for discharge, by mail and cablegram, soon began to arrive. General Orders No. 13, published to the American Expeditionary Forces the conditions of return to the United States for discharge, and applications received from soldiers were handled by the Enlisted Division and by the Commanding General, Services of Supply. Discharges of men in France were made only by the Enlisted Division. General Orders No. 60, April 5, 1919, decentralized a part of the work by granting authority to commanders of armies, army corps, and divisions to take final action on applications to return to the United States for discharge. Discharge in Europe is still handled by the Enlisted Division. A total of 20,786 soldiers have been ordered to the United States for discharge up to and including April 30, 1919.

Code Division: The functions of the Code Division are to code and decode messages for and from the Adjutant General of the Army. The division maintains both a day and a night service with tours of duty providing for at least one officer and one man on duty at all times.

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Cable Division: The Cable Division was inaugurated about June 15, 1917, for the copying, extracting, indexing, and filing of cablegrams sent to the War Depattment and received from Washington, after their release from the code office. The system originally devised for the handling of cablegrams has been used continuously with such modi-

modifications and elaborations as the increase of the American Expeditionary Forces demanded. Proposed drafts of cablegrams became a part of its functions in September, 1917.

Cablegrams are checked for answers and suspense. Before cablegrams are filed, they pass through the hands of indexing clerks who prepare indexes for future reference. A system of so-called base cards has been used on which all matter pertaining to a certain subject has been classified. Casualty cablegrams are indexed separately. The system of indexes provides a close cross-reference check upon all matters sent or received by cable. On August 9, 1918, the Commanding General, Services of Supply, was authorized to dispatch cablegrams directly from his headquarters to Washington, in so far as they contained matter related to supply or other purely routine subjects. Copies are furnished General Headquarters where they are indexed. In order to reduce cabling by wire the War Department, in July 1918, authorized the use of couriers in dispatching certain routine matters. Thus was created a new series of cablegrams known as curier cables. Both incoming and outgoing cablegrams were indexed and extracted in the usual manner.

The handling of the many different classes of cables requires the most accurate, efficient, and highly organized system - and the one devised met all calls made upon it.

Mail Division: The Mail Division consists of the Mail Section proper and the Adjutant General's post office. The Mail Section receives outgoing paper from the Record Division and other sections at General Headquarters, sorts them, prepares them for dispatching, marks them for distribution, addresses envelopes, and determines the medium by which they shall be transmitted. Telegrams are sent directly from the Mail Section to the Signal Office. Communications sent from the Mail Section to the Adjutant General's post office are sealed. The Adjutant General's post office is a dispatching point. It sends out to organizations communications by courier or post in accordance with the directions of the Mail Section, and it distributes to staff sections and departments of General Headquarters, through a series of boxes which are collected every thirty minutes by orderlies sent from receiving offices. On the whole, incoming matter precisely reverses this process. The Mail Division cooperates with the Military Postal Express Service, Motor Dispatch Service, and Overseas Courier Service.

As originally established, the Mail Division received, opened, stamped, and checked to the various other divisions all official mail received at General Headquarters. It also served as an intermediary for correspondence passing back and forth between the various staff sections, corps, and departments, and as a regulating point for papers acted upon by the Adjutant General. In addition the Mail Division received official mail for officers and men at General Headquarters. On July 28, 1918, a registry system was put into operation.

The Mail Section was divided in April, 1918, into four subsections: Receiving, Telegraph, Distribution and Mailing-Out. The Receiving desks receive the mail brought from the Adjutant General's post office, and all communications for the Commander-in-Chief, General Staff (except G-2), and Adjutant General. Routine mail is separated from special, and confidential and secret matter, papers for G-3, etc., are distributed immediately. What remains is opened. checked, and stamped. From the distribution desks incoming material is dispatched to the various sections of the Adjutant General's Office or staff departments for necessary action. The telegraph desks constitute a kind of speed center. Telegrams are received from both the American and French offices, checked to the proper section, record made and delivery effected in an average of twelve minutes. The telegraph desks also dispatch all telegrams signed by the Adjutant General. The mailing-out desks dispatch all correspondence sent through the Adjutant General's Office.

Permit Division: The Permit Division of the Adjutant General's Office, which was opened November 22, 1917, was necessary to supply officers, soldiers, and civilians of the American Expeditionary Forces with suitable identification papers under the provisions of General Orders No. 63, General Headquarters, American Expeditionary Forces. 1917. A second function of this division was to arrange visits of American officers in

zones allotted to associated armies and to issue the necessary passes to officers of the Associated Powers whose duties made it necessary to circulate in the zones occupied by the United States Army. It was furthermore essential that active liaison be maintained with both the British and French authorities.

The Permit Division regularly issues five different identification papers. The officers identity card is prescribed for all commissioned officers of the American Expeditionary Forces. It contains a photograph of the holder. A record is kept of all such cards issued at these Headquarters, showing the name, rank, organization, and the serial number of the card. Similarly, the red Workers' Permit is a photographic identity card issued to civilian members of the American Expeditionary Forces. The permit is in triplicate: One copy is carried by the receiver; the second copy is filed at French General Headquarters; and the third copy is held by the Provost Marshal General. A card index file and a book record of workers' permits, and a numerical file with copy of the original application, are maintained. The soldiers' identity card is prescribed. The Adjutant General's white pass is issued to civilians authorized to circulate in the area occupied by the United States Army. Finally, the brown or serial card pass is issued to officers of the Armies of Associated Powers and to American officers connected with certain branches of the service.

For the period from November 22, 1917, to include April 30, 1919, the following issues by the Permit Division were made:

Officers' identity cards.	15,120
Officers' identity cars distributed to various other headquarters for issuance.	85,000
Soldiers' identity cards distributed to various organizations to be issued.	175,000
Red Workers' permits issued.	39,000
Adjutant General's white passes.	2,043
Brown, or serial, card passes (to March 27, 1919).	896
Total Identifications issued.	317,059

Orders Division: From the Orders Division, as in operation at Paris, three distinct sections have evolved: The Orders Division proper, the Adjutant General's Printing Plant, and the Property Division. The work of these three sections is closely related and thus may be treated under the heading of the Orders Division.

About November 1 1917, a demand for general orders and bulletins for new organizations arriving in France became so large that it was necessary to reprint and distribute all the orders and bulletins previously mimeographed in the Orders Division or printed in the Base Printing Plant by the Quartermaster Corps in Paris. At that time a run of each order and bulletin numbered 10,000 copies: At the signing of the Armistice, it numbered 50,000 Compilations of orders and bulletins, in which such numbers as had been revoked or amended were eliminated, were issued in order to enable organizations more recently arrived in the Expeditionary Forces to become familiar with the regulations then in force.

The distribution of orders and bulletins was expedited by sending fifteen advance copies by courier before the remainder of the total supply was sent by mail. As has already been stated, the distribution of various War Department publications and the reprinting of enough copies to supply the Expeditionary Forces made an important supplement to the distribution of orders and bulletins originating overseas. On September 1, 1918, tables of organization and equipment manuals previously distributed by the General Staff were turned over to the Orders Division for distribution. A complete record is kept of the organizations to which each copy is sent, which enables the Orders Division to make automatically the distribution of changes. Such manuals and tables govern the

property and personnel of all units in the Army for which tables of organization have been approved. They are printed in the Adjutant General's Printing Plant.

Each division arriving in France has called for back orders and bulletins. For this reason it has been found necessary to employ men continuously in making up loose numbers into sets. In this way a total of 39,110 sets were made up and distributed.

The Special Orders Section for more than a year issued copies of paragraphs and consolidations by typewriter or mimeograph. Since September 1, 1918, however, all paragraphs of each special order have been printed in sufficient number for individual distribution and are later consolidated and issued in the form of pamphlets. Such publications are distributed in accordance with a special list which includes The Adjutant General of the Army, all Armies, army corps, and divisions, and the headquarters and the various sections of the Services of Supply, and those staff sections and departments which are concerned. With respect to the indexing of special orders, it should be stated that [the name of] each person for whom a special order has been issued has been card-indexed to show the number and date of the order and its substance, and notations of subsequent movement, promotion, etc., have been added as necessary. The indexed cards at present number about 85,000. In addition, copies of general orders, special orders, bulletins, and memorandums issued from Services of Supply, Army, army corps, and divisions, and other headquarters are received and filed in this division.

[The report continues with an enumeration of the numbers of the different publications printed and issued by this division with a total of over 54 million distributed by April 30, 1919.]

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Record Division: The Record Division began its operations in Paris on June 14, 1917. In spite of preliminary difficulties caused by shortage of office material and suitable personnel, it was possible to form the beginnings of the division always with the idea of further expansion as need might arise. Lack of floor space prevented the proper systemization of the filing system but the difficulty was remedied upon removal of General Headquarters from Paris to Chaumont. The method of filing, which is based on the numerical system formerly employed in the War Department, as at present in operation, is the outgrowth of the system initially installed.

[The report continues by giving the details of routine channels within the division.]

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Statistical Division: The beginnings of the Statistical Division have already been outlined Returns, both field and monthly, reports of killed, wounded, and missing, on the old Adjutant General forms, and the channels through which muster rolls were to be forwarded, were fixed by General Orders No. 2, General Headquarters, American Expeditionary Forces, 1917.

The movement of General Headquarters from Paris to Chaumont, September 1, 1917, afforded increased office space for the Statistical Division. The activities of the Statistical Division were centralized by General Orders No. 67, General Headquarters, American Expeditionary Forces, 1917, in the office of the chief of the division at General Headquarters, radiated to statistical sections at headquarters of divisions, Line of Communications sections, ports of debarkation, staff corps, etc., and terminated in the subsections organized in each unit. Statistical sections were charged with the following duties:

(a) The preparation of an initial roster of organization with their location and

a roster of all officers and enlisted men in their section detached from organizations.

(b) Reporting change of station of units or of detached officers and soldiers.

(c) The preparation of statistical cards for all officers and soldiers in the section.

(d) The preparation of the daily report of casualties and changes for officers and soldiers serving at the headquarters to which the section was attached, and the supervision of the same report from organizations.

(e) Supervision of all returns, muster rolls, etc., of organizations.

(f) Supervision of weekly reports from hospitals showing the patients therein their condition.

(g) Supervision of strength returns.

Commanding generals to whose headquarters statistical sections were attached were directed to organize statistical subsections in each brigade, regiment, separate battalion, or other separate organizatinns under their command, charged with the responsibility for securing the information necessary for the preparation of statistical cards, the preparation of rosters, strength returns, daily reports of casualties, and changes, the supervision of muster rolls, monthly returns, etc., required from the organization of which they were a part, and the forwarding of all reports and returns to the Statistical Section at the headquarters under whose jurisdiction they were serving.

The forms so far developed consisted of an initial information slip, designed to facilitate obtaining data for the statistical card, upon which was entered all essential data pertaining to the soldiers and which contained blank spaces for the continuation of his record in the American Expeditionary Forces; the daily report of casualties and changes to be made out by each organization; and the weekly medical report to be filed weekly by hospitals to show the status of patients. The locator card was a 3 x 5 inch index card, upon which was entered the name of the individual, his rank and organization, and location.

Statistical sections were organized at the following headquarters:

1st Division
2d Division
Headquarters Line of Communications
Intermediate Section, L. O. C.
Advance Section, L. O. C.
Base Section 1, L. O. C.
Base Section 2, L. O. C.
Base Section 3, L. O. C.
Base Section 4, L. O. C.
U. S. A. Ambulance Service
Medical Corps
Air Service

It may be stated that the prime motive for the organization of the Statistical Division was to provide a means for keeping record of individuals, for the purpose of identifying and reporting of casualties. To this end it was necessary to provide a mechanical process to account for each member of the American Expeditionary Forces. Upon arrival of organizations or casuals at ports of debarkation, commanding officers were interviewed by the statistical officers and given sufficient blank initial information slips for their entire commands. At the same time rosters of the commands were requested, and forwarded, with initial information slips to the Statistical Division at General Headquarters. Here the locator cards and statistical cards were prepared and placed in the file. The statistical officer at the port of debarkation also furnished the commanding officer of troops with a supply of blank forms for daily reports of casualties and changes. It frequently happened, however, that organizations arriving at the port could not remain long enough to complete the initial information slips, and in

such cases the commanding officer was furnished the blanks and instructed to turn them in to the statistical officer of the area into which they moved.

As the arrivals increased it was found that this method was not entirely satisfactory, and that it would be much better if the work could be completed prior to embarkation in the United States. A plan was formulated providing for the preparation of passenger lists, locator cards, and statistical cards in the United States and their delivery to the statistical officer at the port of debarkation in France. Though this plan was put in operation in May, 1918, it was not until September of that year that it could be relied upon. As a consequence, each organization had to be checked upon its arrival, and missing cards requested.

In January, 1918, it was rellized that in an army of the size then contemplated, there would necessarily be many duplications of names and that some method must be devised to insure certain identification of casualties A recommendation was made to the War Department that a system of numbering individual soldiers be adopted. On February 10, 1918, the War Department authorized this system and allotted blocks of numbers for each organization in the service. The numbers were in one series and continued consecutively without limit. The plan provided that the soldier's number be placed on all records, and to be used in all Correspondence, reports, returns, etc., in which the soldier's name appeared. This was of immeasurable value later when heavy casualty reports began to come in.

[The report continues with personnel matters.]

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On June 20, 1918, soon after the establishment of the Central Records Office at St-Pierre-des-Corps, General Orders No. 100 was issued, reorganizing the Statistical Division and definitely prescribing the functions of Statistical Sections. At this time, the functions of the Statistical Division were to maintain complete military record of each individual officer and soldier in the American Expeditionary Forces; to maintain a locator card for each officer and soldier in the American Expeditionary Forces; to maintain a record of all casualties and to report them to the War Department; to classify each officer and soldier in the American Expeditionary Forces according to his occupational qualifications, and to maintain the resulting records; to maintain individual records as to identity, status, and location of all enemy prisoners of war; to maintain data regarding strength of units of the American Expeditionary Forces and to prepare a consolidated strength return of the American Expeditionary Forces weekly; to maintain records concerning the location of units of the American Expeditionary Forces and to publish weekly station lists; to maintain a roster of general and field officers of the American Expeditionary Forces; to supervise the rendition of all reports, rosters, returns, etc., required by the War Department, to forward them, and to prepare a consolidated monthly return of the American Expeditionary Forces; to render such periodical or special reports concerning any of the above as required by the Staff; and, finally, to answer all inquiries from any source regarding individuals. In order to provide a uniform method for the collection and recording of such data, numerous blank forms were originated.

On October 25, 1918 in accordance with General Orders No. 60, War Department, 1918, officers of the Statistical Division who had heretofore been known as Statistical Officers, were designated as Personnel Adjutants, although the offices over which they exercised jurisdiction continued to be known as Statistical Sections.

With the introduction of the system for classification of personnel into the American Expeditionary Forces, a new problem of increasing importance had to be met. The first four divisions and a considerable number of the staff corps had arrived in France before the classification system was adopted in the United States and, in the case of the four divisions, were in the front line engaged in active operations. A great many

men had become separated from their organizations and scattered among others who had already been classified, and the task of searching out all these men and properly classifying them was stupendous. A classification camp was established at the Depot Division at St-Aignan, where all casuals arriving from the States or evacuated from hospitals in the American Expeditionary Forces were interviewed and classified upon their arrival. Men in the depot divisions were separated according to their occupational qualifications as well as military training. Replacement requisitions called for men trained in civil occupations corresponding to the military positions they were required to fill. Officers found unsuitable for their positions were reclassified and assigned to duties for which their prior civilian training had fitted them. By this system, not only was the personnel of combat units kept balanced, but the services of many officers were utilized who, under the old system, would have been ordered before Efficiency Boards and discharged from the service. The classification of personnel and the maintenance of the records concerned was a function of the Statistical Division. In addition to the classification camp at St-Aignan, a reclassification camp for officers was established at Blois, and a field force of officers and enlisted men was organized by the enlisted section to classify the Staff Corps personnel.

In the summer of 1918, approximately 10,000 troops were arriving daily and checking of individual records was impossible. It was believed that much closer cooperation with the United States was advisable. Accordingly an officer was dispatched to the United States to coordinate the work. After spending a week at the port of Hoboken this officer visited the divisions on the priority list, giving complete instructions as to the preparation of records for overseas and the statistical work required in the American Expeditionary Forces. By direction of the Adjutant General of the Army he was then detailed for one week as instructor at the School for Personnel Adjutants at Camp Sherman, where he delivered several lectures, in addition to writing a pamphlet of instructions which was made a permanent feature of the school.

The work of the Statistical Division is reflected to a greater extent by the reports of casualties than by any other one feature. In the organization of the Central Records Office one section was created to deal solely with casualties. This section was charged with the receipt and verification of casualty lists and reporting to the War Department at Washington.

[The report continues with the procedure in reporting casualties and the difficulties in checking them.]

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At the peak of its activities the Statistical Division was organized as follows:

General Headquarters

Office of the Chief of the Division, and the following sections:
- Casualty Information and Check Section
- Officers Index Section
- Officers Roster Section
- Officers Qualification Card Section
- Strength Return Section
- Station List Section
- Monthly Return Section
- Correspondence and Files Section
- Inspection Section

Central Records Office:
- Mail, Telegraph and Records Section
- Master Card Section
- Casualty Section
- Classification Section
- Prisoner of War Section
- Service Record Section
- Investigation Section
- Correspondence Section

Statistical Sections were located at the following Headquarters:
- Advance Section S. O. S., Established 4 December, 1917
- Headquarters Services of Supply, Established 1 December, 1917
- Intermediate Section S. O. S., Established 3 December, 1917
- Base Section 1, S. O. S., Established 5 December, 1917
- Base Section 2, S. O. S., Established 6 December, 1917
- Base Section 3, S. O. S., Established 12 December, 1917
- Base Section 4, S. O. S., Established 3 April, 1918
- Base Section 5, S. O. S., Established 6 December, 1917
- Base Section 6, S. O. S., Established 22 May, 1918
- Base Section 7, S. O. S., Established 7 July, 1918
- Base Section 8, S. O. S., Established 11 June, 1918
- Casual Officers Depot, Established 20 January, 1918
- First Depot Division, Established 1 March, 1918
- Second Depot Division, Established 1 July, 1918
- First Replacement Depot, Established 1 December, 1918
- Embarkation Center, Established 3 January, 1919
- Central Prisoner of War Enclosure, Established 13 June, 1918
- District of Paris, Established 1 September, 1917
- American Mission, G. H. Q., Established 6 October, 1917
- American Mission, French General Headquarters, Established 1 March, 1918
- American Embassy, Berne, Switzerland. Established 1 March, 1918
- Advance General Headquarters, Established 11 December, 1918
- Army Artillery, Established 1 February, 1918
- Air Service, Established 1 December, 1917
- Tank Corps, Established 16 October, 1918
- Combat Officers Depot, Established 18 December, 1918
- Provost Marshal General, Established 20 February, 1919
- North Russian Expedition, Established 20 August, 1918
- Army School, Established 17 December, 1917
- 1st Corps School, Established 6 December, 1917
- 2nd Corps School, Established 20 January, 1918
- Each Army
- Each Army Corps
- Each Division

[The report continues with the duties and procedure of the subsections of the Statistical Division.]

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The history of the Central Records Office shows a task accomplished without precedent in American military annals. The very nature of its functions involved a personnel untrained at the start and required constant schooling in accuracy, system, and dependability which demanded time and persistency on the part of responsible officers, but which were absolutely essential to the proper conduct of the enterprise. The scope of work of the Central Records Office called for the formulation of plans, hitherto untried. Fortunately it was early realized that these plans must be simple in operation, yet sufficiently elastic to cope with any emergency.

As the American Expeditionary Forces increased, the work of the Central Records Office likewise expanded. A small platoon of personnel who opened the initial records of the office had multiplied on April 30, 1919, to a regiment of over 6,000 officers and enlisted men, whose efforts were supplemented by the efficient services of some 500 British women, members of the Women's Army Auxiliary Corps. More than passing notice is merited by the services of these W. A. A. C.'s Through an arrangement concluded in July between Headquarters American Expeditionary Forces and the British Government, some 200 members of this organization were sent by way of experiment to the Central Records Office, then located at Tours. The experiment proved so satisfactory and provided such willing and capable help at a critical time that further drafts of this organization had increased the number of women to approximately 500 when the office was moved from Tours to its permanent station at Bourges (Cher) in September.

The work of completing and maintaining an organization for the collection of data which afterwards became a basis of military records of the American Expeditionary Forces was not a direct responsibility of the Central Records Office. To the Statistical Division at General Headquarters fell this task. Through that division the work of both branches was closely coordinated. The transmission of such data, however, became a matter of such concern that the Central Records Office was finally given the responsibility of maintaining its own courier routes with schedules planned to secure a prompt and reliable method of transmitting such data. Data were forwarded by the freighting of heavy masses of records such as duplicate master cards, sailing lists, etc., from ports of arrival over French railroad systems; by motor truck delivery where practicable; and by mail, telegraph, and courier or messenger.

The objection urged against transportation of data by French railroads could likewise be applied to mail and wire facilities, which were undeveloped until August, 1918. The French telegraph system involved frequent relays of messages, each adding to dangers of incorrect transmission. The British were unable to permit the use of their telegraph system for the transmittal of such information. With the completion by the Signal Corps of American controlled telephone and telegraph lines, a distinct improvement was noticeable not alone in accuracy of transmission of data but in scope of service. As indicative of the extent to which these services were demanded by the constantly increasing needs of the office, it may be stated that a daily average as high as 1,400 messages, involving 83,000 words, and about equally divided between those received and sent has been filed with the fourteen expert telegraph operators on duty in shifts throughout each twenty-four hours at the Central Records Office. An average of about 850 long distance calls are received by various departments of the office during a like period of time and about 400 calls are sent daily to outlying points.

With the elaboration of records and the necessity for securing original data it was realized that the telegraph and telephone must be properly authenticated by confirmations transmitted through other channels. Hence there developed a courier or messenger service with the Central Records Office as its center which, in time, became the chief as well as the quickets and most reliable form of communication. This courier service was developed on much the same basis as is the registered letter system of the postal service. Courier routes were mapped out covering all sections of France. Supplemental routes lead to the British Front in Flanders, to London, and to the United States. Others include rail service between centers where such transportation is quick and

certain. Still others combine the two for best results. At the Central Records Office an expert dispatcher routes all outgoing parcels and envelopes through the use of wall charts and carefully drawn schedules which indicate in detail the proper means of quickest delivery. A daily average of approximately 2,000 outgoing and 8,000 separate packages of incoming data has been handled by this courier service of the Central Records Office, each package under the constant personal supervision of a courier. Connections are made at central points with local systems radiating to every American organization in France. The seven main lines comprise:

Bourges to Tours and connections
Bourges to Chaumont (General Headquarters)
Bourges to Bordeaux
Bourges to Clermont
Bourges to Nice
Bourges to Allerey
Bourges to London

Couriers on these trips also reach Le Mans and Paris.

The Welfare Information Bureau of the Central Records Office activities was not organized until after the cessation of hostilities. Mail inquiries as to the welfare of members of the American Expeditionary Forces addressed to the War Department, Washington, D. C., and forwarded for answer to the Central Records Office, as well as those sent to General Headquarters, and other units of the American Expeditionary Forces, grew to such large proportions that a new department for investigating and answering such inquiries was created early in 1919. The nature of its work can best be estimated when it is understood that to this department alone has been referred an average of 6,000 mail communications daily, each of which must be verified from records of the office, or referred to organizations for further information before an intelligent reply can be drafted.

With the answering of mail inquiries from individual sources as to the whereabouts and present conditions of members of the American Expeditionary Forces was finally combined the investigation and answer by cable of such inquiries as were forwarded to the Central Records Office by the War Department at Washington. It may be added that on September 1, 1918, one officer and nine enlisted men comprised a section of the Casualty Division which devoted its time to the investigation and answer of War Department inquiries which then averaged fifty-two per day. By March 1, 1919, the personnel of this section had grown to 20 officers, 6 field clerks, and 165 enlisted men, who concerned themselves with answering a daily average of 836 such inquiries. As late as April 30, 1919, these figures remained practically constant.

[The report continues with the details of procedure in checking casualties by the Casualty Division.]

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The object of establishing the Personnel Division of the Central Records Office was to maintain a Central Bureau in France where there was to be kept a qualification card, in addition to a Master Card Record, of every enlisted man in the American Expeditionary Forces. The qualification card given in summary form the enlisted man's civilian, educational, and military experience. Owing to differencies in experience, technical skill, specific training and temperament, it was found that a man may be worth in one position many times what he is in another. The aim of the Personnel Division, was first to obtain a qualification card which would give in concise form a man's complete history from the date he first entered school until the date the qualification card was actually prepared; secondly, to match each man's abilities with his task; and finally to place him that position where he would be of most value. Since many of the officers and men concerned in personnel work had no previous experience, a Personnel School was established

as an adjunct of the Central Records Office, in which a complete course was studied, embracing every phase of personnel work in the army. This course required one week to complete, and every officer and enlisted man who received instruction in the different phases of this course was thoroughly capable of going into the field and superintending the preparation of qualification cards and explaining the object of the personnel work as it affected each commander. For the first time, each officer and enlisted man was so classified that his services could be used to greatest advantage. Heavy demands from every quarter placed upon the Personnel Division for assistance in the selection of classifications in urgent demand to meet emergencies, indicated the wide use to which this branch of service was put.

[The report here discusses the routine of subsections of the Statistical Division.]

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About May 27, 1918, it was determined that more satisfactory results could be obtained if the various statistical sections in the Services of Supply were to be placed under one head. Accordingly all statistical sections of the Services of Supply were placed under the supervision of the Personnel Adjutant, Headquarters, Services of Supply, who thus became responsible for the coordination of these sections and for the proper rendition of their reports and returns. This necessitated a greatly increased force at Headquarters Services of Supply and the reorganization of that office. Statistical Sections were established at the headquarters of the Advance and Intermediate Sections, at each base section, and at the headquarters of the special services. These sections were responsible for the collection and consolidation of all reports and returns from the organizations in the area under the jurisdiction of the headquarters to which the statistical section was attached, as well as the rendition of the reports and returns required from the headquarters concerned. Moreover statistical sections were required to maintain a locator card for each officer and enlisted man in the area and the strength and location of each organization in the area. In addition to these duties, statistical sections located at base sections of the Services of Supply were charged with the checking of records and preparation or supervision of passenger lists of organizations or casuals returning to the United States, with the receipt and forwarding of passenger lists, master record cards, and locator cards of all troops arriving from the United States, and with the instructions of incoming troops in the preparation of the required reports and returns.

The statistical work in the sections of the Services of Supply was more complicated and difficult than in combat organizations or special services. In the first place, the section covered a large area which made communication with the organizations difficult. In the second place, the bulk of the troops in the area at any given time were transients located in the area for short periods of training which made the problem of transmission of their reports through the section headquarters a difficult one. Lack of transportation and the difficulty of securing trained personnel added greatly to the difficulties. The latter difficulty was later obviated to a great extent by the organization of the Army Service Corps.

Early in the period of activities, on account of the employment of our forces with the British and French, it was realized that close liaison must be maintained with the British and French headquarters staffs in order to secure proper records of those of our forces passing through British or French sanitary formations, as well as maintaining communication with such of our troops as were under the direct command of British or French commanders. For this purpose, offices were established at Paris in liaison with the French Minister of War and the heads of the French Hospital Service, at Rouen with the administrative headquarters of the British Expeditionary Forces, at French General Headquarters, and also at the American Embassy at Berne, Switzerland, to obtain

data on prisoners of war in cooperation with the Red Cross.

On January 8, 1918, the establishment of a Casual Officers' Depot at Blois, under the jurisdiction of the Commanding General, Services of Supply, was authorized by General Headquarters, to receive casual officers recently graduated from schools and training camps in the United States, to classify them according to their military and vocational qualifications, and to distribute them accordingly to the particular branches of the service for which they were especially qualified. The functions of the depot were afterward extended to include the reception and reclassification of officers and enlisted men evacuated from hospitals or sent back from the front as unsuitable to their present duties.

[The report here discusses the classification of personnel in the replacement divisions.]

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The work of the Statistical Section in the division formed the foundation of all statistical work pertaining to combat troops. The division statistical officer, or as he was later known, the personnel adjutant, while nominally a member of the division staff under the division adjutant, was usually assigned to duty under orders from General Headquarters, and in all matters concerning statistical work, received instructions direct from the Statistical Division, at General Headquarters. He was expected to maintain close cooperation with the various staff officers of the division and with the commanding officers of the units comprising the division and to coordinate the work of the subsections in the regiments and other units. It was his duty to furnish the division staff with all the information they required concerning the strength and location of units and their requirements with respect to replacements. To this end it was necessary to maintain at division headquarters locator cards of officers and enlisted men of the division (used principally in the re-direction of mail), a station list showing the location of each unit, rosters of organizations, and periodical strength returns. He was also charged with the responsibility of properly reporting all casualties in the division, as well as enemy prisoners of war captured by units of the division. During combat, all the energies of the division statistical officer were devoted to the problem of securing the record of casualties, which necessitated sending members of the division statistical office to the organizations in the line and to the hospitals located in the division sector. The division personnel adjutant was also held responsible for the proper preparation of the routine reports and returns of the organizations in the division and the consolidation of all reports and returns as were required at division headquarters. Prior to the formation of army corps, division personnel adjutants reported directly to the Statistical Division, General Headquarters, or the Central Records Office. After corps headquarters were organized, the division personnel adjutant was placed under the supervision of the corps personnel adjutant. The army corps statistical section functioned for corps troops in the same manner as the division section. After army headquarters were organized, corps personnel adjutants were placed under the supervision of army personnel adjutants. The army statistical section functioned for army troops in the same manner as the corps sections.

With the signing of the Armistice on November 11, 1918, the Statistical Division entered on a new phase of its activities. Prior to that time the principal function of combat statistical sections was to compile and furnish to the staff information upon which to base their plans of operations and furnish the Central Records Office with lists of casualties by name. Upon the cessation of hostilities the task of rechecking all casualties and the determination of the true status of all men who had been reported as wounded or missing was undertaken. In effect, this amounted to an audit of the entire American Expeditionary Forces and necessitated each case being traced through the

organization statistical sections, hospital subsections, Graves Registration Service, Effects Depot, American Red Cross, and the Embassy in Switzerland. Cases of mistaken identity, or lack of identification, in men reported killed were cleared up by personal interview with the members of the organizations, burial parties, and chaplains, and in extreme cases by the exhumation of the bodies. Statistics concerning casualties were prepared in several ways for historical purposes. A separate section was organized in the Central Records Office for investigation and answering of inquiries from friends and relatives in the United States concerning the welfare and whereabouts of members of the American Expeditionary Forces. Lists of men reported as missing, whose definite status could not be determined, were printed and circulated throughout the American Expeditionary Forces in the hope that someone might furnish a clue on which to base further investigation. French and British hospitals and hospital records were searched by special representatives of the Statistical Division for the same purpose.

[The report here discusses the replacement depots and embarkation center.]

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Combat Officers' Depot: By provision of General Orders No. 231, General Headquarters, American Expeditionary Forces, December 18, 1918, the Combat Officers' Depot was organized and placed under the control and direction of the Adjutant General. The Personnel Division issued to the Combat Officers' Depot telegraphic instructions as to the forwarding of commissioned replacements to combat organizations and to such other units as stood in need of officers. The town of Gondrecourt (Meuse) was chosen as the site because it was expected that the I Corps schools, which were located there, woul cease to operate bout December 20. Thus the plant and equipment of the schools would be available for use by the new depot. Instructions were to provide accommodations for any number of officers under 1,500. Upon the arrival of the first casual officers December 11, 1918, the depot was ready to care for them. Gradually the entire plant of the I Corps schools, including most of the personnel, was turned over to the depot although this was not accomplished until after the beginning of the new year.

The personnel office at the Combat Officers' Depot represented an adaptation of the statistical classification system in the Adjutant General's Department. The system was capable of expansion to care for some 1,200 officers per day, including daily arrivals and departures of 400. Up to April 30, 1919, a total of 3,486 officers had been received at the depot and 158 had been reclassified. The depot was broken up on May 1, 1919.

Military Postal Express Service: General Orders No. 72, General Headquarters, American Expeditionary Forces, May 9, 1918, established the Military Postal Express Service, whose chief is under the general direction of the Adjutant General, American E. F., in order that the latter may coordinate the Postal Service, Central Records Office, and other similar activities. This order provides that the service "will receive from the civil postal authorities all mail arriving in France for the A. E. F., distribute same, and forward it to its destination. It will be responsible for the collection, dispatch, and delivery of all mail emanating from and destined for the A. E. F. Return mail will be collected by the Military Postal Express Service and delivered to the civil postal authorities. The Military Postal Express Service will also receive, dispatch, and deliver all express arriving, or arising, in France for the A. E. F., and will deliver the express bound for the United States to the proper express company. It will take over, develop, and expand the existing Motor Dispatch Service."

As the Postal Express Service finally developed, it consisted of three branches: The Motor Dispatch Service, organized September 15, 1917; the Postal Express Service proper, which was charged with delivery of all mail as distinct from courier matter, and the Overseas Courier Service. Its field of operation covered thousands of miles. Its

personnel was scattered throughout the entire War Zone. Its activities provided one of the most important means for administration and operation and for the maintenance of morale in the Expeditionary Forces.

Colonel Thorndike D. Howe, F. A., was announced as Director of the Postal Express Service, and the following data are based on his report.

Before the appearance of General Orders No. 72, the Motor Dispatch Service had been in operation for eight months. Mail for the American Expeditionary Forces had been handled by civilian personnel. An overseas courier service had already been established. The function of this order was, therefore, to coordinate and to place under a single military direction the services already in operation. Before discussing in detail the activities of these three branches of the Military Postal Express Service, some mention should be made of their history before 9 May, 1918.

The operation of the mail service by the civil authorities covered practically one year, during which the American Expeditionary Forces had grown to 659,245 persons, all actively engaged in the prosecution of the War. On 1 June, 1918, fifty-one American post offices were in operation. The personnel of the civil establishment had grown to some 285 civilian clerks, to assist whom about 400 soldiers had been from time to time detailed as necessity demanded. There was no regularly scheduled transportation of American military mail with the exception of one baggage car on each Tours-Chaumont military train, which carried sack mail for offices on that line. All other American mail moved through the French post on a verbal agreement as to the trains and number of sacks to be accepted. Mail from the United States, except for the few sacks sent by French post, was dispatched in carload lots to destination, unconvoyed. The growth of the forces, the need for the constant expansion of every facility and service, and the extension of the area covered by American troops could not be met by the means at the disposal of the civilian agencies. The development of adequate postal facilities demanded, among other facts and consideration, an increase in personnel and number of post offices and the establishing of railway post office lines similar to those in the United States, with division superintendents in charge of the districts; the operation of pouch express service and shipment of carload lots of mail accompanied by military convoy; development of a scheme for dispatch of mails; the operation of postal regulating districts under the control of Army officers; establishment of inspection and liaison with the various branches of the American Expeditionary Forces and the War and Post Office Departments in Washington.

On September 15, 1917, the Signal Corps began to operate the Motorcycle Dispatch Service. Its purpose was to provide rapid delivery of official communications which could not well be handled by telegraph between General Headquarters, the headquarters of Armies, army corps, and divisions, and other important points. Route No. 1 lay between General Headquarters and Neufchateau; Route No. 2, from General Headquarters to Gondrecourt, Headquarters of the 1st Division. After test runs, in which road records, troop movements, and speed regulations received attention, schedules were drawn up on the basis of a speed of twenty miles per hour. Transfer points were established at designated Signal Corps telegraph offices. Two trips daily were maintained on Routes No. 1 and No. 2. The milage ran approximately to 5,500 miles per month, with a monthly average of about 15,000 official communications.

Except for maintaining the service as outlined above and for experimenting in methods and operation, the Motorcycle Dispatch Service was only slightly developed until the beginning of 1918. In January, however, the arrival of additional divisions, the establishment of Advance General Headquarters, and the beginnings of regulating stations, important depots and unit headquarters, demanded an extension of the Motor Dispatch Service runs and [an] increase of personnel and equipment. Additional dispatch patch riders made it possible to inaugurate on January 7, 1918, five new routes. Routes No. 3 and No. 4 traversed the center of the advanced American Expeditionary

Forces zones and connected all training areas with General Headquarters. By May 9 the service had grown to seven routes, and the average monthly mileage was 25,000. Such was the condition of the Motorcycle Dispatch Service up to the appearance of General Orders, No. 72.

The Transatlantic Courier Service began operations in the latter part of March, 1918, and continued for some fourteen weeks before it was replaced by the Embarkation Courier Service. The first courier under the Chief Embarkation Officer arrived at General Headquarters July 17, 1918.

Such was, in brief, the situation in respect to the three branches of communication which became July 1, 1918, the Military Postal Express Service.

POSTAL EXPRESS SERVICE

The administration of the postal business in the American Expeditionary Forces actually passed from the civil to the military authorities July 1, 1918. Headquarters of the Postal Express Service had been established during June at Tours in order to secure touch with the Services of Supply and with all troop movements. Tours was also made the central supply point by the Postal Express Service. On October 16, 1918, the headquarters were moved to Paris, a more advantageous location because of proximity to advanced areas. The official staff of the P. E. S., with the Base Censor, and their respective official organizations, were housed in the Hotel Mediterranee.

Here the Chief of the Postal Express Service directed operations. Of his principal assistants, one was in charge of personnel and served as liaison officer with the French and British services. A second was assigned to the supervision of the establishment and discontinuance of Army post offices. He supervised distribution of mails and the directory service; delivery to and collection from units served; the registry service; dead letter service; equipment, supply and printing. The third was in charge of the Railway Mail and Transportation Service, including distribution of mail on trains; maintenance of schemes for mail; transfer of mails to and from trains at junction points, and matters relating to personnel of the Railway Mail Service. A fourth assistant chief was assigned to duty in the United States with headquarters at New York to supervise distribution of mail at the port of embarkation and the dispatch of mail to France. Headquarters of the Postal Express Service also included an adjutant's office and a division of inspection.

[The report continues with an account of the personnel that administered the Postal Express Service.]

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Paragraph 4, General Orders, No. 72, authorized the establishment of Army Post offices. The policy of the Postal Express Service was to establish stationary post offices for the accommodation of units and members of the American Expeditionary Forces at such points as showed concentration of troops and mail. Offices at base and intermediate sections of the Services of Supply were designated by number and name of the city in which they were located. Offices in the Advance Section and Zone of the Advance were designated by postal code numbers. There were two kinds of post offices, fixed and mobile. Fixed post offices were located in towns and cities in which troops were more or less regularly quartered and to each post office was assigned a geographical area. Commissioned officers, noncommissioned officers, and privates acted as superintendents in fixed offices. Mobile offices were organized and located within Armies, Army Corps, and Divisions. Such offices moved with the units from which they were organized, and the code number assigned to the office became the permanent address for that unit. Mail received at fixed offices was sorted for delivery to units served

by such offices. Mail addressed to mobile post offices was delivered to the army, corps, or division postmasters and distributed through that agency. As far as possible, soldiers with post office or express experience were selected for duty in both classes of offices.

[The report continues with an account of personnel that administered the Army Post offices, postal routes, and the handling of mail.]

CENTRAL POST OFFICE

Before May, 1918, the Statistical Division had assisted the civil postal authorities in readdressing and forwarding of stray mail. Upon the removal of certain sections of that division to Saint-Pierre-des-Corps there was established under the Postal Express Service the Central Post Office, with the following objects: First, to provide a central distribution point for all inter-A.E.F. mails; secondly, to create a centrally located office for distribution and dispatch of mails massed by railway terminals in the United States on the American Expeditionary Forces which were not made up to permit of direct dispatch from base ports to organizations; undeliverable on account of casualty or transfer of personnel to unknown places or units. Such work could not be handled by the American Post Offices because of lack of facilities for direct dispatch and intercommunication.

[The report continues with the details of handling mail from the United States to include distribution in France, the personnel handling the mail, the amount of mail handled, and the difficulties encountered.]

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MOTOR DISPATCH SERVICE

On May 15, 1918, a general scheme for the development of a Motor Dispatch Service was adopted. The essential feature was the operation of courier routes on schedule radiating from central points to connect with other courier routes for the purpose of serving all headquartess larger than divisions, including depots, schools, regulating stations, and railheads. The scheme included special couriers for service over designated Motor Dispatch Service routes who were detailed for the exclusive use of commanding generals, chiefs of staff, and other specially designated officials. In the Zone of the Advance, the Motor Dispatch Service routes would extend to corps headquarters by connections to be made with divisional couriers. An officer with necessary personnel was to be assigned to the Headquarters of the Line of Communications (Services of Supply), each base Section, and British and French General Headquarters corps commanders were to designate an officer to operate liaison and service within their respective corps. A registry system was provided. In the main, this plan became effective.

The organization of the Courier Service was perfected on July 18, 1918, Courier Service Bulletins No. 1 and 2 continued explanations of a hand-to-hand receipt system, and an announcement of the purpose of the Courier Service. The hand-to-hand receipt system required a large increase of clerical personnel, which was supplied by the Postal Express Service. The establishment of the First Army with the addition of various divisions and organizations demanded an extension of routes.

[The report continues with the details of the Motor Dispatch Service.]

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OVERSEAS COURIER SERVICE

The third division of the Postal Express Service maintains communication by courier between the American Expeditionary Forces and The Adjutant General of the Army

in Washington. From July 7, 1918, to April 29, 1919, forty-nine east-bound overseas couriers had reported at General Headquarters in an average time of eleven days and twelve hours, carrying an average of 11.14 pouches each, with a mean weight of 557 pounds. From July 21, 1918, to April 28, 1919, seventy-six west-bound couriers had carried each an average of 13.67 pouches with an average total weight of 684 pounds from Chaumont to Washington in an average running time of eleven days and nine hours.

In response to requests from various sources, a European Officer Courier Service was inaugurated in November, 1918, to serve especially the American Commission to Negotiate Peace. On April 30, 1919, the service had been extended to serve The President of the United States, the American Expeditionary Forces, the American Commission to Negotiate Peace. the American Relief Administration, the United States Grain Corporation, the American Red Cross, the Young Men's Christian Association, the United States Navy, the United States Embassies and Legations throughout Europe, and the Military and Naval Attaches throughout Europe. Offices are maintained in Belgrade, Berne, Berlin, Brussels, Bucharest, Constantinople, London, Paris, Rome, Trieste, and Vienna. Seventeen routes are in operation connecting Paris, Berlin, Brussels, Rotterdam, Copenhagen, Helsinafors, Danzig, Prague, Cracow, Fiume, Constantinople, Sofia, Bucharest, Jerusalem, and other cities. Connections are made through Embassy pouches to Athens, China, Christiania, Gibraltar, Japan, Lisbon, Madrid, and Tangier. This service in addition had handled during the six months in which it has been in operation about $2,000,000 in cash and securities.

In order to relieve the Overseas Courier Service of bulky matter the Overseas Express Service was instituted, connecting Washington with all points in the Expeditionary Forces reached by American Railway Mail Service cars. It has handled sixty-one east-bound shipments with an average weight of 1,794 pounds and a total of forty west-bound shipments averaging 444 pounds each.

Chaplain's Office: By the provisions of Section VIII, General Orders, No. 66, May 1, 1918, a Chaplain's Office was established at General Headquarters under the supervision of the Adjutant General.

The functions of the Adjutant General affecting the General Headquarters Chaplain's Office were to coordinate the activities of that office with those of other staff departments as occasion arose, and to advise upon military procedure and customs when necessary. The activities of the General Headquarters Chaplain's Office attended to the spiritual and religious welfare of the American Expeditionary Forces, shaped its own policies, and to all interests and purposes carried on its functions independently of the Adjutant General's Office. The report of the General Headquarters Chaplain is submitted as a separate document.

The vast volume of work of the Adjutant General's Office in the American Expeditionary Forces has been completed through the loyalty and the unremitting efforts of the officers, army field clerks, and enlisted men who composed its personnel. Deprived of the privilege of serving with combatant organizations, they have performed duties which, because of the closeness of the work, the absolute necessity for accuracy, and the length of the hours, have presented peculiar difficulties at every turn - difficulties which taxed patience and nerves to the utmost and exacted at times the fullest disregard of personal comfort, wishes, and consideration. They have given their best without regard to self or time. For their zeal and the splendid results which they obtained, it is impossible to express fitting appreciation and thanks. Their greatest reward is their own knowledge and satisfaction of duty to their country well done.

Respectfully submitted,

ROBERT C. DAVIS,
Adjutant General

Final Report of the Chief of Artillery, American Expeditionary Forces

Chaumont, Haute-Marne, undated.

From: Chief of Artillery, American Expeditionary Forces

To: The Adjutant General, American Expeditionary Forces

[Extract]

1. A Chief of Artillery, A. E. F., was provided for in G. O. 31, G. H. Q., A. E. F., Corrected Copy, dated February 16, 1918.

The duties of the office are prescribed in Par. I, G. O. 64, G. H. Q., A. E. F., dated April 29, 1918, Corrected Copy, which was not issued, however, until May 24, 1918.

Par. II of this order announced Brigadier General Ernest Hinds, N. A., as Chief of Artillery, A. E. F. He has served in this capacity since May 27, 1918, on which date the office was established at G. H. Q. (CHAUMONT) in compliance with Par. 20, S. O. No. 120, G. H. Q., A. E. F. * * *

2. The duties of the Chief of Artillery under the order cited are:

(a) To supervise the training of all artillery organizations until they join the units to which they belong.

(b) To supervise all artillery schools except those of the Army Group at LANGRES and the artillery sections of the Corps Schools.

(c) To prepare all details concerning the instruction and training of artillery units in accordance with approved training policies.

(d) To prepare drafts of such artillery manuals and other artillery literature as may be necessary in the training ane employment of artillery.

(e) To inspect all artillery of the command with respect to organization, training, materiel and equipment, methods, and all other phases affecting efficiency.

(f) To inspect the artillery schools of the army groups at Langres and the artillery sections of the Corps Schools.

(g) To make suitable recommendations based upon these inspections and upon study, investigation, and experience.

(h) To act as advisor upon artillery matters.

3. At the date the office was established to Chaumont the commissioned personnel consisted of seventeen officers.

To meet the ever-changing conditions and to carry out the requirements of the order cited above, the staff underwent numerous changes, regroupings, and a small increase until November 11, 1918 * * *

FIELD ARTILLERY TRAINING

4. When the office was organized on May 27, 1918, the system of training for the field artillery was already well established, and the work of the office was that of expanding, improving, and supervising the projects previously initiated by my predecessor, Major General March, and myself, as commanders of the Army Artillery, First Army, A. E. F.

The basis of the training of all the field artillery of the A. E. F. was a letter of instructions, dated July 16, 1917, from the Adjutant General A. E. F., to the Commanding General, 1st Division, outlining the courses to be followed in the training, not only of the 1st F. A. Brigade but also of subsequent brigades to arrive in France.

As a result of experience gained in the instruction of the 1st F. A. Brigade and following a comprehensive report submitted by General March, a scheme of training was adopted consisting of four phases, viz.

(a) Technical artillery instruction, both theoretical and practical.

(b) A short period of service at the front where the regiments would be given an opportunity to improve their training.

(c) A period of tactical training with the division to which the unit belonged.

(d) A school for the training of higher artillery commanders and their staffs, as well as for the further training of specialists.

Due to the necessity for throwing in every available officer and man of the A.E.F. to stop the German drives, these four phases were never carried through for any brigade; all brigades completed the first phase, but in many cases it was done under great handicaps, as will be set forth later; less than half of them completed the second phase; only two or three completed the third; and the fourth was put in operation less than one month before the signing of the Armistice.

So it may be said that the energies of this office, so far as concerns field artillery training, have been concentrated upon the first phase, i. e., the technical training necessary to insure the proficiency of our divisional artillery not only in the new methods of warfare but also in the handling of new materiel as well, for our troops came to Europe with the understanding that guns, ammunition, horses, wagon transportation, fire-control instruments, etc., would be supplied by the French and British until such time as our own resources could be developed and materiel manufactured and shipped over to supply our needs.

The first phase, technical instruction, included a theoretical course of about two weeks for all officers, covering the new phases of technical training. Then followed instruction of officers and enlisted specialists and practical instruction with materiel and horses and in the direction and conduct of fire.

The general instruction was given:

(a) In the materiel and its handling.

(b) In firing and the employment of artillery.

(c) In laying and maintaining telephone lines and in signalling.

The specialists were instructed in liaison, telephones, wireless telegraphy, signalling, the care and maintenance of materiel, and as *orienteurs*, aerial observers, and gas officers.

A great deal of emphasis was laid on practical instruction in the direction and conduct of fire. The first brigade was not limited as to the amount of ammunition allowed. As a result of the experience of that brigade the allowance of succeeding brigades was fixed at 28,600 rounds of 75-mm. ammunition and 12,600 rounds of 155-mm. howitzer ammunition per regiment, giving over 500 rounds per officer for the 75-mm. regiments and 200 for the howitzer regiments.

It is believed that this large ammunition allowance was a vital factor in the attainment of technical proficiencey.

5. In August, 1917, the French turned over to us, for purposes of artillery training, the camp at Le Valdahon where the training of the 1st F. A. Brigade was begun under Major General March on Septemeer 3, 1917. In August also steps were taken to provide additional training facilities in anticipation of the arrival of other artillery brigades, and the French set aside for this purpose the camps of Coetquidan and Meucon in Brittany and Souge near Bordeaux. All these camps were greatly enlarged, and later two more were added, La Courtine about 90 kilometers east of Limoges, and Le Courneau (Camp Hunt) about 60 kilometers southwest of Bordeaux.

Had there been anything like a regular flow of troops to France, these camps would have readily accommodated all of our divisional artillery, but for a time, during the

spring of 1918, the troop movement consisted largely of infantry, and the artillery camps were not working to capacity. Then the artillery came over faster than the camps could take care of it, so that a number of brigades had to be sent into training areas in the vicinity of the camps until those in training could be gotten out of the way.

6. At each camp was a director of instruction, with a staff of instructors, both American and French. A French Mission, headed by Col. Alphonse Maitre, was attached to Gen. March's staff upon its arrival. The instruction of the 1st Brigade was carried out entirely under French instructors, but from the beginning the policy was adopted of replacing the French by our own instructors as soon as practicable so that on November 11, 1918, there was only one French liaison officer authorized for each camp.

7. The following table shows the field artillery camps and training areas with the units trained at each, including brigades under training, on November 11.

TABLE SHOWING FIELD ARTILLERY TRAINING CAMPS AND AREAS

SECTION OF FRANCE		CAMP OR AREA	CAPACITY (BRIGADES)	BRIGADES INSTRUCTED
Brittany	Coetquidan	Camp	3	51, 67, 57, 3, 55, 60, 158, 160, 61, 64, 56*
	Meucon	Camp	3	53, 153, 155, 54, 7, 63*
	Redon	Area	1	
	Messac	Area	1	
	Ploermel	Area	1	
Bordeaux	Souge	Camp	3	152, 4, 52, 62, 164, 159, 59* - Divisional. 151, 166, 163, 65-Corps & Army.
	Le Courneau (Camp Hunt)	Camp	1	165, 161*
	Gradignan	Area	1	
	St-Laurent	Area		
Center of France	La Courtine	Camp	1	157, 167, 154
	Montmorillon	Area	1	
	Poitiers	Area	1	
Eastern France	Valdahon	Camp	1	1, 2, 5, 58, 6, 156.
	Ornans	Area	1	

* Training commenced but not completed.

Total accommodations for 22 brigades, of which 12 could carry on firing instruction simultaneously.

8. The total number of field artillery personnel trained at these camps was about 7,500 officers and 197,000 men, and the maximum number under training at one time was more than 2,600 officers and 65,000 men. The permanent camp staff comprised 100 officers and 2,200 men, and the instructional staff consisted of 225 officers and 400 enlisted instructors. The average training period for brigades was 1 month and 15 days, the longest 2 months and 20 days and the shortest 23 days.

The following table shows by months the numbers of officers and men of the field artillery units training in the various divisional artillery training camps:

1917	Officers	Men
September	242	5,990
October	294	6,130
November	349	7,270
December	857	11,980
1918		
January	532	11,980
February	480	10,975
March	565	15,975
April	882	11,980
May	472	11,980
June	1,331	32,945
July	2,236	47,970
August	2,336	45,975
September	2,662	65,890
October	2,584	65,890
November	480	11,980

FIELD ARTILLERY SECTION

9. The supervision of the training of divisional artillery troops was first carried on by an Inspector of Divisional Artillery in the Field Artillery Section of the Army Artillery Headquarters, First Army; and since the establishment of this office, by the Training Division of the Field Artillery Section. The instruction at the different camps was closely supervised and kept up to date by all possible means; the latest information available from all sources was distributed by circulars or memoranda; and instructors were sent to the front whenever possible for tours of observation. Each brigade was given a thorough inspection by an officer from the Field Artillery Section to determine results obtained from the instruction and the readiness of the brigade to go to the front.

FIELD ARTILLERY MOTOR TRAINING CENTER

10. This school, which was made necessary by the motorization of 155-mm. howitzer regiments, was opened November 4, 1918, at Le Blanc, about 90 kilometers south of the city of Tours.

It was organized to have a capacity of 2,000 students with an output which it was hoped would reach 3,000 graduates a month by January, 1919. The first class, graduated about December 1, numbered 600; the second and last class, of 900, graduated on December 24. The third class was to have contained 1,800 students.

HEAVY ARTILLERY TRAINING

11. Similarly to the field artillery training just discussed, the work of this office in the training of heavy artillery has been to improve and expand a system already in operation.

A letter from the Commander-in-Chief to Major General March, dated October 2, 1917, gave an outline of the organization of the of the Army Artillery, First Army, and assigned to General March the supervision of its organization, instruction and equipment; this was followed by another letter dated January 17, announcing the early arrival of brigades of army artillery and enlarging General March's authority over its training and organization.

12. As the major part of the army artillery consisted of 8" and 9.2" howitzers (British and American) and 155 G.P.F. guns (French), and tractor-drawn, the most urgent problem on hand was the training of chauffeurs and officers to handle the automobile equipment.

Upon the receipt of the letter of January 17, arrangements were made at once to send 160 American officers to the French Tractor School at Vincennes on February 1, 1918, and a letter was written by the Commanding General, Army artillery, First Army, to the Commander-in-Chief containing recommendations which formed the basis for the instruction of the heavy tractor artillery.

13. The following is an outline of the steps which were taken in organizing this instruction:

(1) Utilization of existing French schools until our own could be established.
(2) Establishment of a tractor school for officers.
(3) Creation of organization and training centers for heavy artillery.
(4) Preparation of firing ranges

These four steps formed the basis of all Heavy Artillery Instruction, and were completed later by two more:

(5) Creation of an O. and T. Center for railway artillery
(6) Creation of an advanced area. (See par. 20, below.)

UTILIZATION OF EXISTING FRENCH SCHOOLS

14. In addition to the school for officers at Vincennes, which has been mentioned above, the French gave us facilities at four of their schools for chauffeurs, Le Tremblay, Dourdan, Boulogne, and later Sathonay. These schools furnished us from 500 to 800 men per month until October, 1918, when our own schools were sufficient to supply our needs.

OFFICERS' TRACTOR SCHOOL

15. In May, 1918, an American tractor school for officers was established at Vincennes, alongside the French school; the plan of having the two schools together proved so satisfactory that when the French school moved to Gien, about 50 kilometers south of Fountainebleau, our school moved also, about August 25, 1918, and remained there until instruction was discontinued after the signing of the Armistice; its capacity was about 200 officers a month.

ORGANIZATION AND TRAINING CENTERS

16. These centers consisted each of an area, a city and several surrounding towns, where heavy tractor artillery units were instructed and equipped.

The troops were billeted in the towns near the city and a certain number of officers and enlisted specialists were sent to the school established at the Center itself, lo-

cated in the city, to receive the necessary specialist instruction; in the meantime the troops at the billets received instruction under the supervision of officers sent out from the Center.

The general outline of the instruction given is as follows:

(a) Training of chauffeurs and mechanics for all types of vehicles (tractors, trucks, touring cars, motorcycles).

This instruction was given at the automobile school at the Center; the monthly output of each of these schools was from 800 to 1,000 chauffeurs per month.

(b) Training of specialists: Orienteur, signal, radio, telephone, and gas officers carried on at the Center.

(c) Artillery Instruction: Given in the billets near the Center, using the materiel with which the unit was armed.

(d) Instruction in Convoy Work and Field Service: Given in the billets after the batteries had received their materiel and their chauffeurs who had been trained in the Center.

(e) Firing.

FIRING RANGES

17. Due to the longer ranges necessary for the tractor artillery, the question of finding suitable ranges was a more difficult one than in the case of the divisional artillery; in some cases the heavy artillery units were able to use the divisional artillery ranges at Camp Souge and La Courtine were used, and special ranger were prepared at Clermont-Ferrand and at Montmorillon.

CREATION OF AN O. and T. CENTER FOR RAILWAY ARTILLERY

18. This center was established by G. O. 37, Headquarters, Railway Artillery Reserve, A. E. F., in conformity with a letter of instructions from the office of the Chief of Artillery, A. E. F., dated August 7, 1918. Its organization was never completed in accordance with the authorized organization tables, because of the cessation of hostilities.

The object in establishing this Center was to carry on, under the Chief of Artillery, A. E. F., the work of training Railway Artillery Reserve units that had heretofore been under the Commanding General, R. A. R.

RAILWAY ARTILLERY SPECIALISTS' SCHOOL

19. In conjunction with the Center was established a Railway Artillery Specialists' School. This school was designed to complete the training of the specialist personnel, both commissioned and enlisted, of all newly arrived units, while the unit itself was undergoing at the O. and T. Center a final course of training to fit it for service at the front. It was also intended to put through the school the specialist personnel of the units which, after service at the front, had returned to the station of the Railway Artillery Reserve to await orders. In this manner, not only the proper instruction of new units, but also the refreshment of old units, would be accomplished.

CREATION OF AN ADVANCED AREA

20. In addition to the O. and T. Centers, an advanced area was established in the region of Donjeux---Doulevant---Doulaincourt; this was used for heavy tractor artillery units which had completed their training at the O. and T. Centers but had not yet been

fully equipped. It was necessary to move them out of the Centers to free these for the reception of units to be trained; after the Armistice, heavy artillery units were assembled here after leaving the front, in order to turn in their ordnance material. It was intended also to use this area for the reorganization and re-equipping of units which had just returned from the front.

21. The following table shows the O. and T. Centers and firing ranges their locations and the units trained at each.

				UNITS TRAINED	
DESIGNATION	**LOCATION**	**CAPACITY**	**FIRING-RANGE**	**BRIG. HQRS.**	**REGIMENTS**
O and T Center No. 1	Libourne	4 Regts.	Souge		57
				33 C.A.C.	60-61-62
				36 "	68-69
				37 "	45-46
				66 F.A.	146-148
					53 Amm. Train
					3 H.M.O.R.S.
O at T Center No. 2	Limoges	4 Regts.	La Courtine	32 C.A.C.	58-59-65
				35 C.A.C.	66-67-72
					63
					Army Artillery Park
					4th-6th H.M.O.R.S.
O and T Center No. 3	Clermont-Ferrand	4 Regts.	Clermont	31 C.A.C.	55-56
				59 F.A.	125-127
					142 (Det.)
					144
					146
					303
				163 F.A.	337-339
				166 "	348
					316 A.T. - 1st H.M.O.R.S.
O and T Center No. 4	Angers	6 Regt.	Montmorillon	34 A.C.A.	64-70-71
				38	48-49-50 (Det.)
					52-55 A.T.
					2nd-5th H.M.O.R.S.
O and T Center No. 5	Angouleme	4 Regts.	Montmorillon		47
					54 A. T.
					5-6-7-8 H.M.O.R.S.
					3-4-5 Corps Arty Park
					Army Arty Park (Det.)
Under C.G. R.A.R.	Mailly and Haussimont		Haussimont	30 C.A.C.	42-43-52-53
				39 "	44-51
O and T Center No. 6	Mailly and Haussimont		Haussimont		54 (Det.)
				40 C.A.C.	73-74-75 (Det.)

22. The work of the Heavy Artillery Section is covered in full in Part I of the Inclosures; the Training Division of the section maintained close supervision over the work of the schools and centers by frequent inspections, by the circulation of information through training circulars, and by visiting the front and then carrying back to the centers the results of the experience gained there.

The Engineering Division of this section, in addition to the supply and distribution of publications, blank forms, maps, and topographical data, supervised the work of *orienteur* officers, prepared orientation forms and other data, and organized and supervised the high-burst ranging sections.

The following table shows by months the numbers of officers and men of the heavy artillery units under training in the 0. and T. centers:

	Months	Officers	Soldiers
October	1917	250	5,200
November	1917	252	5,200
December	1917	214	5,200
January	1918	160	600
February	1918	245	600
March	1918	255	600
April	1918	304	7,598
May	1918	598	14,917
June	1918	684	17,333
July	1918	750	21,120
August	1918	1,075	29,111
September	1918	1,498	41,737
October	1918	1,376	36,849
November	1918	1,439	40,140
Total trained CAC		3,103 (note)	55,326
Corps Artillery		688	22,668

Note: In addition to this number 3,103, there were 219 officers graduated from the H. A. schools after the date of the Armistice.

23. Soon after the establishment of this office, trench artillery was placed under the Heavy Artillery Section and an officer who was familiar with these matters was detailed to this section to handle them.

Even before this time study and experience of trench artillery officers had been such that its two prime needs could be stated as:

(a) Establishment of a trench artillery center.
(b) Reorganization of trench artillery.

Papers showing these needs were submitted for the consideration of the General Staff, A. E. F. (By the Director of the Trench Artillery School on May 2 and May 15, 1918, and by the Chief of Artillery, A. E. F., on July 10 and July 22, 1918), which approved the former and disapproved the latter. As a result of the experience gained during the next three months, it was decided that the trench artillery should be reorganized, and a cable was sent to the War Department, November 10, 1918, recommending the reorganization.

24. The original organization of the trench artillery was copied from the French and consisted of:

Divisional	1 battery 58-mm. or 6-in. Newton
Corps	1 battalion 240-mm.

The reorganization as recommended in the cable referred to above provides for the organization of trench artillery units into regiments consisting of three battalions, six combat batteries, and one headquarters and supply battery. The regiments to be of two types, those manning heavy mortars and those manning medium mortars. An answer to this cablegram stated that this recommended organization would be considered in connection with plans for reorganization of the Army.

25. The training of the trench artillery batteries was at first carried on with their brigades while the officers were instructed first at the French school at Bourges, and later at the American Trench Artillery School near Langres.

The Trench Artillery Center was authorized late in August; the Trench Artillery School was moved to the point selected, Vitrey (Haute-Saone), on September 8, 1918, and the organization of the Center began.

The Center Area comprised 13 villages and, on November 11, had about 300 officers and 7,000 enlisted men.

The functions of the Center were:

To train officers
To train organizations
To train recruits
To supply trench artillery replacements of officers and men
To equip recently arrived organizations with supplies and materiel of all kinds
To organize new units as needed
To prepare trench artillery manuals and drill regulations
To study trench artillery materiel and methods
To test new materiel

In addition to replacements (183 officers and 853 men), the following organizations were trained or under training on November 11 at the Center.

Trench artillery battalions - 2, 3, 4, 5, 6, 7.
Trench artillery batteries - 8, 106, 109, 113, 115, 116, 301, 309, 311, 313, 316.
Total (including replacements) - 365 officers, 6,800 men.

26. Besides supervising the several activities of the Trench Artillery Center, this office supplied trained officers as instructors in the United States and later officers to command organizations destined for service in France, both in accordance with policies recommended by it and approved by the War Department.

It is felt that this supervision in the A. E. F. and the numerous recommendations made to the War Department for the improvement of methods and materiel would have soon produced satisfactory results in that we would have had in a short while trench artillery capable of accompanying infantry. This in the last analysis is what was sought.

ANTIAIRCRAFT

27. The antiaircraft Service in the A. E. F. was organized by Brig. Gen. James A. Shipton, C. A. C., Par. I, Sec. III, G. O. 46, G. H. Q. dated October 10, 1917, established the Antiaircraft and Trench Mortar School at Langres, with Gen. Shipton as Director; he was appointed Chief of Antiaircraft Service on April 3, 1918. At his own request Gen. Shipton was relieved from duty with the Antiaircraft Service and assigned to the command of the 55th F. A. Brigade per Par. 77, S. O. 180, G. H. Q., June 29,1918.

General Orders No. 181, G. H. Q., October 16, 1918, assigned Col. Jay P. Hopkins, C. A. C., as Chief of Antiaircraft Service. He had been Acting Chief since Gen. Shipton's relief.

The relation of this office to this service is prescribed in Par. 3 of the above order which reads as follows:

The inspections required of the Chief of Artillery, A. E. F., Sec. I, Par. 2, G. O. No. 64, c.s., these headquarters, will be such as are necessary for complete information as to the equipment, efficiency, and availability for duty at the front for all units of the Antiaircraft Service, A. E. F. Section I, Pars. 3 and 4, G. O. No. 64, c.s., these headquarters, apply to the Antiaircraft Service, A. E. F.

The training and organization of antiaircraft units and officers were carried out under the Army Antiaircraft School, with Headquarters at Langres. The Searchlight and Antiaircraft Machine Gun Sections of the school were located near Langres. The Artillery section was at Arnouville-les-Gonesse, where full advantage could be taken for instruction purposes of the elaborate antiaircraft defenses of Paris and of the French Antiaircraft Artillery School at Arnouville.

* * * * * *

RECAPITULATION

28. The following table shows the total number of artillery trained in France:

	OFFICERS	MEN	TOTALS
Divisional artillery training camps	7,978	205,213	213,191
H.A. centers and H.A. School graduates	4,010	77,994	82,004
Trench artillery center	459	8,400	8,859
Antiaircraft centers	184	4,645	4,829
Saumur Artillery School, graduates	1,548	3,393	4,941
Field artillery replacement regiment	432	28,273	28,705 *
Heavy artillery replacement battalions	218	10,804	11,022
Aggregate	14,829	338,722	353,551

* Includes only original replacements from the U.S.

MATERIEL

29. It may be stated at the start that the question of materiel has been a most serious one and that its lack has had a highly injurious effect upon the efficiency of the divisional artillery.

30. As stated at the beginning of the report the French Government was to completely equip our divisional artillery until such time as our own materiel could be manufactured and shipped; this materiel consisted of:

Artillery materiel
- 75-mm. guns
- 155 mm. howitzers

Vehicles.
Fire control equipment.
Horses.

Although the first brigade was promptly and completely equipped, various causes made it very difficult to provide the necessary equipment, especially as regards the 155 howitzers and limbers, fire-control equipment, and horses for succeeding brigades.

The last question was of the utmost seriousness; for example, two brigades at the camp of Meucon did not receive their horses until just before their departure for the front and, in the case of several units of these brigades, after their arrival at the front.

This question was always serious, misunderstandings arose and, although when the French Government made a general requisition for horses and turned over three-fourths of those obtained to us, it was far from completing our necessary supply. Even the motorization of some of the 155-howitzer regiments, while it cleared up the situation somewhat, had not solved the question definitely up to November 11.

The slow delivery of essential materiel and the practical absence of horses for issue to brigades in the training camps after August 1, 1918, greatly handicapped our efforts to train properly the divisional artillery, particularly in open warfare methods. To teach the principles of open warfare properly, mobility is indispensable. It cannot be done with immobile guns. In many of the 155-mm. howitzer regiments not even guns were available in sufficient numbers for purposes of instruction. During nearly the entire training period of the regiments after August 1 there were available but four howitzers for the use of the entire regiment.

One of the great lessons that our people should learn from this war is that it requires much time to manufacture guns. On November 11, 1918, with the exception of twenty-four 8" howitzers manufactured upon plans which had been used by the Midvale Steel Co. in the construction of howitzers for the British Government, there was not in the firing line a single field or heavy artillery gun manufactured for us in the United States after our entrance into the war---a period of nineteen months. Had it not been for the materiel furnished us by the French and British, it is believed that the war would have been lost.

31. The following table, with explanatory notes, shows the status of the equipment of field artillery brigades (with attached ammunition trains) on July 25, 1918.

Explanatory Notes (Written July 25, 1918):

(a) 86 batteries released by French July 24. Shipments starred July 25 direct to brigades.

(b) The 152d Brigade now has two batteries of 155 and should receive by July 26, 4 batteries. On the same shipment the 55th Brigade, which now has one battery should receive two more batteries. 155's are received from the French at the rate of six batteries a week. At this rate the 52d Brigade should be completely equipped by August 22. It will be noted that six brigades have one battery each for drill and instruction. At the present rate of delivery the last of the brigades now in France should be equipped by October 15.

(c) Sufficient just received at depot to complete equipment.

(d) Down to include the 153d Brigade will have enough to function by the time they are to go to the front. Enough to equip 10 brigades has been promised shortly after August 1.

(e) About 10,000 animals available for field artillery up to August 31. French requisitions discontinued after August 31. No More animals from Spain. None at present being shipped from the U. S. No more horses in sight. This will equip down to include the 58th Brigade.

(f) Figures show what has been shipped. No reports as yet to show what has been received.

(g) This equipment is ordered by Engineer Office, G. H. Q. So far all reports from brigades indicate that no equipment has been received.

(h) All are equipped or will be shortly.

Table showing Status of Equipment Field Artillery Brigades (and attached Ammunition Trains) on July 25, 1918

DIVISION	F. A. BRIGADE	STATIONS	NUMBER OF DAYS ALREADY IN TRAINING	75 EQUIPMENT	155 EQUIPMENT	TRENCH MORTAR	FIRE CONTROL	REMOUNT, INCLUDING AMMUNITION TRAIN	Q. M. TRANSPORTATION, INCLUDING ATTACHED AMMUNITION TRAIN	SIGNAL	ENGINEER	GAS EQUIPMENT		M. T. S., INCLUDING AMMUNITION TRAIN
												MEN	ANIMALS	
5	5*	Valdahon	31	x	x	x	x	x	x	x	0	x	x	-
4	4*	Souge	43	x	x	x	x	x	x	x	0	x	x	-
82	157	La Courtine	45	x	x	x	x	85%	x	x	0	x	x	-
28	53	Meucon	44	x	x	x	x	54%	x	x	0	x	x	-
35	60	Coetquidan	10	x	x	x	x	40%	x	x	0	x	x	-
78	153	Meucon	38	x	33%	x	x	55%	x	x	0	x	x	-
30	55	Coetquidan	36	x	16%	x	0	57%	x	x	0	x	x	-
33	58	Ornans	33	x	-	0	0	x	x	x	0	x	90%	-
80	155	Redon	Not commenced	x	-	x	0	45%	x	x	0	x	45%	-
27	52	Souge	1	x	-	x	0	19%	x	x	0	x	x	-
83	158	Guiprey [Guipry]	Not commenced	0	0	0	0	03%	66%	x	0	x	x	-
92	167	Montmorillon	10	0	16%	50%	0	02%	30%	x	0	x	0	-
89	164	Salaunes	Not commenced	0	16%	x	0	0	66%	x	0	x	0	-
37	62	Souge	"	0	16%	0	0	0	25%	x	0	x	0	-
29	54	Poitiers	"	0	16%	0	0	04%	50%	x	0	x	0	-
90	165	Le Courneau	"	0	16%	0	0	0	0	x	0	x	0	-
6	6	Ornans	"	0	0	0	0	0	0	x	0	x	0	-
				(a)	(b)	(c)	(d)	(e)	(f)		(g)	(h)	(h)	(k)

* Ordered to the front.
x Equipment essentially complete.

(k) Motor transportation ordered by G-4 direct. All the brigades have some equipment, none have their full authorized equipment.

32. With regard to the heavy artillery, the situation was better, but far from satisfactory. From the date of organization of the O. and T. centers, the training of the units was seriously handicapped by lack of equipment of all kinds. The lack of equipment greatly delayed the training and prevented proper instruction being given in convoy work and maneuvers. After about July 1, 1918, sufficient equipment was secured at each center for the training of the troops, but at no time were the regiments fully equipped while at the center.

MATERIEL SECTION

33. When this office was first formed, both the Heavy Artillery and Field Artillery Sections had a Materiel Division, but when the definite policy was announced on or about September 20, 1918, of motorizing 155-mm. howitzer regiments, it was decided to amalgamate these sections into one Materiel Section to better coordinate all matters affecting the materiel pertaining to both kinds of artillery. The following are some of the questions which this section has handled:

(a) Condition and suitability of equipment in use at the front.

(b) Status of equipment of artillery organizations.

(c) Necessity for improvements in existing materiel, and the development of new types to meet the conditions of modern warfare.

(d) Supervision of equipment of units in training to insure that organizations were equipped in the proper order as far as the supply permitted.

(e) Supervision of the equipment of artillery centers and schools.

The condition of equipment regulates to a great extent the operation of artillery. The care given to the equipment in general has been highly satisfactory. The repair equipment provided by the Ordnance Department has been satisfactory when available, but there has been a serious shortage of light repair and supply trucks. No units have been supplied the authorized allowance of repair trucks, but this has not caused serious difficulties. The great difficulty and delay in securing necessary spare parts and repair materiel for motor vehicles has seriously interfered with the efficient operation of all types of artillery using motor transportation. The Ordnance Department provided facilities for repair of guns and carriages and it was originally contemplated that this department would make repairs to motor transportation. When the Motor Trainportation Corps was charged with repair or motor vehicles with artillery, they had no facilities for doing the work and the provision of the necessary shops and personnel would have duplicated equipment. Steps were taken by this office, by taking the matter up with both the Ordnance Department and the Motor Transportation Corps, so that a uniform method was settled upon of effecting repairs to all transportation with units of artillery, utilizing therefor a minimum shop equipment without duplication of personnel and materiel.

MOTORIZATION OF DIVISIONAL HOWITZER REGIMENTS

34. Plans had been completed to motorize all 155-mm. howitzer regiments in the divisional artillery, as well as one regiment of 75-mm. guns with each combat division; in addition, the army artillery of each army was to contain one regiment of motorized 75's, the guns and caissons to be carried on trucks.

Up to November 11, none of the 75 regiments were motorized, but the following 155-mm. howitzer regiments were actually motorized.

Brigade	Regiment
6	11
167	351
54	112
165	345
160	330
154	312
58	123
156	316
7	8
64	142
61	133

PERSONNEL

35. At the declaration of war, the total number of officers in the Field and Coast Artillery was about 2,000; in France along, for 40 divisions, it was necessary to train about 8,000 officers for divisional artillery and from 2,000 to 3,000 for railway, tractor, antiaircraft, and trench artillery.

The school system for artillery officers in the A. E. F. may be expressed diagrammatically as follows:

SAUMUR

F. A. Training Camps	Heavy Artillery School Tractor School Railway Artillery Specialistists' School O. and T. Centers
Artillery School at Valdahon	Field officers' Course Artillery Center of Studies

(The above does not include the trench artillery and antiaircraft schools, which have been described.)

SAUMUR

36. In addition to training the brigades it was necessary to provide replacements for officers. This was done by the establishment of the Artillery School at Saumur in September, 1917, where field, and later heavy artillery officers were trained. The plans for this school contemplated taking young college men from the training camps who had been commissioned in the Field Artillery, and later enlisted candidates for commissions, and giving them the necessary theoretical and practical instruction to fit them for the technical work of artillery officers. It was the policy to send these officers from Saumur to the divisional artillery training camps and to the Heavy Artillery School ---in the first case to take the course of training with a brigade, and in the second case to complete the course at the Heavy Artillery School, then join an organization at an O. and T. center and received the training course there. Owing to the urgent need for officers with artillery brigades at the front, it was never possible to carry out fully this policy; wherever it was possible to do so, the state of training of officers after passing through the training camps and centers was most satisfactory.

The capacity of Saumur, at first about 500 students, was increased until it was finally about 1,800, with steps under way at the time of the signing of the Armistice to increase it to 2,400, that is 800 per month, the course being three months. About 4,900 students have completed the course.

The quality of the young officers from the 1st and 2d Training Camps and of the candidates for commissions has been generally high and the technical training of these men has given satisfaction in the regiments to which they were assigned. The course was for twelve weeks and covered instruction in artillery materiel, equitation, hippology, reconnaissance, topography, the battery mounted, telephones, wireless, signalling, ammunition, ballistics and dispersion, preparation of fire, observation of fire, principles and methods of fire, and a considerable amount of actual conduct of fire.

FIELD ARTILLERY TRAINING CAMPS

37. (a) Battery officers: This has been covered above under Field Artillery Training.

(b) Field and Staff Officers: The course of instructions for field and staff officers at the training camps followed the general scheme outlined by General March in his report on November 5, 1917, and in subsequent training orders and bulletins. Instruction at Valdahon was given by Colonel Maitre and Major Legrand of the French Mission. Training at subsequent camps consisted of utilizing the type problems prepared by the French Mission and requiring similar solutions to be worked out. This was sometimes done under a French instructor and sometimes under one of the American officers. Occasionally an officer of the French Mission would make a tour of the camps for the purpose of giving lectures and assisting in the solution of the problem and in September and October, 1918, the brigades in camp were visited by an officer from this office who had prepared a lecture and problem dealing with the employment of artillery on the defensive.

Finally, during October, 1918, efforts to secure the detail of experienced staff officers from brigades at the front were successful and arrangements were made to carry out a systematic and up-to-date course in instruction. The work was to be supervised and coordinated by a supervisor at these headquarters, who had under him two assistants, one for the Brittany group, Coetquidan and Meucon, and the other for the Bordeaux group, Souge and Le Courneau.

However, this scheme had just been put into operation when the Armistice was signed, and the training camps were then discontinued.

ARTILLERY SCHOOL AT VALDAHON

38. The opening of this school was greatly delayed due to the impossibility of ordering officers to it from the front and also on account of the great difficulty in obtaining horses; as it was desired to make this school one in which maneuver and open warfare tactics predominate it was not considered advisable to open it until the necessary agents for rapid maneuvers were at hand. A number of Ford tanks, tractors, and horses have lately been secured and the school has been in operation since January 28, 1919.

The students consist of officers of the Regular Army and those who desire to retain commissions in the Field Artillery. Every endeavor is made to instruct student officers in maneuver, road discipline, advance to and occupation of positions, and in securing, with the least delay, adjustments on such targets as are usually encountered in a campaign of open warfare.

HEAVY ARTILLERY SCHOOL

39. This school was originally established at Mailly, for the training of officers of the 30th C. A. C. Brigade and of officers sent over as replacements from the United States. As the number of heavy artillery troops in France increased, the lack of space at Mailly made it necessary to move the school to Angers where it remained until its discontinuance on January 20, 1919.

The course at the school was designed to give the student a theoretical knowledge of the principles of heavy artillery and a thorough ground work in their duties. After completing the course a very short period of duty with an organization should produce a competent battery officer.

The students at this school consisted of:

(a) Officers graduating from Saumur and assigned to the heavy artillery.
(b) Officers ordered from the United States as replacements.
(c) Officers in regiments arriving in France who needed further instruction.

Upon completion of the course the students were assigned:

(a) To heavy artillery units, either in O. and T. centers or at the front.
(b) To the Tractor School at Gien.
(c) To the Railway Artillery Specialists' School at Mailly.

In all a total of eight regular courses was given, in addition to special courses in *orienteur* and other work and courses for enlisted specialists. The length of the regular courses averaged about six weeks; the following are statistics covering these courses:

No. of Course		Date 1917	Students	Graduates
1	October	1 - December 28	103	64
		1918		
2	January	23 - March 30	160	121
3	April	22 - June 14	146	98
4	July	8 - August 28	171	164
5	August	5 - September 25	90	87
6	September	2 - October 10	120	111
7	October	7 - November 9	132	123
8	November	4 - December 13	123	115

The total number of graduates in all courses, was 1,071 out of a total of 1,283 students.

RAILWAY ARTILLERY SPECIALISTS' SCHOOL

40. Already discussed under Heavy Artillery Training.

TRACTOR ARTILLERY SCHOOL

41. Already mentioned under Heavy Artillery Training. Officers sent to this school were given thorough instruction in the operation and maintenance of all types of trucks and tractors. In all the courses much attention was given to convoy work and to the emplacement and withdrawal of guns from position.

Upon graduation, officers were assigned to duty with organizations as mechanical officers or were sent to O. and T. centers for duty as instructors.

In the later courses, many field artillery officers were sent to the school for instruction and then assigned to motorized field artillery regiments.

FIELD OFFICERS' COURSE

42. Upon the establishment of the Heavy Artillery School at Angers, a course for field officers was added. This course was designed for the instruction of field officers of artillery who had been on staff duty and were returned to duty with artillery. The course was so arranged that it enabled these officers to refresh their minds on the duties of battery officers and, in addition, they received instruction in the duties of field officers of heavy artillery. The course was completed by a ten-day period of in struction with a unit at the front.

This field officers' course, in addition to being given at the Heavy Artillery School, was given to brigades under instruction at O. and T. centers by officers sent from the school.

CENTER OF ARTILLERY STUDIES

43. The purpose of this center was to bring together specially selected higher commanders, both of infantry and artillery, with their staff, for the study together of the broad questions concerning the use of artillery, its employment in the offensive and defensive, communications, transportation, reinforcement, etc.

The Center, located at Langres, was organized and prepared to begin its course of instruction on September 16, 1918, but, due to the need for officers at the front, it was impossible during the fall to assemble a class composed of officers of appropriate rank and attainments.

Due to the cessation of hostilities, however, the Center started operations on December 9 with a class of 21 officers, composed as follows:

3 brigadier generals of infantry,

3 brigadier generals of artillery, each accompanied by a staff officer,

9 colonels or lieutenant colonels of artillery.

This course, which continued until January 7, including a seven-day trip of observation and study of certain portions of the recent front, was the last given at Langres; the center has recently moved to Treves, where its work is now carried on.

INFORMATION SECTION

44. The Information Section of this office has had the following functions:

(a) Information bureau for the office of the C. of A.

(b) Dissemination of Information. This was done by means of bulletins prepared in the section, containing information gathered from all possible sources, enemy and allied, and given a wide distribution throughout the entire artillery.

(c) Supervision of the Artillery Information Service: Close touch with entire A. I. S. was kept by numerous inspections and an A. I. S. Instruction School was established at Angers to train officers for this work.

Since the cessation of hostilities a careful study has been made of the subject of the A. I. S., including plans for its future, and the A. I. S. Regulations have been revised.

ADMINISTRATIVE SECTION

45. The administrative work of the office has been in charge of a Secretary, who attended to the usual work.

FRENCH MISSION

46. The Commanding General of the French Armies on July 11, 1917, placed at our disposal a mission to assist us in the organization and instruction of the American Artillery and to assure proper liaison between ourselves and the French authorities; this mission commenced its duties with General March at Valdahon, accompanied the staff of the Army Artillery when it moved to Bar-sur-Aube, and later came to Chaumont, when this office was established.

The assistance rendered to us by Colonel Maitre, Major Legrand and the other members of this mission cannot be overestimated, and the American artillery is greatly indebted to them for the valuable work they have done for it.

LIAISON OFFICERS

47. The Artillery has had two liaison officers: Col. A. F. Brewster, F. A. (now assistant C. of A., A. E. F.). at Headquarters. S. O. S.; and Col. E. M. Blake, C. A. C., at the Headquarters of the French Inspector General of Artillery.

INSPECTION OF SEACOAST FORTIFICATIONS ON BELGIAN COAST

48. Two members of this office, Major A. Norton, C. A. C., and Major D. Armstrong, C. A. C., were detailed about December 1, 1918, to make a study of the seacoast fortifications constructed by the Germans on the Belgian coast. After a visit to an inspection of the German installation, a report was prepared, illustrated with photographs taken on the spot, which described in detail the most important batteries and outlined in full the whole scheme of coast defense installed by the Germans. This report was forwarded through G. H. Q., A. E. F., to the War Department on January 14, 1919.

BOARD OR OFFICERS TO INSPECT SEACOAST FORTIFICATIONS

49. Recommendation was submitted by the Chief of Artillery on February 10, 1919, that a Board of Officers, consisting of Brigadier General C. L. Kilbourne, Colonel George Goethals, Engr. Corps, Lt. Col. John Mather, C. A. C., and Major Augustus Norton, C. A. C., be organized and directed to visit such of the coast defenses of the English French, and Italian countries and the coast defense of Trieste, Pola, and the Dardanelles occupied by the Allied Forces, as they might be permitted by the governments concerned to visit. The Commander-in-Chief approved this recommendation, the necessary permission was obtained, and the Board is now making these inspections. It is the purpose of this Board to get in touch, as far as possible, with the latest approved methods of harbor and coast defense in these countries. Full report of the studies of the Board will be submitted upon the completion thereof.

WORK OF THE OFFICE SINCE NOVEMBER 11, 1918

50. Since the cessation of hostilities, the work of the office has been that of inspection and the supervision of motorization of 155-mm. howitzer regiments, the establishment and supervision of the Valdahon school, the supervision of the Saumur Artillery School, and the closing up of the various camps and centers of the artillery.

BOARD OF OFFICERS TO STUDY THE EXPERIENCE GAINED BY THE ARTILLERY OF THE AMERICAN E. F.

51. Under the provisions of an office memorandum, dated December 9, 1918, a board of officers consisting of:

Brigadier General Andrew Hero. Jr.. U. S. Army.
Brigadier General John W. Kilbreth, Jr. U. S. Army, and
Lieut. Colonel Curtis H. Nance, Field Artillery, was assembled to make a study of the experience gained by the artillery of the A. E. F. and to submit recommendations based upon such study.

This board met on December 9 and has made studies of the following subjects:

(a) Study of after-war reorganization of the Artillery
(b) Study of development of mechanical transport of artillery
(c) Study of armament for:
  (1) The Division
  (2) The Corps
  (3) The Army
  (4) The Reserve
(d) Study of Liaison.
(e) Study of the training system in France:
  (q) Artillery schools
  (2) F. A. training camps
  (3) Heavy artillery O. and T. Centers
(f) Study of artillery equipment:
  (1) Ordnance
  (2) Signal
  (3) Miscellaneous
(g) Study of Unit Organization:
  (1) The Battery
  (2) The Group
  (3) Higher Units
(h) Study of artillery staffs
(i) Artillery parks:
  Ammunition supply, etc., etc.

To gather as far as possible the experiences of all artillery officers of experience, a letter was sent to all officers who have commanded artillery brigades, artillery regiments, trains, or schools in France, requesting information along the lines indicated above. Numerous replies were received containing information of value, based upon the experience of these officers.

The report of the Board was transmitted to the Chief of Staff, A. E. F., on March 27, 1919, with the recommendations of the Chief of Artillery, A. E. F.

52. It is believed that this report is the most valuable one that has emanated from this office. Its value consists not only in the views and recommendations of the Board, but to a still greater degree in those of a great number of our ablest and most experienced artillery officers, which are collated and classified in the various Annexes to the report, and which are, therefore, available in permanent form for future study of the many questions covered by them. From these the War Department authorities can draw their own conclusions, which may or may not agree with those of the Board. The conclusions drawn from those experiences by officers who study them will vary with the weight assigned by them to the views of the various officers quoted. While there is a general agreement in regard to most of the questions considered, the views differ widely on certain points. This is due, of course, to the fact that our views depend largely upon our own personal experiences, which are generally the result of local conditions of limited application and which are rarely reproduced elsewhere.

RECOMMENDATIONS OF THE HERO BOARD

53. In view of their great importance the principal recommendations of this board are summarized here so that they may be considered in connection with those contained in this report (Par. 53, below):

(a) That the proposed consolidation of the Field Artillery and the Coast Artillery Corps should not be made.

(b) That the battery combat trains be organized into ammunition batteries and battalions.

(c) That the battalion detail, now a part of the headquarters company, be made a distinct unit of the battalion.

(d) That the commissioned personnel of the battalion staff be increased.

(e) The Board believes that a two-battalion organization for the heavy regiment would be advantageous.

(f) That the trench-mortar batteries should not form part of the field artillery brigade but should be assigned to the General Artillery Reserve. (In order to expedite the development of trench artillery materiel, particularly of light mobile and of heavy motorized types, a further thorough study of this question should be undertaken and pushed to a conclusion now while our knowledge and experiences are fresh in the minds of trench artillery officers. If a trench artillery center should be established at once in the United States it is believed that rapid progress would be made. A considerable improvement in the present types has already been made at the A. E. F. Trench Artillery Center.)

(g) That the artillery ammunition train and a mobile ordnance repair shop be made parts of each divisional field artillery brigade and kept always directly under the brigade commander, the infantry ammunition train and that part of the repair shop pertaining to the infantry being handled separately.

(h) That a battalion of mountain artillery guns be added to the divisional artillery brigades to make provision for accompanying guns.

(i) That the divisional artillery be provided with a howitzer of smaller caliber than the 155-mm. howitzer.

(k) That the corps artillery armament consist of 155-mm. howitzers, 4.7-inch guns, and 155-mm. guns.

(l) That the 75-mm. gun carriage be modified to permit of high angle fire.

(m) That artillery not pertaining to divisions or corps should be organized into a General Artillery Reserve---that there should be no organic army artillery.

(n) That the army artillery staff should be a small tactical staff.

(o) That many modifications should be made in ordnance, quartermaster, signal, and motor transportation equipment.

(p) That the communications personnel and equipment therefor be increased.

(q) That study and experiment should be energetically continued looking toward the early motorization of every piece of artillery that can be successfully adapted to motor traction.

(r) That aerial observation must be made more satisfactory. That an observation squadron be permanently assigned as a part of each combat division, that the aerial observers used therewith be officers of artillery trained as observers and members of the unit for which they are adjusting, and that these officers be required to live with their units and leave them only for the purpose of making the required adjustments.

(s) That the personnel of the Flash Ranging Service and the Sound Ranging Service should be artillerymen, and that those services should be parts of the artillery organization.

(t) That the strength of our liaison detachments be considerably increased.

(u) That in addition to divisional maneuvers there should be established a course of instruction for general, field, and staff officers, of both infantry and artillery for practical training in artillery operations.

54. In addition to the recommendations of the Hero Board summarized in the preceding paragraph, the experience of the artillery of the A. E. F. leads to the following recommendations:

(a) It is indispensable that an adequate reserve of materiel and equipment, particularly of ordnance, for our needs upon the outbreak of war be accumulated and maintained in time of peace. Had we not been able to obtain ordnance from the French and the British we would have been a negligible factor in the war until the end of 1918. When the Armistice went into effect, nineteen months after we entered the struggle, with the exception of twenty-four 8"-howitzers made from British plans by the Midvale Steel Co., we had in line not one single piece of divisional, corps, or army artillery manufactured in America after our entry into the war.

(b) We should establish military instruction at all of our principal educational institutions, so that we may from the graduates of these schools build up a Reserve Corps of officers. The one thoroughly satisfactory source of supply of junior officers was the body of young men recently graduated from our colleges and universities.

(c) We should train in much greater numbers our regular officers for general staff duty. This was one of the most troublesome questions that we had to consider in the A. E. F. Due to the tremendous expansion of our Army, the lack of trained officers for duty with troops, and the consequent imperative necessity for the retention as long as possible of such trained officers as we had with the fighting units at the front, the organization of the staffs of our larger units---the corps and armies---was postponed much longer than was desirable. It is believed that earlier formation of these staffs is of the greatest, in fact, of almost vital importance.

(d) There should be a greater amount of time devoted to the combined training of our infantry and field artillery, with interchange of officers of these two arms for a few months period of training.

(e) The liaison between the artillery and the air service must be improved. Our officers must be brought to a realization of the necessity for aerial observation for the artillery.

(f) Our artillery officers must be trained in time of peace in artillery staff duties---for brigade, corps, and army artillery staff work.

(g) The Artillery Information Service should be retained in time of peace as a part of our Field Artillery organization. One artillery information service company (or better one for each corps) should be organized and stationed at the Field Artillery School of Fire---this company to consist of there sections: An A. I. S. section, a flash ranging section, and a sound ranging section, composed of artillery personnel. This A. I. S. company should establish a short course of instruction by which a nucleus of trained personnel would be provided for the A. I. S. when needed.

(h) The technical knowledge and training of our field artillery officers must be greatly increased, not only in matters of theory, but in practice; and with such special bearing on the various phases of motor transport and the application of both pure and applied mathematics to the technical employment of field artillery--- this without prejudice to the well-known and long-tried principles governing the employment of the arm in what we have, heretofore, known as open warfare.

To insure the technical proficiency of our field artillery officers in handling the fire of artillery units, a large ammunition allowance for target practice is indispensable.

(i) The development of the motorization of artillery of all calibers, including that of caterpillar mounts, should be pursued energetically. It cannot be claimed

as the moment that we have reached the point where the horse-drawn light guns can be discarded, but it is believed at the present rate of progress that point soon will be reached---we should keep in the forefront of progress by continual study and experiment.

(k) A study should at once be made of the question of army artillery organization while our experiences in the A. E. F. are fresh in mind. It is believed that our artillery officers of experience are practically unanimous in the opinion that there should be a general reserve of all artillery not assigned to divisions and corps.

(l) Some plan---drastic if necessary---must be found and applied which will result in the elimination of unfit officers now in the service, in the prevention of such in the future, as far as humanly and politically possible, and in the timely promotion and reward of those who have proved, and who may in the future prove, their worth. It is believed that our officers throughout the service are now so thoroughly convinced of the necessity for such action that it would be easy to carry out carefully digested regulations for examination for promotion, with a view to eliminating unfit officers. If legislation could be secured whereby it would be possible to retire officers who are found by examination boards to be not fit for further promotion, on a percentage of pay basis (say 2 1/2% of pay for each year of service after six years), it would afford an ideal solution.

Promotion by selection in time of war is not only justified but it is probably the only practicable plan; in time of peace, however, for regimental grades, much injustice would result from one cause or another under our system of government. On the other hand, a properly devised system of elimination will rarely do injustice to the individual or result in injury to the best interests of the service. In any system of promotion by selection, many good officers would undoubtedly be passed over, because they are not as well known as others, or have not as attractive personalities as others, etc; and yet they may in reality be, in many cases will be, abler officers than those selected. It is very difficult in time of peace to prescribe methods whereby the best officer may be determined---it is easy to select those whose service are not satisfactory. A good officer once passed over in time of peace is injured; if passed over again he is ruined, and the Government has not only lost a valuable asset but has acquired a continuing liability---a disgruntled officer who is continually thinking of the injustice done him and airing his grievances to those about him, the tendency of which is to breed discontend and dissatisfaction among his brother officers.

55. Accompanying this paper are the following inclosures, which give the details of the subjects covered in a general way in the report proper:

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Part IV. Materiel.
Part V. Artillery Information Service.

56. In concluding this report the Chief of Artillery desires to place on record his deep appreciation of the able, efficient, and loyal assistance given him at all times by both the commissioned and enlisted personnel who have been on duty at various times in his office. To them is due mainly the success which it is believed that this office has achieved in the performance of the duties prescribed for the Chief of Artillery in the orders establishing the office.

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ERNEST HINDS,
Major General,
Chief of Artillery, A.E.F.

[Inclosures]

PART IV

MATERIEL

EQUIPMENT OF FIELD ARTILLERY BRIGADES

[Extract]*

1. As a result of an agreement between the American and French governments, the latter undertook to supply the complete equipment for our divisional artillery until such time as our own materiel could be manufactured and shipped.

Summarized, the French were to furnish:

Beginning in July, 1917	All materiel necessary for the artillery of the 1st Division.
Before January 1, 1918	480 - 75-mm. guns 136 - 155-mm. howitzers
Before July 1, 1918	960 - 75-mm. guns 272 - 155-mm. howitzers

This agreement was further extended on account of irregularity in the arrival of brigades and slowness of manufacture in the United States, so that the French government was to furnish the guns necessary for "all divisional artillery arriving in France."

1st Brigade: The 1st Artillery Brigade, which arrived in August, received from the French its entire equipment, consisting of artillery materiel, vehicles, fire-control instruments, and horses.

September 1917 - May, 1918: The brigade arriving during this period received the following from the French:

75-mm. guns and caissons.

155-mm. howitzers and caissons.

Fire-control instruments.

A certain amount of transportation.

All this was furnished without any difficulty except the caissons, of which a sufficient number had not been provided for in the first agreement, as it was hoped to receive some from the United States early in 1918. These did not arrive, however, and there was some delay until renovated French caissons could be obtained.

During this period, the United States furnished the horses and the greater part of the transportation. The horse question began to be serious almost immediately.

After May, 1918: The question of materiel and equipment grew more and more serious; not only were brigades arriving in great numbers from the United States but in addition the French armies on the front were using up materiel in the operations going on and had little to spare to furnish us.

Materiel: On account of the large reserves on hand, there was no difficulty in completely equipping, during June, July, and August, 1918, 21 brigades with 75-mm. guns (1,056 guns).

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* The paragraphs omitted from this inclosure refer to details concerning supply and equipment, status of equipment at various times, tables of organization, and quoted letters and memoranda.

As regards the 155-mm. howitzers, however, the question was more difficult. The French had no reserves on hand and, in addition to furnishing us with a considerable number (504), were transforming into 155 howitzer units a large number of batteries armed with old equipment. This transformation was stopped, and excepting those necessary for replacement purposes, the entire French output was placed at our disposal.

In spite of the best efforts it was not possible to furnish the howitzer regiments with their entire equipment as soon as they arrived, although in all cases they received at least one battery at once for instructional purposes and the rest before leaving for the front.

On September 20, 1918, 216 155-mm. howitzers were lacking to completely equip all brigades in France; by November 1st this shortage had been reduced to 90.

Fire-Control Equipment: As will be shown later, there was always a shortage of fire-control equipment for brigades in training, the supply furnished by the French Service Geographique being insufficient.

Wagon Transportation: This was furnished as a rule by us, although with some delays.

Horses: For all brigades after the 1st, this has been a question of great seriousness and importance.

The French furnished a complete supply for the 1st Brigade and were to continue to do so for the following brigades, but as a result of several misunderstandings it was decided that we would furnish them ourselves.

As a matter of fact, during the winter of 1917-1918 the horses were obtained partly in France and partly in the U. S., a very unsatisfactory arrangement, with the result that the four brigades under instruction during the period October, 1917---April, 1918 did not receive their horses until just before leaving for the front: What effect this had upon their instruction is evident enough.

In May the situation became still more serious; all available tonnage was being used to transport troops and the situation could not be relieved by the motorization of 155-mm. howitzer regiments as the tractors had not arrived.

The French government finally made a general requisition for horses and were thus able to furnish us about 100,000, not enough however, to equip completely all brigades. The problem was never satisfactorily solved as the losses at the front and the arrival of more brigades was not offset by the motorization of howitzer regiments, which began early in the fall of 1918.

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EQUIPMENT FOR TRAINING CENTERS

3. The history of the matter of equipment for our training centers is the story of a long struggle between the Office of the Chief of Artillery (or the Commanding General Army Artillery, First Army, prior to June 1, 1918) on the one hand and the supply departments and the First Section, General Staff, on the other---a struggle beginning on October 12, 1917, the date of arrival of the first staff of instructors at Coetquidan, and ending with the approval on October 3, 1918, of a table of unit equipment for various types of centers.

The camp at Valdahon was fully supplied from the first with equipment installed by the French, and remained to the end the best equipped, in most respects, of any of the centers. Finally, towards the last this equipment was formally taken over by our supply departments.

The center at Coetquidan had been furnished no equipment whatever at the time of the arrival of the first organization to be trained there, but as the result of efforts extending over a period of three months the director finally succeeded in obtaining an amount sufficient for the work then in hand.

But when advance detachments began to arrive for training, the amount on hand was found to be woefully insufficient, and this was more especially so later on when the specialists of brigades in the neighboring areas began to arrive for instruction, according to plan.

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It was not only a question of equipment for advance specialist detachments, but of the more urgent one of getting enough for the brigades actually in training at the camps. So far as Coetquidan was concerned, this was finally accomplished by taking away from the Saumur Artillery School part of its equipment.

The training camp at Souge was furnished a fair initial supply of equipment by the supply departments and this was supplemented by some articles borrowed from the Heavy Artillery Center at Libourne. But when it became necessary to provide for an increased number of brigades and for advance detachments, great difficulty was encountered in securing even the essential articles and it was not until late in October that the equipment was complete.

Initial equipment for the camp at La Courtine was obtained when the Corps Schools were discontinued. But the usual difficulties were experienced later on when an attempt was made to secure additional equipment for training advance detachments.

The camp at Le Courneau (Camp Hunt) had no reconnaissance equipment whatever and only small amounts of other classes until the school of La Courtine was broken up in October, 1918. The one brigade (165th) which had gone through the camp prior to that time had fortunately been supplied with enough of its own equipment for training purposes.

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HEAVY ARTILLERY EQUIPMENT

7. With regard to the Heavy Artillery, the situation was better but far from satisfactory. From the date of organization of the O. and T. Centers, the training of the units has been seriously handicapped by lack of equipment of all kinds. The lack of equipment greatly delayed the training and prevented proper instruction being given in convoy work and maneuvers. After about July 1, 1918, sufficient equipment was secured at each center for the training of the troops, but at no time were the regiments fully equipped while at the centers.

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MATERIEL SECTION

Office, Chief of Artillery

8. The functions of the Materiel Section have been to keep the Chief of Artillery advised on all questions pertaining to artillery materiel. The most important of these questions have been:

(a) Condition and suitability of equipment in use at the front.
(b) Status of equipment af artillery organization.

(c) Necessity for improvements in existing materiel, or the development of new types to meet the conditions of modern warfare.

(d) Supervision of equipment of units in training to insure, as far as the supply permitted, that organizations were equipped in the proper order.

(e) Supervision of the equipment of artillery centers and schools.

CONDITION AND SUITABILITY OF EQUIPMENT IN USE AT THE FRONT

9. The condition of equipment regulates to a great extent the operation of artillery. The care given to the equipment by the artillery has in general been highly satisfactory.

The repair equipment provided by the Ordnance Department has been satisfactory when available, but there has been a serious shortage of light repair and supply trucks. No units have been supplied the authorized allowance of repair trucks, but this has not caused serious difficulties. The great difficulty and delay in securing spare parts and repair materiel for motor vehicles has seriously interfered with the efficient operation of all types of artillery using motor transportation.

The Ordnance Department provided facilities for repair of guns and carriages and it was originally contemplated that this department would make repairs to motor transportation. When the Motor Transportation Corps was charged with repair of motor vehicles with artillery it had no facilities for doing the work and the provision of the necessary shops and personnel would have duplicated equipment.

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STATUS OF EQUIPMENT OF ARTILLERY ORGANIZATIONS

10. In order to know at all times the status of equipment of artillery organizations it was necessary to maintain close liaison with all sections of the General Staff at G. H. Q., with all supply departments and with G-4, S. O. S., and also with all artillery organizations in France through their proper channels of communication.

To effect the above, as each unit of artillery arrived in France, data sheets were prepared which showed the location of all units and the complete status of their equipment. Weekly telegraphic reports were received from the O. and T. Centers, giving the exact status of equipment of each unit thereat, as well as orders of supplies for materiel which had been ordered supplied.

G-4, G. H. Q., furnished a data list showing all authorized issues to artillery units. The chiefs of supply bureaus furnished this office with lists of materiel as it became available for issue. Thus all the data were obtained necessary to keep the Chief of Artillery informed as to the state of equipment of artillery units.

The office of the Chief of Artillery maintained a liaison officer at the Headquarters, S. O. S., who furnished weekly reports on the state of equipment of all divisional artillery units.

When organizations of artillery joined their tactical units at the front, they passed from the jurisdiction of the Office of the Chief of Artillery, A. E. F., but, in order to advise the Commander in Chief on artillery matters, the Chief of Artillery must know the exact status of equipment of all artillery units in France. Therefore, arrangements were made with the chiefs of artillery of armies to report monthly the status of the equipment of all artillery units under their jurisdiction, which permitted tables to be prepared which showed the exact condition of equipment of all units of artillery in the A. E. F.

These tables consisted of the following:

Table A. Showing the organization of divisional artillery in the A. E. F.

Table B. Statement of guns, ordnance, and transportation assigned to army artillery regiments in the A. E. F.

Table C. Statement of guns, ordnance, and transportation assigned to corps artillery regiments in the A. E. F.

Table D. Showing organization, ordnance and transportation assigned to motorized divisional artillery in the A. E. F.

Table E. Showing armament and location of antiaircraft artillery in the A. E. F.

Table F. Showing organization of divisional ammunition trains.

Table G. Showing organization, ordnance and transportation assigned to trench artillery in the A. E. F.

NECESSITY FOR IMPROVEMENTS IN EXISTING MATERIEL, OR THE DEVELOPMENT OF NEW TYPES, TO MEET THE CONDITIONS OF MODERN WARFARE

11. The necessity for improvements in existing materiel or the development of new types of materiel to meet the conditions of modern warfare is apparent. Certain materiel necessary for position warfare would be unsuitable for ordinary warfare. The scarcity of animals for horsed artillery showed the urgency for motorizing artillery wherever possible. Suitable tractors were developed, which assured the early motorization not only of 155-mm. howitzers but of 75-mm. regiments of divisional artillery. The ammunition trucks were not suited to deliver ammunition to the positions and the need was felt for some device which would be satisfactory. The caissons carry only a limited quantity of ammunition and the large ammunition expenditure required delivery of tremendous quantities of ammunition to the battery positions. A caterpillar ammunition trailer has been designed and tested, which can be hauled by the tractors to any gun position.

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17. The railroad artillery for the whole A. E. F. was formed into the Railway Artillery Reserve with headquarters at Mailly and garage at Haussimont. At the latter place were located the railway shops and machine shops for effecting repairs to rolling stock and armament, as well as a camp for the personnel. Schools were maintained at Mailly and Haussimont for training incoming railway organizations and near Sommesous was a target range.

Requisitions for the service of units of railway artillery were made by commanding generals of armies to G-3, G. H. Q., and the latter placed the proper units at the disposal of the army concerned.

The Chief of Artillery advised G-3, G. H. Q., as to the availability of units of the R. A. R. for service at the front and, in turn, the Commanding General, R. A. R., kept the Chief of Artillery advised of such availability. For operations after joining their proper tactical units at the front, the units of the R. A. R. were under the or orders of the army commander (army chief of artillery), but were still subject to inspection by the Commanding General, R. A. R., and the Chief of Artillery, A. E. F. The former also made recommendations concerning the use of R. A. R. units to the army concerned.

The Commanding General, R. A. R., had the functions and duties of a divisional commander with respect to the R. A. R., but was subordinate to and functioned under the Chief of Artillery, A. E. F., as concerned purely artillery matters---training, organization, and equipment. Most of the details were left to the Commanding General, R. A. R., but were coordinated by the Chief of Artillery.

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21. The 75-mm. regiments of artillery, carried on trucks, were drawn from the 6th division of each corps, making 5 such regiments per army. These regiments were used for quick lateral concentrations, the guns carried on trailers or trucks.

The antiaircraft batteries of 75's, semi-mobile, were used in the army areas, as defense against air raids, to protect ammunition depots and other parks, as well as to protect the towns and cities that were vital and necessary in military operations.

There was but one regiment of 5" Seacoast guns in the army artillery, viz, the 69th Artillery (C. A. C.). These guns were available in the coast defenses in the United States and were used because of the scarcity of other desired calibers. This regiment never got on the line, but was trained, equipped, and about ready to go to the front just as the Armistice was signed.

Three regiments, the 61st, 62d, and 68th, C. A. C., were assigned to 6" S. C. guns for the same reason that the 5" Seacoast were employed. All were practically trained and ready for the front just as the Armistice was signed.

GRANDE PUISSANCE FILLOUX

There were four regiments of army artillery armed with the 155 Grande Puissance Filloux gun, viz, the 55th, 56th, 57th, and 60th, and all were on the line and participated in the St-Mihiel and Argonne engagements. The 45th and 47th Regiments had just arrived and had been assigned to this caliber of gun, but the Armistice was signed before any guns reached them. Their training had not commenced.

Twelve regiments of 8" howitzers were in the following condition at the signing of the Armistice:

44th, 51st, and 59th Artillery (C. A. C.), British howitzer, on the line.

63d, 64th, and 71st Artillery (C. A. C.), British howitzers, nearly ready to go on the line.

58th Artillery (C. A. C.), American howitzers, on the line.

66th, 67th, and 70th Artillery (C. A. C.), American howitzers, about ready to go on the line.

The 48th and 49th Artillery (C. A. C.) had just arrived; their training had not commenced. These regiments would have had American howitzers.

There were 3 regiments of 9.2"-howitzers in France when the war ended: the 65th, which was on the line; the 72d, which was ready to go on the line; and the 50th, which had just arrived---its training had not commenced.

No regiments had been assigned to 240-mm. howitzer armament, and no armament had arrived in France.

Some Navy 7" caterpillar mounts and some 8"-howitzer caterpillar mounts were in sight, but never actually arrived in France.

One Army artillery Park was in France and operated with the First Army; the Second Army Artillery Park was ready to sail, but did not reach France. An Army Park consisted of three sections: motor section of 6 truck companies, depot section, consisting of a headquarters and 3 park batteries, and an attached mobile ordnance repair shop. The whole park had a headquarters of 31 officers and men; total strength about 1,970 officers and men. The motor section of the park was to be used to supplement the ammunition service of the army artillery units. The depot section was the repository for all spares of cannon and all other materiel for units of army artillery. The attached. repair shop was used to effect the more important repairs for units of army artillery that could not be effected by the troops locally with their own repair facilities.

Brigade headquarters for brigades of army artillery were the same for units of railway artillery and for units of motorized army artillery. A brigade of army artillery consisted of three regiments of artillery, divided into three battalions of two batteries each. A battery consisted of 4 guns. To this brigade belonged an ammunition

train a heavy artillery mobile ordnance repair shop, and this brigade headquarters was the organization whereby the brigade commander could operate his brigade as an administrative and tactical unit. It furnished him the proper personnel from which to form his staff for these purposes.

For the 14" naval guns, the organization of the regiment was slightly different from the smaller caliber regiments. The 14" regiment had only 12 guns, a battery consisted of 2 guns, a battalion had 2 batteries, and there were 3 battalions to the regiment.

The headquarters company and supply company for 6"-gun, 8"-, 9.2"-, or 240-mm. howitzer, and these same companies for 5"- or 6"- seacoast gun regiments, provided the means for staffs for administrative and supply purposes for the regiments, and these units could well have had the same organization. There should not have been two different tables of organization for the different calibers, since the personnel and duties involved were practically the same.

Ammunition trains for army artillery brigades consisted of 4 truck companies of 28 trucks each, and a headquarters. This organization furnished the local ammunition supply for the units of the brigade.

Heavy artillery mobile ordnance repair shops furnished the means for making repairs to the materiel of the units of the brigade that could be made locally and which were of a minor character. This organization was formed from personnel of the Ordnance Department and was charged with making repairs to all transportation for all artillery organizations with the Brigade that were of a minor character, which could be made locally.

Provisional replacement units furnished the staffs, administration and instructional personnel for the artillery schools, for the Heavy Artillery Board, and the Railway Artillery Reserve.

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DIVISIONAL ARTILLERY

26. Plans had just been completed at the date of the Armistice to motorize all 155-mm. howitzer regiments in each brigade of divisional artillery, as well as one regiment of 75-mm. guns with each combat division.

As mentioned under army artillery, one 75-mm. regiment from the 6th division in each corps was to be motorized and the guns and caissons were to be carried on motor trucks to act as army artillery, but none were ever motorized.

Materiel did not arrive in sufficient quantities to motorize any 75-mm. regiments, but the following 155-mm. howitzer regiments of the indicated brigades were actually motorized, with the transportation as shown in the attached list:

Brigade	Regiment	Basis of motorization for each regiment.
6	11	24 caterpillars, 5 or 10 ton, Ordnance
167	351	24 ammunition trucks, M. T. C.
54	112	4 staff observation cars, Ordnance
165	345	1 artillery repair truck
160	330	2 reconnaissance cars, Ordnance
154	312	14 cargo trucks, M. T. C.
58	123	5 touring cars, 5-passenger, M. T. C.
156	316	10 motorcycles with side cars, M. T. C.
7	8	20 bicycles, M. T. C.
64	142	1 Ambulance, Medical Department
61	133	24 155-mm. howitzers, Ordnance
		24 caissons, Ordnance
		1 light repair truck, Ordnance
		3 artillery supply trucks, Ordnance
		4 carts, reel. regt. and bn., Ordnance

It was also intended to motorize one-half of each 75-mm. regiment in the depot and training divisions, viz, the 3d and 6th divisions of each corps. This was not realized before the end of hostilities

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PART V

ARTILLERY INFORMATION SERVICE

ORIGIN AND NATURE OF ARTILLERY INFORMATION SERVICE IN GENERAL

[Extract]

1. At the beginning of the present war all questions concerning the enemy, his activity, position, strength, intentions, etc., were handled by the Intelligence Section of the General Staff concerned (French 2d Bureau).

Artillery information, as it is known now, did not exist; the nearest approach to the present A. I. S. were artillery details---battery, battalion, and regimental---which set up observation posts from which fire was observed or conducted. Practically speaking there was no flow of information back to the high command.

When the present conflict settled down into trench warfare the whole information service for the artillery, as furnished by the means at hand, G-2, and artillery observation stations, was no longer sufficient to meet the situation.

The enemy was using large masses of artillery, in well-protected and well-camouflaged positions; at the same time a pressing need for a more efficient counter-battery was manifesting itself; the enemy guns could not be allowed to harass our trenches, roads, batteries, and other sensitive points, in perfect security from our fire. Neither G-2 nor the artillery observatories were accomplishing much in discovering enemy batteries, much less in giving their exact location.

As the pressing need for artillery information became more and more felt, a new source for obtaining it began to be developed, that is, aerial photography. But without indications from other sources even the most expert study and interpretation of these photographs will often fail to locate batteries; in fact, the search for a battery is usually directed to a certain locality by other agencies (sound or flash ranging, prisoners' statements, etc.); then this locality is photographed and the accurate position of the battery obtained.

In short the information furnished by G-2, even with the aid of air photos, became more and more insufficient. Furthermore, G-2 itself was branching out along new lines and was willing enough to see a service established to study artillery targets, especially batteries.

2. For a long while, artillery commanders used their orienting officers for this work, with more or less satisfactory results. But the work was not centralized and close liaison was often impossible between these orienting officers and G-2, the aviation, and other sources. So, early in 1916 the *Service de Renseignements de l'Artillerie* (S. R. A.) was established in every army and corps artillery headquarters by orders from French G. H. Q.; it was not extended down to the divisional artillery until nearly a year later.

The S. R. A. was not set up as a competitor to G-2 and in the French armies there has never been any friction between the two, most French G-2 men realizing that the

artillery was getting better service than they had given it, and they in turn were getting more from the artillery than they had formerly.

The above, as stated, applies to the French, upon the results of whose experience our A. I. S. was largely founded.

3. Along with the French, the British built up a system of their own, similar in its general lines and in its sources of information; its principal difference, as regards its relation to counterbattery work, will be explained later and discussed at some length, as there is much difference of opinion on this subject.

4. The Germans appear to have been behind the Allies in establishing an Artillery Information Service, but the following captured German document shows that they finally recognized the need for such a service.

> Corresponding to the information officers with the infantry the following has been decided upon for the artillery:
>
> At each artillery regimental and battalion headquarters an officer will be assigned to duty as information officer.
>
> All officers engaged in this work will have no other duties and they will report directly to the commander of the regiment or of the battalion and not to his adjutant.
>
> The names of the information officers will be furnished as soon as possible to the artillery commander.
>
> These officers should be permanent; if a change is necessary, a request will be forwarded to the division, stating reasons.

From the above, it will be seen that the Germans as well as the British and French came, sooner or later, to the same conclusions, that an independent information service was necessary for the artillery.

5. The missions of G-2 and the A. I. S. are essentially dissimilar, although they sometimes overlap, or rather supplement and strengthen one another; certainly, too much intelligence or too accurate information can never be obtained.

The following indicates the general missions of G-2 and of the A. I. S.:

Par. 98 of the Provisional Staff Manual (Nov., 1918) defines the missions of G-2 as follows:

> It is the duty of the Intelligence Section of the General Staff to collect, collate, and disseminate information of the enemy, including his organization and strength, his position, armament and equipment, his morale and his habits, in order that his probable intentions may be foreseen and his future actions defeated.

The missions of the A. I. S. are as follows:

(a) To collect information concerning the enemy artillery and to give it to G-2 as quickly as possible.

In this the A. I. S. is a helper of G-2 and in no sense a rival; the A. I. S. gives G-2 information it can get in no other way and would not get without the A. I. S.

(b) To collate information from all sources concerning artillery targets and to transmit this to the artillery in the most useful form.

It is a fact that everyone is interested chiefly in his own work and is inclined to underestimate the work of others.

It is believed that the average G-2 does not realize that the artillery must have special means to accomplish its missions and without the A. I. S. these specials means would be furnished, if at all, only after many delays and misunderstandings.

(c) To organize and supervise the immediate exploitation by the artillery of information concerning the activity of its targets.

This is a mission that no agency separate from the artillery can possibly take over.

(d) To act as a G-2 for the artillery commander in keeping him informed as

to the general situation and in furnishing the information upon which to base his recommendations to the Commanding General when operations are being planned or are in progress.

With regard to this it is necessary for the artillery commander to have on his staff, the means to obtain the information he needs.

6. The above is intended to show in general the functions of the A. I. S. and the necessity of his separate existence, apart from, but working closely with, G-2.

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GHQ, AEF: Superior Board File: Fldr. 4: Report

Final Report of the Chief of Antiaircraft Service

Chaumont, Haute-Marne, January 2, 1919

From: Chief

To: Commander-in-Chief, G. H. Q., American E. F.

[Extract]

1. Report on the Antiaircraft Service in the American Expeditionary Forces is attached hereto. It is arranged in the following order:

TRAINING:

Artillery

Machine Guns

Searchlights

ORGANIZATION.

OPERATIONS AT THE FRONT.

ANTIAIRCRAFT DEFENSE IN THE S. O. S.

* * * * * *

JAY P. HOPKINS,
Colonel, C. A. C.

[Inclosure]

ANTIAIRCRAFT SERVICE, A. E. F.,
December 28, 1918.

REPORT OF ANTIAIRCRAFT SERVICE

ARTILLERY TRAINING

The development of the American Antiaircraft Service in the A. E. F. began in July 1917, by the detail of---

Brigadier General James A. Shipton,
Captain George F. Humbert, C. A. C.,
Captain Glenn P. Anderson, C. A. C.

to proceed to Europe to investigate the subject of Antiaircraft Service.

Investigations were made in England, at the French Antiaircraft School at Arnouville-les-Gonesse, and along the French front. It was decided that an American school for antiaircraft would be necessary and arrangements were made to have such a school conducted by English-speaking French officers, under the supervision of Captains Humbert and Anderson.

Through the courtesy of the French, the chateau at Arnouville-les-Gonesse was requisitioned for our use and on Sept. 26, 1917, a class of twenty-five officers reported there to receive instruction. Instruction was given by Captain Paul Gassier, assisted by lectures by Commandant Bricard.

Major Jay P. Hopkins, C. A. C., relieved Captain Humbert, about Oct. 15, 1917. Lieut. Edgard de Vigan joined as a French assistant before the completion of the course.

The school was given official recognition in Par. 1, Sec. III, G. O. 46, G. H. Q., dated Oct. 10, 1917, which established the Antiaircraft and Trench Mortar Schools, with General Shipton as commandant. There was never any connection between the Antiaircraft and Trench Mortar schools, except as General Shipton was commandant of both.

Upon completion of the first course, the student officers and captain Anderson proceeded to the French front for two weeks' experience with batteries.

It had been decided that the Army Antiaircraft and Trench Mortar Schools should be a part of the Army Schools at Langres. The antiaircraft School was to include both antiaircraft artillery and antiaircraft machine guns. On Nov. 1, 1917, while the student officers were still at the front, Major Hopkins moved the headquarters of the Artillery Section to Langres.

Upon the arrival of antiaircraft batteries, in December, 1917, it became evident that the school must necessarily be a training center as well as a school for officers.

Repeated efforts were made to obtain materiel for use at Langre, but without success. Finally, arrangements were made with the French to allow us to use their materiel at Arnouville and guns installed in Paris defenses.

On January 24, 1918, the 1st Antiaircraft Battalion, less Hq. and Supply Co. and Battery A, and the 2d, 3d, and 4th Antiaircraft Batteries, left Langres for Arnouville. The troops occupied Fort de Stains. The Hq. and Supply Co. and Battery A, 1st A. A. Bn., remained at Langres to drill with two auto-cannon which had been loaned by the French. The 1st Antiaircraft Battery had been sent to Chaumont to receive instruction with the French battery at that place.

The officers' school was reestablished at the Chateau of Arnouville. All officers

from antiaircraft batteries were detached from the batteries to attend the school and thirty-one additional officers were sent from C. A. C. replacements to take the course.

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Upon completion of the officers' course, the students were sent to the French front for two weeks' observation and experience. Arrangements were made with the French to have our American batteries assigned to French batteries for experience at the front, and they proceeded for this purpose on April 15, 1918. The 1st Antiaircraft Battery, however, was assigned to the antiaircraft defense of Is-sur-Tille and went there direct.

Arrangements were made with the British to have groups of five officers take the course with their school at Steenwerck. Twenty officers in all were given this instruction, the last five leaving the Steenwerck school at the time of the German advance.

The policy of detaching officers from organizations in order to attend the school while their organizations were in training has been followed with each group of batteries arriving. Upon completion of the course, officers have been sent to the French front for special experience and the batteries have been sent to the front for experience in actual firing upon completion of their training.

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The aim of the school has been to give the fullest and most complete course possible in antiaircraft artillery. Every effort has been made to study in detail each new development in antiaircraft artillery and this has been effected by the translation by the school staff of French data and reports.

The location of the school near the French school has been a distinct advantage in enabling us to keep in touch with developments in antiaircraft service. The courses have been so developed as to give the theory and practice of latest fire control methods and also to cover thoroughly all discarded methods where the principles involved were interesting. Officers were thus made competent to instruct men in the use of instruments with a full knowledge of the theories involved. Knowing the theories of discarded instruments, officers could criticise suggestions for new methods or the design of new instruments and aid in the development of new methods.

The following subjects were covered as thoroughly as conditions permitted:

Semi-fixed mounts, emplacing, dismounting and drill.

Auto-cannon materiel and drill.

Instruments:

- Altimeters, string, Puteaux, and Husson
- Tachyscope
- Field telemeter with corrector
- Goniograph
- Auto-mount telemeter
- Sitogoniograph
- Range drum
- Wind drums for semi-fixed and auto-mount
- Angle of approach telescope
- Brocq predicting apparatus
- Routin mechanical tachymeter
- Goniotachymeter
- Sitogoniotachymeter.

Instruction has also included barrage fire and special regulations for night firing; fire by sound; signal systems for identifying planes; organization; liaison; camouflage and bomb proofs; fixed defenses of back areas; rules for road traffic; and gas instruction.

Instruction in fundamental subjects, such as close order drill, physical exercises, military courtesy, and first aid were not neglected.

The very first work of the school involved preparing an English translation of the French fire-control instruction and drill regulations. In addition to the development of the courses of instruction through translations and investigations, the staff of the school had done a great deal of technical work in connection with the design of fire-control instruments for American mounts. Trajectory charts for the American antiaircraft truck-mount when firing French ammunition were computed and printed. Data were computed and curves drawn for hand goniographs, sitogoniographs, goniotachymeters, and sitogoniotachymeters for the American fixed mount (improvised mount) and for the American truck-mount. Curves for the Routin tachymeter, type U. S., were also drawn and used in the instruction on this instrument.

Instruction has been given to 240 officers and about 5,000 troops. The general policy of the school has been instruction rather than elimination. Where officers failed to show the required proficiency in examination, each case was investigated on its merits and if there was sufficient reason to believe that the officer's previous scientific and technical training or inherent ability was such as to make him valuable to the service, he was continued in the service. Where there seemed to be little technical foundation for antiaircraft training and where it was felt that the officer would be of more service in another branch, where technical and scientific ability would not be at such a premium, a transfer was recommended.

It is believed that the results obtained as a result of the establishment of this school and training center have amply justified it. While the actual bringing down of enemy planes shows only one phase of the results and can be regarded only as a fortunate incident, such results are nevertheless indicative of the quantity of the shooting.

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With the exception of the 23d Antiaircraft Battery (Battery B, 1st Antiaircraft Battalion), which had two auto-cannons with complete equipment which had been purchased from the French, our artillery personnel at the front were serving as additional relief with French troops. In a few cases, the numbers of French troops was so reduced that our personnel took entire charge.

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December 30, 1918.

MACHINE-GUN TRAINING

Major William F. L. Simpson, Inf., was detailed to organize the Machine-Gun Section of the Army Antiaircraft School, December 2, 1917. He gathered information from the French and British authorities and made preparations for the reception and training of troops. Major Simpson died the latter part of January, 1918, and Major Andrew B. Drum, U. S. Marine Corps, succeeded him the first part of February, 1918.

Prior to the arrival of the 1st Antiaircraft Machine-Gun Battalion, the staff of the Machine-Gun Section of the school consisted of a director, senior instructor, four commissioned instructors, chief clerk, and detachment of sixteen enlisted men. During the first months of 1918, the instructors, under the supervision of the director,

studied the methods of fire on airplanes with machine guns. The only machine guns available in quantity were the Hotchkiss and St-Etienne. Their work determined that the Hotchkiss would fire at all angles of elevation, while the St-Etienne would not, and the Hotchkiss was adopted. Various antiaircraft machine-gun sights were also tried out at the school, and the one known as the infantry corrector (a French sight) was adopted. Experiments were also conducted to determine targets suitable for antiaircraft machine-gun fire, and balloons were found to be the most practical.

The work of the school was planned for the instruction of a battalion entire. Classes for the officers and for the noncommissioned officers were arranged, but the officers were not detached from their companies. Lectures were prepared which included such subjects as the metric system, maps, indirect fire, barrage fire, night firing on airplanes, identification of airplanes, protection, and camouflage. The course was arranged for six weeks, and this obtained for the instruction of the first two battalions. Thereafter it was planned to shorten the course. The first two weeks of the course were devoted to teaching the mechanism of the machine gun and its use in ground firing. The latter part of the course was given as much as possible to aerial firing.

The 1st Antiaircraft Machine-Gun Battalion arrived May 19, 1918. The firing range known as the Courcelles-en-Montagne Antiaircraft Firing Ground had been assigned to the school. It is about 25 [square ?] kilometers in area and, because of a ravine at each end, makes an excellent range. Ground firing is conducted in the ravine against the side hills. Aerial firing is conducted from the ravine, the balloons floating over the terrain allotted for firing. In addition to the use of balloons, a track was constructed for firing at a moving target. A motorcycle moving at full speed along the top of a hill towed the target. The rider is protected by stone walls, and the machine gunner sees only the moving target. The machine gun fired from the valley below the hill. The range complete was built by troops undergoing instruction.

Night firing was conducted in cooperation with the searchlight section of the school. For this firing small balloons were liberated and, after being picked up by the searchlights, were fired upon.

In addition to the instruction of the antiaircraft machine-gun battalions, a two weeks' course of instruction was arranged for classes of artillery officers and noncommissioned officers, who were sent to the school from time to time to receive instruction in antiaircraft machine-gun work. About 125 officers and 350 noncommissioned officers were thus qualified to serve the machine guns assigned to their organizations for antiaircraft protection.

Two instructors were sent to Is-sur-Tille to give a two weeks' course of instruction to the antiaircraft artillery and searchlight detachments in those defenses.

Two instructors were sent to Abainville in August, 1918, to give instruction to the local troops manning the machine guns provided for the light railway shops at this place.

During the period between May 27, 1918, and November 30, 1918, the 1st to 5th Antiaircraft Machine-Gun Battalions, inclusive, and the 141st Machine-Gun Battalion, were instructed; a total of about 4,500 troops. At the signing of the Armistice only two battalions had reached the front, but the 3d had completed its training and was about to proceed to the front.

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The success of these antiaircraft machine-gun battalions had been due largely to the initiative, zeal, and untiring efforts of Major Andrew B. Drum, U. S. M. C., as Director of the Machine-Gun Section of the Army Antiaircraft School. The results obtained by each organization, showing also the time each organization was in our front lines, are as follows:

ORGANIZATIONS	DATED	PLANES BROUGHT DOWN
Company A, 1st A. A. M. G. Bn.	Sept. 6 - Nov. 11	2
Company B, 1st A. A. M. G. Bn.	Aug. 1 - Nov. 11	5
Company C, 1st A. A. M. G. Bn.	Aug. 1 - Nov. 11	9
Company D, 1st A. A. M. G. Bn.	Aug. 1 - Nov. 11	8
Company A, 2d A. A. M. G. Bn.	Sept. 6 - Nov. 11	5
Company B, 2d A. A. M. G. Bn.	Oct. 13 - Nov. 11	4
Company C, 2d A. A. M. G. Bn.	Oct. 4 - Nov. 11	7
Company D, 2d A. A. M. G. Bn.	Oct. 4 - Nov. 11	1

Total number of shots fired by antiaircraft machine-gun units during period stated	225,115
Total number of planes brought down	41
Average number of bullets per plane	5,500

December 31, 1918.

SEARCHLIGHT TRAINING

Early in the war, it was demonstrated that field searchlights could not exist within ranges where their lights would be effective. The one use that has been made of searchlights during the war which is effective is in antiaircraft service.

In our army, field searchlight troops are engineer troops and such troops devoted their training to the searchlight as an adjunct in antiaircraft service.

A searchlight depot was established at Gievres. A section where training would be given searchlight troops and where shopwork would be done, was established at Fort Mont Valerien, near Paris, where the French had a searchlight repair shop. Pending the arrival of our own materiel, some of the first troops to arrive were sent to the British and French fronts to man their material and for training.

An additional location for searchlight instruction was established at Langres, under the supervision of the Army Engineer School. By June, 1918, it was definitely recognized that searchlights are properly a part of antiaircraft service and searchlight training was made a part of the Army Antiaircraft School, with the main school at Langres (Champigny) [Champigny-les-Langres]. The shops at Fort Mont Valerien were maintained, and the troops in training and serving with the British and French continued to so serve until they could be used on the American front.

An Advance Searchlight Base was established at Colombey-les-Belles, where searchlight troops who had completed their training could be assembled pending receipt of equipment. This locality had the advantage of being near one of our flying fields so that there was an abundance of aerial targets for drill.

The training course at Langres was six weeks in duration and included thorough instruction in various types of searchlights; selection of searchlight positions, their protection and camouflage; the paraboloid and other forms of listening apparatus; gas engines and generators as applied to searchlights; motor transportation; telephones; military topography, etc.

The French have made but little use of their searchlights to illuminate enemy aircraft. Their means of directing fire at night has been developed in connection with the listening apparatus. The British and American Antiaircraft Services have recognized the latter but also have developed the searchlight for illuminating the target

at night, so as to obtain direct fire. We use the listening apparatus primarily as a means of directing the searchlight. In addition to the searchlights used along our army fronts, they have also been installed in our fixed antiaircraft defenses.

The Searchlight and the Artillery Sections of the Army Antiaircraft School were too widely separated to obtain in drills the close cooperation necessary between them. Machine-gun troops in training have received the benefit of drill with searchlights by transporting a light from the Searchlight Section of the school to the Machine-Gun Section, for at least one night per week. It has been the plan, approved in principle by G. H. Q. and desired by each branch of the Antiaircraft Service, to consolidate the there sections in one training area. One suitable location was found in the vicinity of St-Jean-de-Monts, where the American school of fire for aeroplanes was established, but entirely new construction would be required and the barracks were not available. Another investigation made at the suggestion of the French was at Camp d'Avord, their training school for new antiaircraft batteries and for aeroplanes, but the French could not spare the barracks that would have been necessary for us.

Searchlights along the army fronts for antiaircraft service have been a demonstrated success. Liaison has been developed with the Air Service, whereby the pursuit planes take advantage of our illumination within certain areas. Searchlights have also been of great assistance in illuminating the ground for forced landings. It has been evident that they have a great moral effect on the enemy aviator, not only because of the probable fire that will follow, but also because of the effect of the light itself.

It is fitting that recognition be given the services of Lieut. Colonel J. C. Gotwals, C. E., commanding the 56th Regiment of Engineers (Searchlights), who has been the Director of the Searchlight School and has been in close touch with the actual operations of the searchlights on the fronts occupied by both our armies.

January 1, 1919.

ORGANIZATION OF ANTIAIRCRAFT SERVICE

The Chief of Antiaircraft Service, American E. F., is in direct command of our fixed antiaircraft defenses, operating under G. H. Q. Antiaircraft service in each army is subject to his inspection and recommendations.

The Chief of Antiaircraft Service in each army is in direct command, under supervisions of the Chief of Artillery of the army, of all the Antiaircraft Service assigned to the army. This includes artillery, machine guns, and searchlights.

The artillery is organized into separate sectors, normally of four batteries of two guns each. This sector (normally four pairs of guns) corresponds with the French groupments of three pairs of guns, and with the British battery of four pairs of guns, and with the Italian battery of two pairs of guns. The number of pairs of guns in our sector is normally four, but this number can be increased or diminished as occasion demands.

Machine guns are organized in separate battalions of four companies each. Each company has three platoons of four machine guns each.

Searchlights are organized in separate companies, each company having five platoons, and each platoon manning three lights. All the searchlight companies are part of a regiment of engineers.

In each army, the various antiaircraft units were distributed according to directions from the Chief of Antiaircraft Service of the army. The subordinate artillery, machine-gun, and searchlight commanders were independent of each other.

Each pair of guns was supposed to be in direct telephone communication with each adjacent pair, with each balloon within range, and with the sector commander. Sector commanders were to be in communication with each other and with army headquarters. Wire-

less was to be provided so as to place each sector headquarters in communication with nearest flying fields.

The system of watching and listening posts, whereby alerts were communicated to places in rear of the army areas, was entirely French installation. At the time of the Armistice, arrangements had been made to confer with the French, so that the American Antiaircraft Service would take over its proportionate share of this work.

In fixed antiaircraft defenses in our S. O. S., the tactical control was somewhat different. All the artillery assigned to a locality formed a sector. The number of batteries per sector would vary from three to six. The assignment of searchlight platoons or companies was such as to provide approximately one searchlight for each gun. Plans called for one company of machine guns for each sector. The artillery sector commander was in tactical control of the artillery, machine guns, and searchlights. His fire-control station was in direct communication by telephone with each searchlight, with each battery, and with each group of machine guns. He was also in communication by telephone with the nearest French telephone central, from which alerts were received. Each listening apparatus in each sector was used primarily as a means of directing searchlights, but they were also in communication with the sector commander, and data from them could be used for directing barrage fire.

Our defense installations were planned to include areas adjacent to Is-sur-Tille, Langres, Chaumont, Neufchateau, Vittel, Gondrecourt, Colombey-les-Belles, Sorcy-sur-Meuse, and Haussimont. Each of these areas (except the last) should have been in direct telephone communication with adjacent areas, but our installation was never completed.

December 31, 1918.

OPERATIONS AT THE FRONT

At the time of our entrance into the war, there was no American antiaircraft artillery materiel. The only American antiaircraft artillery mounts that were delivered in France during the war that could be used were suitable only for use in fixed defenses. When our first batteries were ready to proceed to the front, there was no materiel for issue to them. Our batteries were first assigned to French batteries as additional personnel in order to give our men experience in firing at the front. This was expected to be only temporary, but no other arrangements has been possible. The batteries invariably displayed such aptitude that they were given equal opportunity with the French for firing and in many cases the entire operation of the batteries was intrusted to them.

The French batteries as a rule were lacking in personnel, so that the assignment of American personnel was a welcome relief. Our batteries worked in harmony with the French and received every possible assistance from them. Our first batteries proceeded to the front on April 15, 1918, and were widely scattered from Verdun to Belfort.

Although our independent batteries were destined for service in fixed defenses, it was considered advisable for them to spend at least 2 weeks at the front before proceeding to their permanent stations. The Second Antiaircraft Battery, while so serving, brought down the first enemy plane, May 18, 1918.

We purchased from the French 2 auto-cannon with complete battery equipment and this was assigned to Battery B, 1st Antiaircraft Battalion (now 23d Antiaircraft Battery). Its first assignment with this equipment was in the Chateau-Thierry sector, under French direction.

Personnel of two antiaircraft battalions (10 batteries) and 3 separate batteries were on our army front during the St-Mihiel and subsequent operations.

The 1st Antiaircraft Machine Gun Battalion (less Company A) was in the Chateau Thierry offensive. Company A was detained in order that its equipment might be used in

training the 2d Antiaircraft Machine Gun Battalion. Company A, of the 1st Antiaircraft Machine Gun Battalion, and Company A, of the 2d Antiaircraft Machine Gun Battalion, joined our Army fronts on September 6, and the remainder of the 2d Antiaircraft Machine Gun Battalion, on Oct. 4.

Two companies of searchlights were in position on our army front in the St-Mihiel advance and this number was subsequently increased to nearly 4 companies.

The artillery antiaircraft defense of our armies was composed of French batteries, supplemented by the available American personnel and by our 23d Antiaircraft Battery. The antiaircraft machine gun and searchlight defense of our army front was strictly American. There were some French units at some of the towns in the rear.

The French supplied a number of mobile batteries, but not in sufficient numbers to cover our entire front. As soon as the St-Mihiel salient was taken, the line from Verdun to Pont-a-Mousson was covered by moving forward *demi-fixe* batteries, leaving the mobile batteries (which has followed up our advance to this line) free to support the line from Verdun west to the Argonne.

Colonel R. W. Collins, C. A. C., was Chief of Antiaircraft Service of First Army, and Colonel G. T. Perkins, C. A. C., Chief of Antiaircraft Service of Second Army. The Chief of Antiaircraft Service, A. E. F., was in constant liaison with them and cognizant of all plans for installation and for movement.

* * * * * *

The principal function of antiaircraft artillery is to prevent hostile planes from accomplishing their mission; preventing bombing planee from reaching their objectives; preventing the artillery observation planes from remaining in the vicinity of the target; driving off photographing planes; breaking up battle-plane formations, etc.

All batteries within range of observation balloons are ready at all times to place protective barrage. Direct telephonic communication between the balloon and the battery is maintained for the purpose of warning the balloon of the approach of enemy planes. The great speed obtained by the aeroplane diving to attack a balloon and the fact that the attack may come from any direction, percludes any system of fire except barrage.

Constant liaison is maintained with the Air Service, so as to keep them informed of the movement of enemy aircraft. Daily reports are submitted to G-2 of the army, to the air service, and to the chief of artillery of the army, showing the enemy aerial activity of the day.

Machine guns, equipped for antiaircraft fire, are a part of the equipment of all troops for their own protection against low-flying planes. This condition obtains in the armies of all of the Allies. Our own Expeditionary Force is the only one that has supplied antiaircraft machine-gun troops at the front for the specific purpose of combating low-flying planes. These guns are installed in groups of not to exceed 4 at intervals of not less than 1,000 yards and within range of our front line troops. This places them within easy and dangerous range of shell fire and many deaths and wounds have resulted.

Searchlights have been placed in a band across our army front. This band has necessarily been narrow due to lack of equipment. Our plan has been to illuminate the enemy plane so that it could be attacked by direct fire. It has been very evident that searchlights have a great moral effect on the enemy, not only because of the probable fire that will follow, but also because of the effect of the light itself. Liaison was developed with the Air Service, whereby pursuit planes were to take advantage of our illumination within certain areas. There was also an understanding with the artillery and machine guns so that they would not fire on planes within these areas.

One of the important questions connected with our antiaircraft artillery has been that of organization. Our first tables of organization called for 3 guns per battery.

The French tried this arrangement for one battery and abandoned it. All the Allies have agreed that the unit should be a group of 2 guns. The Italians formed 2 of these groups into a single tactical command. The French formed them in groups of 3. The change effected in our organization has been the adoption of tables of organization showing 2 guns per battery with batteries grouped normally by fours; but with the proviso that more or less than this number could be assigned as a field officers' command. Changing battery positions is frequently necessary and this flexible arrangement permits a battery to be detached from one sector and assigned to another. All antiaircraft batteries were numbered serially in order that this might be accomplished without change in the designation of the battery. This arrangement permitted also the easy transfer of individual batteries or of entire sectors between the front line and the S. O. S.

As is well known, the aeroplane represents a most difficult target and the results which are accomplished by the Antiaircraft Service, are largely in keeping enemy planes at such a distance that they can accomplish their mission only with difficulty. Actually hitting planes is known to be fairly common, but to bring them down can be regarded only as a fortunate incident. Nevertheless, comparative results in actual planes brought down to give a very fair measure of the accuracy of the shooting.

* * * * * *

On our Army front there were probably 1,500 antiaircraft machine guns which were identical with the total of 96 that were used by our two antiaircraft machine gun battalions. Probably there were planes brought down by these 1,500 guns, of which we have not had a report; but the total of which we have specific information is two. The number of planes brought down by antiaircraft machine guns on the entire British front is about two per month. Our two battalions, one serving at the front less than four months, the other less than two months, brought down forty-one (41) planes.

The results obtained by each organization, showing also the time each organization was in our front lines, is as follows:

ORGANIZATION	DATES	PLANES BROUGHT DOWN
Company A, 1st A. A. M. G. Bn.	Sept. 6-Nov. 11	2
" B, " " " "	Aug. 1-Nov. 11	5
" C, " " " "	Aug. 1-Nov. 11	9
" D, " " " "	Aug. 1-Nov. 11	8
" A, 2d " " "	Sept. 6-Nov. 11	5
" B, " " " "	Oct. 13-Nov. 11	4
" C, " " " "	Oct. 4-Nov. 11	7
" D, " " " "	Oct. 4-Nov. 11	1

Total number of shots fired by A. A. M. G. units during period stated	225,115
Total number of planes brought down	41
Average number of bullets per plane	5,500

The following specific instances are of special interest:

At Charey, Oct. 13, 1918, eight Fokkers were chasing one American plane back to our lines: Battery A, 2d A. A. Bn., 1st Lieut. T. J. Bell, C. A. C., commanding, brought down two of these enemy planes.

At Jaulny, Nov. 5, 1918, five Fokkers were returning from destroying an American Baloon, the 1st Platoon of Company B, 1st A. A. M. G. Bn., 1st Lieut. J. C. Mickel, Inf., commanding, brought down two of these enemy planes.

At Esnes, Oct. 20, 1918, the 20th A. A. Searchlight Platoon of Company A, 56th Engineers, 2d Lieut. H. R. Davis, C. E., commanding, brought down an enemy plane with machine guns.

December 31, 1918.

ANTIAIRCRAFT DEFENSE IN THE S. O. S.

At the time of the German advance in March 1918, our first antiaircraft batteries were completing their training at Fort de Stains. In the emergency that then existed, these troops were offered to the commanding officer of the Paris defenses. Materiel was available (2 auto-cannon) for but one battery, and Battery D, 1st Antiaircraft Battalion, was assigned to station at Pontoise, March 30, 1918, to assist in protecting the railroad bridge at this point. This place had become very important due to the threatened cutting of the lines of communication at Amiens. This battery remained at Pontoise until the end of June, when they were assigned to a battery of 105-mm. guns, at St-Mesves, also a part of the Paris defenses. This battery proceeded to the First Army front Oct. 6, 1918, to join its battalion.

A detachment of 50 chauffeurs was formed from our batteries in training and turned over to the French for use in the emergency. This detachment continued to serve the French under command of an officer of our Antiaircraft Service until after the Armistice, when they were transferred to the Motor Transport Corps.

The Chief of Antiaircraft Service, A.E.F., operating under G.H.Q., has been responsible for the antiaircraft defense of all areas requiring fixed antiaircraft defense. Plans were prepared for defenses of the regulating station at Is-sur-Tille; the ordnance depot at Jonchery and G.H.Q. at Chaumont; the motor repair park, hospital, and schools at Langres; the air depot at Colombey-les-Belles; flying fields at Ourches, Amanty, St-Blin, Trompot, Grand, Aillianville, Bessoncourt; the flying field and railway artillery park at Sommesous and Haussimont and for such important centers or depots as Liffol-le-Grand, Neufchateau, Gondrecourt, Abainville, and the hospitals at Bazoilles, Vittel, and Contrexeville. These areas were grouped into nine defenses and priority for their installation was established by G.H.Q., as follows:

Is-sur-Tille
Chaumont and Jonchery
Colombey-les-Belles
Ourches
Langres
Gondrecourt
NEUFCHATEAU
VITTEL and CONTREXEVILLE
HAUSSIMONT

The delivery of the American improvised antiaircraft mount made possible the installation of these defenses. Although these mounts were unsuited and unequipped for direct fire, they were, with slight alterations, fairly serviceable for barrage fire.

The first antiaircraft battery proceeded direct to Is-sur-TILLE from its training area (at CHAUMONT) in order to install as soon as possible some antiaircraft defense for this place, which was very important and also very vulnerable.

Eight antiaircraft guns and nine searchlights were installed in these defenses. Notwithstanding its importance, no bombing planes ever reached it.

In July, 1918, additional mounts had become available but there were no troops and three provisional antiaircraft batteries were organized from railway artillery reserve. These three organizations installed 3 batteries at CHAUMONT. The French battery there remained in position until the completion of these installations, when it was removed and our 10th Antiaircraft Battery was assigned in its place and installed an additional battery. The plans for this defense included the installation of 9 searchlights, but the materiel was never available without sacrificing installation at the front. No night bombing was ever attempted in these defenses, but propaganda and photographing planes have been engaged.

Eight guns were installed in the defenses of COLOMBEY-les-BELLES including 2 French demi-fixed mounts which had been purchased. These guns were in action several times. It may be too much to say that this installation saved our air service base at COLOMBEY-les-BELLES, but none of the night attacks after this installation were successful. One very determined night attack by a large squadron of Fokkers, following a thorough reconnaissance by the enemy the same day, was completely broken up. Bombs were dropped in the woods nearby but no damage was done.

A necessafy and extensive part of each defense was the telephone installation by means of which each defense was controlled from its central post.

At the close of our operations, the American areas in France requiring antiaircraft defense were becoming more numerous and it had become necessary for us to develop a system of alerts in liaison with the French. In all the American shops and depots within reach of bombing planes, arrangements were made for putting the place in darkness immediately on receipt of an alert. These alerts were transmitted over French telephone systems. Definite arrangements were made for perfecting this system, wherein we were to do our proportionate part, but the cessation of hostilities prevented its completion.

Investigations for antiaircraft defenses were made of many additional places, but they were then either of too little importance or too far from the front lines to warrant further preparation of defense plans, considering the limitations in troops and materiel. Before the cessation of hostilities, it had become evident that our supply of antiaircraft materiel would ultimately be such that we could install needed defenses throughout our S.O.S., and arrangements were made for perfecting defense plans, but the actual development of such plans was rendered unnecessary.

The French have installed a very complete system of transmitting alerts to give warning to places in S.O.S. of approach of hostile planes. The territory of France was divided into 4 zones, the boundary line running approximately northeast and southwest. Each of these zones had its Center of Information. Two continuous lines of watching posts extended cross France and down the Swiss border. Paris, in addition, is surrounded by an enormous circle of listening posts. Each location having active defense units is also part of this installation. Telephone liaison is established throughout this system very largely by exclusive antiaircraft wires, but where these special lines are missing alert messages are given absolute priority over commercial and army lines. Defense centers between first and second watching lines receive alerts when enemy planes cross the first lines. Each antiaircraft post within this area transmits to adjacent posts information of enemy planes passing in its vicinity. Planes in reaf of the second watching line do not receive alerts unless planes cross that line. The extinction of lights is ordered by these samd alerts so that the area within 100 km. of the point reporting the enemy plane will be totally dark. The system, as thus briefly outlined, is a very estensive and expensive installation which has well served the American areas during hostilities.

Plans for fixed defense showed that guns and searchlights were needed in approximately equal numbers and that one company of antiaircraft machine guns should be pro-

vided for each 4 batteries of antiaircraft artillery. There would have been required approximately 24 antiaircraft sectors (192 guns), 6 antiaircraft machine-gun battalions, and 15 antiaircraft searchlight companies (225 lights). The organization contemplated was such that troops in the front line could be alternated with troops in the fixed defenses.

At the cessation of hostilities, there were in the Antiaircraft Service, A. E. F., 7 antiaircraft battalions and 20 separate antiaircraft batteries; a total of 5,000 artillery, 6 antiaircraft machine-gun battalions; a total of 4,500 infantry; and 10 antiaircraft searchlight companies; a total of 2,500 engineers---an aggregate of about 12,000 troops. The numbers required to complete 3 armies and our system of defense in S. O. S. would have been 9,000 antiaircraft troops with each army and 18,000 troops in the S. O. S. an aggregate of 45,000 antiaircraft troops.

JAY P. HOPKINS,
Colonel, C.A.C.,
Chief of Antiaircraft Service,
A.E.F.

C-in-C Rept. File: Fldr. 387: Report

GENERAL HEADQUARTERS, A. E. F.,
Chaumont, Haute-Marne.

REPORT ON THE DEVELOPMENT OF THE TANK CORPS

[Extract]

Prior to the arrival of the A. E. F., the American Military Mission in PARIS had, by direction of the Chief of the War College, investigated and submitted a report dated May 21, 1917, giving the latest British and French ideas relative to tanks. In May, a Joint British and French Board met in LONDON but were unable to agree as to proper design of tanks or tactics to be employed. In June 1917, shortly after the arrival of the Commander-in-Chief, committees were sent to various fronts to study the organization and equipment of the British and French armies, including tanks. However, the first real step forward towards the development of the American tank corps was a detail of a board of officers to study the new Renault tank on June 19, 1917, by the C-in-C, A.E.F.

The matter of tank equipment for the A. E. F. was carefully studies throughout the summer, and on September 14, 1917, in Cablegram No. 158-S, Paragraph 15, a tank program was outlined. This project was based on a force of 20 combat divisions, and was to consist of 5 heavy and 20 light battalions, employing a total of 375 heavy and 1,500 light tanks. This project was approved by the C-in-C on Sept. 23, and on October 14, Majors Drain and Alden of the Ordnance Department, were detailed to collect all information obtainable on the use, design, and production of tanks. Their report was submitted on November 10.

Soon after, an Interallied Tank Commission was approved in order to coordinate production efforts, and Mayor Drain was appointed the American member.

On December 6, General Bliss cabled the chief of staff for approval of the Interallied agreement for the joint production of 1,500 Marck VIII Liberty tanks, and for the allotment of 1,500 Liberty engines for use in same. These tanks to be assembled in France, and the contract to be finished by October 1, 1918. * * *

In the meantime, Captain Patton (Cavalry) and Lieutenant Braine had been on duty with the French tank corps. They were very well satisfied with the Renault tank and as a result of their report, the ordnance dept. was requested to begin the production of American Renault tanks. However, the French Renault was constructed by a private concern and it was very difficult to complete negotiations for the obtaining of sample tanks and plans.

On December 26, 1917, plans of the Mark VIII or Liberty tank were approved. A sample wooden tank was built, complete in every detail, and an agreement was reached as to the production of these machines. The French Government was not at that time interested in a heavy tank, therefore the arrangement was strictly Anglo-American. Fifty per cent of the components were to be furnished by each country and the tanks were to be assembled in a factory to be built in France. This agreement was confirmed by a treaty between Great Britain and the United States, signed in LONDON, January 22 * * * Deliveries on these tanks were to begin in July - the first 600 to be delivered to the United States. On Jan. 17, cablegram was received stating that delivery on Liberty engines would start during the month of April. * * *

In the meantime, production plans for the American built Renault were under way in the United States, and deliveries were promised by the ordnance department as follows: 100 in April, 300 in May, and 600 monthly thereafter. * * *

A revised project for the tank corps was approved by the G. H. Q. on Feb. 18 and by the War Department on March 21. This provided for the necessary headquarters, 5 battalions heavy tanks, and 20 battalions light tanks. Repair and salvage companies, depot companies, training centers and replacement companies in France, equal to 25% of the combat forces and in the United States 25% more. Tank replacements to be 15% per month.

On February 22, Cablegram No. 816-R was received promising 200 Liberty engines during the month of May, thus setting the heavy tank program back a month.

Permission was received to train personnel for the heavy tanks at English training centers, and a light tank training school was opened near LANGERS, for which 25 French Renault tanks were procured, 10 in the early spring and 15 in June.

In April 1918, the Interallied Tank Committee, consisting of the Chiefs of Tank Corps of France, Great Britain, the United States and Italy, was formed and met at VERSAILLES on May 1, and monthly thereafter. In June this committee reported that no useful number of tanks, either light or heavy, could be obtained from the United States before 1919, and on that basis a promise of two battalions of light tanks was obtained from the French and a promise from the British to equip the one heavy tank battalion then training in England.

On May 5, Cablegram No. 1233-R was received stating that 4,440 light tanks were being built in the United States by the ordnance department and promising prompt delivery.

On June 23, delivery promises for light tanks from the United States were made as follows: 12 to be delivered by Sept. 1, and 100 during October, the number then to increase monthly until the contract schedule of 500 per month had been reached. * * *

On June 29, notice was received of another delay in Liberty engines production, but 100 engines were promised prior to October 1. * * *

In July the importance of tanks had increased to such an extent that a new tank corps project was outlined. This provided a total of 10 heavy battalions and 20 light battalions. This increased organization allowed for 10 brigades, each consisting of one heavy battalion, 2 light battalions, and repair and salvage company. All tank corps troops were to be a general headquarters troops, and to be alloted to the armies according to the theatre and nature of the operation. For the three armies contemplated at that time a combat tank corps for two armies was allowed. The allotment for an army

was normally to consist of an army tank center headquarters, with a heavy artillery ordnance mobile repair shop and 5 brigades. Each army group was to be based on a training center. This would give a total of 750 heavy fighting tanks, 1,450 light fighting tanks, with a reserve of 15% per month. * * *

On August 11 specifications were received for the Ford light tank. * * * One of these tanks was received for tests, early in October, and was thoroughly tried out by both the Ordnance depardment and the tank corps. As a result of these tests the ordnance dept. recommended the Ford tank as a tractor for 75-mm. artillery, but not for use as a battle tank unless absolutely necessary. The tank corps did not recommend this tank as suitable. * * *

In the meantime work had been begun at NEUVY-PAILLOUX on the factory for assembling Mark VIII tanks, but progress was slow. On August 18, telegram was received from the Commanding General, S. O. S. in regard to this matter, in which he stated that the situation at NEUVY-PAILLOUX had been investigated by the chief engineer who reported that there was no possibility of being able to begin production before Sept. 1. The whole scheme was termed by him as too elaborate for a war period and that labor, material and time were being wasted. He recommended that the plan be cut so as to allow for just the bare necessities, in order to produce results. This recommendation was approved by General Pershing in a telegram to Mr. Stettinius, Asst. Secretary of War, dated Aug. 19.

On September 5, the American Commissioner of the Anglo-American Commission addressed a letter to the C-in-C in which he gave the status of the components under the Anglo-American agreement. The English components were at that time in very good shape, 100 sets of armaments consisting of machine guns and 6 pounders, were in store, as well as the miscellaneous equipment. Over 60% of the steel required for the armor plate was in the hands of the manufacturers, and was well on its way to completion. In regard to the American component, he stated that the supply of Liberty motors was a very serious question, and that in his opinion complete American components would not be ready for sometime to come. He stated that the factory was to have been completed in July, while as a matter of fact it was not ready for operation at the time of his report.

On September 28, Cablegram No. 1985-R was received giving the information that 50 Liberty engines would be shipped in September, 300 in October and 600 in November.

On Sept. 27, the light tank situation was outlined in cablegram No. 115-R to the Commanding General, S. O. S., which promised 75 American Renaults in October, 200 in November and 650 in December.

This was practically the status of American fighting tanks at the time of signing of the Armistice, November 11. The plant for assembling Mark VIII tanks at Neuvy-Pailloux was not complete but was ready to assemble tanks on small scale. No American components, including Liberty engines, had been received in the A. E. F., and no Ameri-American-built tanks had been delivered by the Ordnance Department, except the Ford tank, which was simply tested by the tank corps.

To go back to what was actually done: On August 20 the American tank corps did not own a fighting tank. It consisted of 600 trained men for light tanks, and 800 for heavy tanks, with 1200 men training in England and 12 companies of light tank personnel en route from the United States. Before September 1, 2 battalions were equipped with light Renault tanks by the French and were at once assigned to the First Army for the use in the St-Mihiel operations. From that time until Nov. 11 these tanks were in continuous operations at the front, both in the St-Mihiel and Meuse-Argonne offensives.

In the middle of September the British, in fulfillment of their promise, equipped the heavy battalion then training in England, with 47 Mark V tanks. This battalion operated with the American II Corps from September 27 on.

Two American-built Renault tanks were finally received at LANGRES on November 20

and eight more before the end of the year, making a total of 10 American-built tanks in France, of a total of 4,440 promised.

No Mark VIII or Liberty tanks were ever assembled at CHATEAUROUX * * *

ROBERT L. COLLINS,
Lieut. Colonel, U. S. A.,
Chief of Staff.

For and in the absence of:

S. D. ROCKENBACH,
Brigadier General, U. S. A.,
Chief of Tank Corps.

CHART SHOWING STATUS OF TANKS ACTUALLY RECEIVED BY THE AMERICAN TANK CORPS

		DELIVERED			WITH COMBAT UNITS			DESTROYED			TRAINING		
		FRANCE	ENGLAND	U. S.	FRANCE	ENGLAND	U. S.	FRANCE	ENGLAND	U. S.	FRANCE	ENGLAND	U. S.
Aug.	LIGHT										25		
1	HEAVY												
Sept.	LIGHT	144			144						25		
1	HEAVY												
Oct.	LIGHT	1			141			3			25		
1	HEAVY		47			47							
Nov.	LIGHT				122			29			25		
1	HEAVY					14			33				
Dec.	LIGHT	69		2[x]	182						25		2[a]
1	HEAVY		12			14						12	

(x) 2 American Renault Tanks received Nov. 20, 1918.
(a) 8 American Renault Tanks received early in December.

AGREEMENT BETWEEN THE BRITISH AND U. S. GOVERNMENTS FOR THE PRODUCTION OF TANKS

The Government of the United States of America and the Government of His Britannic Majesty, being desirous of cooperating in the use of their respective resources for the production of the war machines known as the tanks, and having considered the joint recom-

mendations made to them by Lt. Col. A. G. Stern, C. M. C., and Major J. A. Drain, U. S. R., whom they had appointed as their commissioners to investigate the possibilities of such joint production, the undersigned, duly authorized to that effect by their respective governments, have agreed upon the following articles:

1. The above mentioned commissioners were authorized by the respective governments:

(1) To build a factory in France, the cost of which is to be defrayed in equal parts by the contracting governments and the running thereof. The factory shall be of sufficient capacity to produce three hundred completed tanks per month and capable of being extended to produce at least twelve hundred tanks per month. The materials required for the construction of the factory shall be obtained in France and in England. The unskilled labor for the erection of the factory shall be supplied by the British Government. Skilled labor shall be supplied by the British or by the United States Government as the commissioners may arrange.

(2) To arrange for the production of, and to produce, fifteen hundred tanks during the year 1918, or as many more as may be required and authorized by the respective governments, and to arrange for the provision of the components for these tanks in the United States and Great Britain substantially as follows:

In the United States: Engines complete with starter and clutch, radiator, fan, and piping, silencer, electric lighting, dynamo and battery, propeller shalf, complete transmission, including main gear box, brakes, roller sprockets, gear shifting, and brake control, tract links and pins, rear track sprocket, hub and shafts, front idler hub and shafts, track roller, track spindles and bushings.

In Great Britain: Bullet and bomb-proof plates, structural members, track shoes and rollers, guns, machine guns and mountings, ammunition racks and ammunition.

2. The respective governments undertake to give the necessary priority in respect of material, labor, shipping and other requirements to enable the program to be carried out in the most expeditious manner.

3. It is understood that the tanks produced by the factory are to be allocated between the United States, France and Great Britain according to a determination to be reached later between the governments of these three countries, provided that the first six hundred tanks produced shall be allocated to the United States Government, and the latter and the British Government shall each take one-half of the total number of tanks produced not sold to the French Government, unless unequal allocations between them shall be subsequently agreed upon.

4. The price which shall be charged to the French, British and United States Governments, should there be an unequal allocation between the two latter, shall be five thousand pounds sterling per tank, which price shall be subject to adjustment at the close of the operations occurring under this agreement, and the liquidation of all assets upon a basis of actual cost, such actual cost to include no charge for overhead by either government.

5. The capital necessary to carry out this program shall be supplied in equal parts by the British and the United States Governments. Expenditure in France for labor materials in connection with the building and running of the factory shall in the first instance be paid by the British Government.

Materials purchased in Great Britain shall be paid for by the British Government and those purchased in the United States shall be paid for by the United States Government.

An adjustment of the accounts shall be made every six months.

6. It is further agreed that the United States Government shall replace the steel provided by the British Government for armour plate; the replacement shall be in the form of ship plates and shall be made on or about the date of delivery of armour plate to the factory, on the basis of ton per ton, the necessary allowance for difference in value to be made in the adjustment of the accounts.

In witness whereof the undersigned have signed the present agreement and have affixed thereto their seals.

Done in London in duplicate, January 22, 1918.

WALTER HINES PAGE.
ARTHUR JAMES BALFOUR.

C-in-C Rept. File: Fldr. 314: Report

FINAL REPORT OF CHIEF OF AIR SERVICE, AMERICAN EXPEDITIONARY FORCES

CHAPTER I - ACHIEVEMENT

[Extract]

When hostilities ceased on November 11, 1918, there were actually assigned to armies 45 American squadrons and 744 pilots, 457 observers, 23 aerial gunners, and the complement of soldiers. These squadrons were equipped with 740 airplanes, with armament of the latest type, and the flying personnel, trained in Air Service schools, was second to none in the world for aggressiveness and skill. Twelve of these squadrons were equipped with American-built planes and Liberty engines. This engine in actual service fulfilled the highest hopes of it which had been entertained in the United States.

On the Marne, at Saint-Mihiel, and in the Argonne our air forces were pitted against the best which Germany could produce and the results show that the enemy more than met his match. Our pilots shot down 753 enemy planes which were officially confirmed, and many others too far behind the lines to be confirmed by our own witnesses, but which were nevertheless undoubtedly destroyed. They also destroyed 71 (confirmed) enemy ballons. Our total losses in air battles were 357 planes and 35 balloons brought down by the enemy.

Our squadrons in round numbers took part in 150 bombing raids, during which they dropped over 275,000 pounds of explosives on the enemy. They flew 35,000 hours over the lines and took 18,000 photographs of enemy positions, from which 585,000 prints were made by the photographic sections attached to observation groups. On innumerable occasions they regulated the fire of our artillery, flew in contact with infantry during attacks, and from a height of only a few yards from the ground they machine-gunned and bombed enemy batteries, convoys, and troops on the march.

Of the 35 balloon companies then in France, with 446 officers and 6,365 men, there were 23 companies serving with the armies at the front. This balloon personnel had also been tranned in A. E. F. schools and in every test proved its worth. Our ballons at the front made 642 ascensions and were in the air a total of 3,111 hours. They made 316 artillery adjustments, each comprising all the shots fired at one target; they reported 12,018 shell bursts, sighted 11,856 enemy planes; reported enemy balloon ascensions 2,649 times; enemy batteries 400 times; enemy traffic and roads and railroads 1,113 times; explosions and destructions 597 times.

Air Service depots to supply the squadrons and balloon companies at the front were in full operation and others were being prepared to maintain this force, which was to be increased rapidly. Needed steps had been taken to provide for the equipment of this force as it was placed at the front, and it was certain that it could be fully maintained. A production plant had been built and was in full operation, where some 10,000 men were employed in assembling planes and in repairing planes, engines, and balloons which had seen service at the front.

Our balloons were attacked by enemy planes on 89 occasions; 35 of them were burned during such attacks and 9 others were destroyed by shell fire. Our observers jumped from the baskets 116 times; in no case did the parachute fail to open properly. One observer lost his life because pieces of the burning balloon fell on his descending parachute.

CHAPTER II - THE WOEVRE AND THE MARNE

The Toul Sector: The Air Service, A. E. F., commenced actual operations at the front in the spring of 1918. The Toul sector was chosen as the place where American squadrons would be located and given their final practice to bridge over the gap which must always exist between training in schools and work under actual war conditions. In this locality the opposing armies were facing each other in two well defined positions, and since the early days of the war this had been a comparatively quiet sector. Means of liaison had been developed and there existed aerodromes which provided all needed facilities. In the air, as on the ground, the enemy was comparatively inactive, using this sector, as did the French, either as a rest area for tired units or as a position to be held by units which had not been so thoroughly trained. It was well recognized that these conditions imposed one serious dissadvantage. They bred false ideas of what constituted real war, for from the beginning the staff of the A. E. F., thoroughly understood that movement constitutes the essence of war. However, our state of preparedness, a situation which will always be encountered where actual preparation for war must be carried on while the war is waged, made it seem wiser to take but one step at a time, and fortunately this particular part of the western front remained inactive until the St-Mihiel offensive on September 12, 1918.

Corps Observation: In April 1918, the I Corps Observation Group, consisting of the 1st, 12th, and 88th Squadrons, was organized. The pilots for the most part were men who had never served at the front. On the other hand, the observers had nearly all seen service with French squadrons and their experience so gained proved of great value. This group was placed under the tactical control of the French XXXVII Army Corps and under the administrative control of the American I Army Corps. Its mission was primarily to keep the command informed by visual and photographic reconnaissance of the general situation within and behind the enemy lines. To accomplish this, a routine schedule of operations was prescribed for each day, consisting of severe close range reconnaissances of the sector, and, towards dusk a reconnaissance for hostile batteries in action. In addition to this routine work, special missions were arranged, in many instances for the day following. Artillery adjustments, in particular, were carried out, and many long distance and special reconnaissances. Except in the one case of the attack on Seicheprey, no opportunities offered for contact patrols.

Value of Experiences in the Toul Sector: From a command point of view, the work of this group in the Toul sector was comparatively unimportant. There were no marked opportunities for obtaining information of value, as no active operations occurred. The instruction of the group itself in its duties during this time was carried on consistently and with great advantage. Individuals made rapid strides in learning the details of their duties, and except training in actual combat, they had arrived at a state of excellence by the time they were to take part in real warfare. This period was also utilized in organizing and operating the group as such, as opportunity existed for so doing without paying the ordinarily heavy price of mistakes in war. A proper organization was evolved rapidly and the principles and methods established stood the test of time. Changing conditions made minor modifications necessary, but the essentials proved sound and were the model for succeeding groups.

Work in Quiet Sectors: During this period one of these squadrons was detached for

duty in the Baccarat sector, where its experience was along the same lines as those followed by the other two squadrons in the Toul sector.

During the summer, while American divisions were in line in the Vosges mountains, the 99th Aero Observation Squadron received its first battle training, operating over the southern end of this sector and particpating in the attack on Frapelle.

Army Observation: The 91st Squadron, our first army observation unit, commenced active operations on the front on June 6, 1818, also in this Toul sector. Its personnel too had much to learn of its work from its own experience. The best methods to employ in obtaining information of the enemy's rear areas were studied and developed. Many material difficulties in doing photographic work were met and overcome. Aerial gunnery was brought to a high degree of efficiency. Formation flying was constantly practiced, and when active operations began in this sector the 91st Squadron had gained confidence in itself and had acquired knowledge of long distance reconnaissance that proved of great value to our staff in later operations.

Day Bombardment: Day bombardment had its beginning on May 18, 1918, when the 96th Aero Squadron was established on the Amanty aerodrome, also in this Toul sector. Its personnel had received some training with both French and British units. The shape of the St-Mihiel salient and the installations within and behind it offered excellent opportunities for bombing. The first raid was made on June 12, when the yards at Dommary-Baroncourt were successfully attacked. Early in July, owing to overeagerness in adverse weather, an entire flight of this squadron was lost, and as at this time there was also difficulty in replacing equipment, the squadron was somewhat crippled. By August, equipment had been secured and twenty successful raids were made during this month. These did considerable material damage, but even more important was the moral effect produced. Bombing has a great effect upon all troops, and according to French intelligence reports, the enemy took to his dugouts long before the bombers reached their objectives.

Much tactical knowledge was gained by this squadron while in the Toul sector. By trial, the most satisfactory formation for encountering enemy pursuit was developed. The enemy methods of attack were studied closely and the experience gained proved of value during the more serious enemy efforts which were made later.

Pursuit: The Toul sector likewise served as a place for giving final practice to the pursuit units. The 94th Pursuit Squadron commenced operations on April 14, 1918, and, on that same day, thanks largely to the excellent liaison with the antiaircraft defenses and to blunders of the enemy, two enemy planes were shot down in our lines without loss to ourselves.

In May, 1918, three other squadrons were ready to be sent into battle, and the 1st Pursuit Group of four squadrons was formed. Fortunately, there were among the pilots some who had served with the Lafayette Escadrille and their experience in war was invaluable in teaching our new pilots, who had much to learn. The very best of school work cannot give a pilot the atmosphere and feeling of the front. Not alone is this true in general, but schooling cannot impress upon the students the relative importance of vision in the air, aerial gunnery, formation flying, and fighting, and acrobacy. In particular, teamwork and formation flying had to be emphasized at the front. These matters were vigorously undertaken, and with marked success. For a time the enemy was neither numerous nor aggressive and combats were infrequent, but there was always the atmosphere---and many of the conditions---which prevailed in active warfare.

In June, 1918, advantage was taken of bombing raids carried on by the British Independent Air Force to cooperate by attacking enemy pursuit planes which sought to interfere with these raids, and on three occasions enemy pursuit planes were shot down by our pilots.

Our pursuit squadrons, like the observation squadrons, came out, after their stay in the Toul sector, while not veteran fighting organizations, yet possessed of excellent

morale and well equipped to undertake the more serious work in which they were about to be engaged.

Balloons: This quiet sector was also chosen for the development of our balloon companies. In February, 1918, the 2d Balloon Company joined the 1st Division, which was then in line. Two other companies, one sent to this Toul sector, one to near Baccarat, reached the front in April, relieving French companies. Specialists from French units remained with our balloon companies until the men had become sufficiently adept, which ordinarily required but a short time. After our own companies had been thus trained they themselves undertook the training of newly arriving American balloon units. The mission of these balloon companies was to regulate artillery fire, to locate targets, to report all activity within the enemy lines by day and, when possible, by night.

The Marne and the Vesle: The work of all of our air forces became of a much sterner type when they entered more active sectors which were the scene of hard fighting in July and August. The operations on the Marne and the Vesle may be roughly divided into three periods: the preparation for the expected German offensive, which came on July 15, the crushing of that offensive, and preparations for the Allied counter-offensive of July 18; and this counteroffensive itself, from Soissons to Chateau-Thiery, with the consequent retreat of the Germans on the line of the Vesle and later to the Aisne. Each of these periods called for a somewhat different disposition of the air forces to effect the best results.

Observation: The I Corps Observation Group, consisting of the 1st and 12th Aero Squadrons, reached the Marne sector during the first days of July, 1918, and occupied an aerodrome about 55 kilometers from the existing front line. It was assigned to duty with the I Army Corps, which at that time held the front extending from a short distance west of Chateau-Thierry to Courchamps, with two divisions in the front line. Although the positions of the opposing forces had somewhat stabilized after the German offensive of May 27, 1918, conditions were quite different from those existing in the Toul area. There were a number of strong points hastily organized rather than a continuous line of trenches. The enemy had also powerful artillery and by this time had massed the heavy guns that were intended to support his formidable attack of July 15. A very powerful enemy air force had also been assembled, and our squadrons, accustomed to the lesser and not so highly trained air forces of the Toul sector, now daily encountered enemy patrols of some seven to twenty machines of the latest Fokker type and flown by the best of German pilot, who were vigorous and aggressive and who showed a teamwork and persistence new to our experience.

On July 1, 1918, the American attack on Vaux gave an opportunity to employ contact patrols and advantage was taken of this to give all our available teams the experience which cannot be gained otherwise.

The arrival of the 88th Squadron on July 6 completed this group, which operated as such from July 7. From this last date to July 15, the main purpose of operations undertaken was a thorough reconnaissance and surveillance of the enemy opposite our sector, in order to keep our command informed of his movements and dispositions. Missions were sent out for this purpose daily at dawn and dusk, while other missions were dispatched throughout the day according to the existing situation. All missions were quite definite. Great importance was attached to photographing the enemy works. Visual reconnaissances and photographic missions were both fraught with difficulties and the enemy often endeavored to interfere with them. Nevertheless, our staff received timely and important information, the result of the work of this observation group during this period. In addition, a certain number of artillery adjustments and contacts patrols were undertaken.

When the enemy attack finally came and was repulsed, the corps observation worked during every hour of daylight and again brought invaluable information.

Observation Work in the Counteroffensive: The Allied counteroffensive of July 18 changed materially the work of the observation squadrons. A war of movement had begun and there became apparent at once the greater difficulties in the way of keeping ground and air forces closely in touch with each other. Contact patrols became of far greater importance. Photography decreased in importance, while the regulation of artillery fire on hostile batteries became much more difficult. Our patrols, in spite of these obstacles, did obtain important information and transmit it to its destination. Our corps observation did effective work, even deep photography, while enemy attempts at photography and visual reconnaissance were greatly hampered by our own pursuit. Throughout all of these operations, in spite of the larger number of enemy planes in this sector and their aggressiveness, our pilots maintained their fighting spirit against heavy odds.

Early in August, 1918, the American III Army Corps came into line on the Vesle and an observation group, consisting of the American 88th Squadron and two French squadrons was organized for its use. The enemy had paused in his retreat and held strongly the heights north of the Vesle. The character of the observation work demanded of both of our observation groups was essentially the same as that undertaken on the Marne. Added experience made for greater efficiency, and the difficult problem of liaison with both artillery and Infantry was attacked with energy. On the whole, it may be stated that during this, their first taste of real warfare, the observation squadrons did good service. Though opposed by a vigorous enemy pursuit, they kept our command informed of enemy movements and of the locations of our own troops.

Pursuit: The 1st Pursuit Group commenced operations in the Marne sector early in July, 1918, as part of the air service of the French Sixth Army. Here conditions were decidedly different from those which had been encountered in the Toul sector, where single planes were comparatively safe and where formations of three to six planes did excellent work. In the Chateau-Thierry sector, the squadron formation became the rule almost from the very beginning. At all times the enemy had a superior number of pursuit planes, the French Intelligence Service estimating the odds at one period to be 4 to 1.

From the beginning of the German attack on July 15, it was planned to maintain during daylight hours a double-tier barrage, one tier at medium and the other at high altitudes. For a time it was attempted to utilize a single squadron formation. This, however, proved unwieldy and the squadrons were echeloned by separate flights, while it became the rule that no patrol should go out at medium altitudes without a covering patrol high above. Fighting at all times against heavy odds, our pilots carried the war into the enemy's country and the majority of combats took place well within the enemy lines.

Close protection of observation planes proved costly and could be undertaken only exceptionally, where the moral support afforded justified the probable losses. Pursuit planes are intended primarily for offensive work. It is the role of the pursuit pilot to seek and to attack enemy planes. To distract the attention of the pursuit pilot from this primary duty by directing him to guard observation planes, requiring him to follow them and to keep tract of their movements while at the same time he endeavors to watch for hostile aircraft, renders him just so much less efficient. Playing his proper role, devoting his entire attention to attacking and driving away or destroying enemy planes, the pursuit pilot protects the observation planes more effectively than when charged with this specific mission alone. It is evident, however, that thorough protection to observers can be given only when there is a sufficiently large number of pursuit planes to keep the enemy out of the air.

Balloons: Three balloon companies took part in the Chateau-Thierry counteroffensive. Two of them operated south of Soissons, accompanying the 1st and American 2d Divisions when those divisions, as part of the French Tenth Army, advanced to cut the

Soissons---Chateau-Thierry Road. The 4th Balloon, Company reached the vicinity of the Chateau-Thierry Salient after this counteroffensive was well under way. It joined the 3d Division and took part in the advance to the Vesle. These balloon companies not only did valuable work in adjusting artillery fire but also kept constant watch upon the progress of the advancing infantry, reporting to the divisional staffs new developments from hour to hour. The aggressive enemy pursuit aviation brought down eight of our balloons and one more was damaged by shell fire. In all, twelve observers were forced to make parachute descents during these operations.

CHAPTER III - ST-MIHIEL, AND THE ARGONNE-MEUSE

Organization for the Saint-Mihiel Battle: On August 10, 1918, the American First Army was organized. Army headquarters were located at La Forte-sous-Jouarre but soon moved to Neufchateau, in the vicinity of the St-Mihiel Salient, where plans were perfected for the attack soon to take place there.

In mid-August the American Air Service comprised one Army observation squadron, half a dozen corps observation squadrons, one of which was equipped with DH-4 planes and Liberty engines, one day bombardment squadron, and fourteen pursuit squadrons. Two of the pursuit squadrons were serving with the British Expeditionary Force.

In anticipation of the St-Mihiel offensive, the French placed at the disposal of the American Army a considerable number of their own air squadrons, which were put under the command of the air service commander of our own First Army.

Additional American squadrons were being equipped as rapidly as possible. It was a task of no little magnitude to prepare these new squadrons for actual battle, to organize the group, corps, and wing staffs, to make dispositions for sheltering our own units and the French units under our command, and to link up the units of the Army Air Service with each other and with the various corps, division, and artillery P. C.'s by wire, radio, courier, and airplane drop message grounds.

On August 26, the Headquarters of the First Army moved to Ligny-en-Barrois, and shortly thereafter these French squadrons reported for duty. An aerodrome and a drop message station were immediately prepared. The order of battle of the First Army placed the American V Corps on the left of the line, its left flank joining the French Second Army at Chatillion-sous-les-Cotes; on its right was the French II Colonial Corps, near the point of the salient, and on the south side of the salient were the American IV and I Corps, from left to right, with the right flank of the First Army joining the French Eighth Army at Port-sur-Seille.

To each corps was assigned an observation group made up of French and American squadrons. These corps air service units are component parts of the corps to which they are assigned and are under the direst orders of the corps commanders.

The Army observation group was formed around the 91st Aero Squadron as a nucleus by adding two new squadrons, the 24th and the 9th, but as these had not had actual battle experience, they did little work other than perfecting their own training. The 91st Aero Swuadron, therefore, took care of all of the long-range day reconnaissances.

Four French squadrons were organized into a group for the regulation of the army artillery, which included several regiments of long-range guns capable of reaching the Metz fortifications.

A number of bombing squadrons belonging to the British Independent Air Force were also placed at the disposal of the Commander-in-Chief for the coming offensive.

This concentration of air forces placed under the orders of the Air Service commander of our First Army 701 pursuit planes, 366 observation planes, 323 day bombardment planes, 91 night bombardment planes, a total of 1,481 planes, and gave us the largest aggregation of air forces that had ever been engaged in one operation on the western front at any time during the entire progress of the war.

Preparation for the Attack: The concentration of forces in preparation for an attack is a difficult problem. Any marked increase of aviation activity is sure to be noted instantly and to arouse the suspicion of the enemy, aa every airplane approaching the lines is tracked both by sight and by sound. During the period of our intensive preparation, road circulation was abnormally heavy, new gun emplacements were being installed, and new ammunition dumps established. It was necessary to prevent enemy reconnaissance of our rear areas at all cost and this called for much activity on the part of our own air forces. There was also an immense demand by troops designated for the attack for photographs permitting a minute study of the terrain. This too caused an increase of our aerial activity, as did the registration of batteries on sensitive points in the enemy's rear areas. This was to be the first major action of the American Army, and the staff endeavoring to make adequate preparation for it, made further demands upon the Air Service in the way of visual and photographic reconnaissances.

All of the air service units assigned to this First Army had moved into position before September 12 and had had time to familiarize themselves with the country over which they were to operate.

Observation at St-Mihiel: The actual operation of wiping out this St-Mihiel salient required but four days, September 12-15. On the first three days the weather was bad, and, while it did not prevent all flying, it seriously interfered with the air program. Throughout all daylight hours whenever it was possible to fly, command airplanes, artillery surveillance airplanes, infantry contact patrols, and long range army reconnaissance missions were undertaken.

September 14 was the only day when it was possible to dispatch photographic missions, the results of which were entirely satisfactory.

Particular credit is due the corps and army air service pilots and observers for their gallantry in flying in most unfavorable weather, rain, and high winds during the St-Mihiel operation. The army observation penetrated as far as 60 kilometers beyond the enemy's front line at a time when rain was falling heavily and clouds prevented flying at an altitude higher than about 1,000 meters.

Pursuit at St-Mihiel: On September 11, the day before the battle, and on the next two days, our pursuit pilots showed the value of fast high-powered single-seater airplanes for missions of visual reconnaissance in unfavorable atmospheric conditions. These planes could fly at times when it was almost impossible for the two-place machines to take the air, and although their pilots had not been specially trained in observation, they brought back important information for our advancing troops.

These pursuit pilots also attacked ground objectives or engaged in ground straffing, as this work came to be called. On September 12, American and French pursuit planes found the Vigneulles---St-Benoit Road filled with the enemy's retreating troops, guns, and transports. This road was a forced point of passage for such of the enemy as were endeavoring to escape from the point of the salient. All day long our pursuit planes harassed these troops with their machine-gun fire, throwing the enemy columns into confusion. The planes of the 3d Pursuit Group, which were equipped to carry small bombs, did particularly effective work in destroying a number of motor trucks on this important road.

This ground straffing was effectively continued on September 13 and 14, when good targets presented themselves on the St-Benoit---Chambley and Chambley---Mars-La-Tour Roads. On September 14 the pursuit pilots devoted most of their time to their more normal work of fighting in the air, during which they inflicted many casualties on the enemy air service and gained a marked aerial superiority. This was a day of good weather. Early in the morning it became evident that the enemy pursuit squadrons had been heavily reinforced. At least four new enemy organizations were positively identified. The enemy pursuit fought persistently and tenaciously in an effort to cover the German retreat, but they were heavily outnumbered and succeeded only rarely in approach-

ing the line of battle to attack our observation airplanes. They did, however, inflict heavy casualties upon our day bombardment planes, French, English, and American, when the latter penetrated deep into the enemy's rear areas. Throughout the days of the attack particularly good work was done by the American 1st Pursuit Group in destroying enemy balloons. So well was the work done that it is doubtful whether the enemy received any information at all from his balloons on the western side of the salient.

Day Bombing at St-Mihiel: The weather hampered the day bombers throughout the battle. Expeditions were dispatched daily, but except on September 14 low clouds and high winds interfered with formation flying and accurate bombing. The enemy opposed this day bombing with all his might, and his use of his pursuit planes in this manner drew them away from the line of battle and made more easy the work of our observation planes on their all-important missions of keeping the higher command informed of the progress of the battle and thus assisting in its favorable development.

Night Bombing at St-Mihiel: While the daylight hours during this battle were unusually rainy and foggy, the nights were for the most part clear. The British Independent Air Force cooperating in the American attack made nightly expeditions to Longuyon, Conflans, Metz-Sablon, and other points on the railway line which the enemy was using to bring up reserves, while the French night bombardment group, containing one Italian squadron, also attacked these points as well as enemy posts of command and concentration centers nearer to the front. The enemy bombers were also very active at night. In the absence of any night reconnaissance squadrons, airplanes of the French night bombardment group were used to keep watch over the enemy's movements at night as well as for bombing purposes, and they greatly aided the Intelligence Section of our Army staff.

Balloons at St-Mihiel: Under our command 15 American and 6 French ballon companies took part in this battle. There were approximately 12 enemy balloons opposite the American sector. The weather conditions during the first two days prevented effective balloon observation, but the balloon companied moved forward with the advancing line and on September 14 regulated artillery fire and sent to the different army corps and divisional staffs much important information. During these September days, the 21 balloon companies moved forward a total distance of 202 kilometers by straight line measurement.

Summary of Operations at St-Mihiel: Despite handicap of weather and inexperience, the Air Service contributed all in its power to the success of this St-Mihiel operation. The staff was kept informed of developments practically hourly by clear and intelligible reports. The hostile air forces were beaten back whenever they could be attacked, the rear areas were watched, photographed and bombed. Our planes participating in the battle, by the material damage and confusion which they cause, helped to increase the total prisoners.

The Argonne-Meuse Offensive: The tactical history of the Air Service prior to the Argonne-Meuse offensive is largely concerned with its training. By the end of the St-Mihiel offensive, however, it was felt at last that the American units then on the front had developed into trained combat organizations. All grades, from individual pilots or observers, had learned much from both the French and British and had had the invaluable experience of fighting, which alone completes the training for war. The American Army having successfully and with comparatively small loss wiped out the St-Mihiel salient, was now to undertake the much more serious task of attacking the enemy's line from the argonne to the Meuse, a line which it was of vital importance to the enemy to hold. During the period from September 14 to September 26, the bulk of the American Army had to be transferred to the new attack area. To assure the essential secrecy was a serious problem for the Air Service. The troop movements had to be screened from enemy aerial observation, yet it was desired that no great increase in our own aerial activity should give to the enemy an indication of our battle plans. The attack on St-Mihiel had drawn there a large part of the enemy's air forces, which had been operating in the Conflans

---Briey area. On the other hand, while the French had placed at our disposal some 742 French planes for the St-Mihiel battle, nearly three quarters of them were withdrawn before the beginning of the Argonne-Meuse offensive.

The difficulties of close cooperation with the other arms of the service being fully realized, every effort was therefore bent toward bringing about a close understanding between the aerial and ground troops.

Corps Observation: The corps observation units, on arrival in the new sector, became acquainted with it by using French planes already in that sector, thus avoiding a show of increased force.

During the entire period from September 14 to November 11, weather conditions remained on the whole unfavorable. Low clouds and fog obscured the ground almost every morning and afternoon. Photographic missions were sent out but were instructed to cover only the most important points, while elaborate preparations were made for more extensive work whenever the weather would permit.

Pursuit machines flew over the observation airplanes which were engaged on these photographic missions, and while their prime object was to attack the enemy, they furnished protection which was of value.

Where the weather permitted, the missions for artillery surveillance were successful. Attempts to make adjustments on fugitive targets did not succeed so well. The batteries were moved frequently and communication was difficult. The radio work was far below a proper standard, and in fact nothing but dropped messages, the simplest but slowed of methods proved successful.

Visual reconnaissance did supply much valuable information. Nothing but the heaviest rain or densest fog was permitted to stop those missions, by which the corps and divisional staffs were kept informed of the enemy's movements. During many periods they were the sole source of information. Infantry contact patrols increased in their efficiency. Instruction courses were inaugurated and men from infantry organizations were given a short but intensive course in aerial liaison, our pilots and observers were sent into the front line, infantry officers were urged to visit aerodromes and were taken up in planes. By these means and by the wide distribution of educational matter, there commenced to develop the mutual understanding which is the foundation of all good cooperation.

A noticeable departure from methods employed in the past was the sending out of what came to be known among our pilots as "cavalry reconnaissance" patrols. These were observation planes flying at very low altitudes scouring the terrain immediately in advance of the infantry and returning to drop messages showing the locations of machine-gun nests, strong points, or other obstacles in the way of our advance. Although not strictly their role, such patrols frequently attacked with machine guns the enemy's infantry.

Army Observation: During this offensive two squadrons of the army observation group were assigned to day work and one to night reconnaissances. Day reconnaissances were mainly visual, missions being dispatched as frequently as necessary in order to keep the sector under constant surveillance. Planes penetrated deeply into the enemy's lines, and returned with much information of his rear areas. Photographs were taken of all railroad centers and important points. Of particular value were photographs taken ---before and after fire on these points by the Army Artillery---of Montmedy, Longwy, Spincourt, Dommary-Baroncourt, and Conflans. Though these important stations were protected by concentrations of antiaircraft artillery and pursuit planes, they were successfully photographed, allowing our artillery to fire effectively during the attack.
In addition, the group kept four command teams constantly on duty at army air service headquarters. These teams were called upon to perform almost every class of reconnaissance mission, frequently making flights at an altitude of not more than 100 meters. Their work proved of great value to the army staff. As the great part of enemy move-

ments now took place at night, night reconnaissance work was of increasing importance. In order for this to be successful, however, perfect conditions of visibility and a highly trained personnel are essential. Only a few of our fliers had as yet become sufficiently experienced in night reconnaissance, and weather conditions were rarely favorable. However, on the few nights suitable for observation, much information of value was obtained.

Pursuit: Our pursuit, on entering the Argonne-Meuse operation, had reached a stage at which it ranked, in efficiency, with the pursuit aviation of the Allied armies. It now consisted of three groups of highly trained squadrons, with pilots second to none.

The moral effect of an attack by air forces upon ground troops was fully realized. Furthermore it was believed that the Germans would use their low-flying battle planes in considerable numbers, to harass our ground forces, and also that German balloons would be a peculiar menace to large concentrations of our troops. It was, therefore, decided to assign an entire group, the first, to the task of combating low flying battle planes and to the destruction of balloons. This proved a wise measure. On the first day, 10 enemy balloons were destroyed and the remainder were so constantly attacked that their value to the enemy was negligible. Many German battle planes were also destroyed with remarkably small losses to our own forces. Conditions on both sides had now reached a stage at which it was believed that more enemy planes would be destroyed and a greater moral effect produced by using larger concentrations at points where a study of the enemy's methods indicated he would be present. On the first day of the offensive, September 26, 1918, a group sortie was made, and resulted in the destruction of eight enemy planes; a second one the same afternoon brought down three more. There after these concentrations were made almost daily---weather permitting---the hour and place being based on the enemy's probable actions. A successful sortie at Bayonville, on October 18, succeeded in bringing forty enemy planes into combat. Their formation was broken up and nine of them destroyed, the remainder escaping to their airdromes.

Night Pursuit: A study of pursuit tactics would not be complete without reference to the night pursuit. Whatever the material damage done by night bombing may have been, its moral effect was very great. This was due in no small part to the consciousness of helplessness. The Germans did little or no day bombing, but did considerable night bombing and were believed to be preparing for even more extensive efforts. Hence every effort was made to combat night bombers, and a squadron for this purpose was organized during the Argonne-Meuse offensive. It had little time in which to operate, and was seriously handicapped by shortage both of material and of pursuit pilots experienced in night flying. Nevertheless it did succeed on two occasions in coming into contact with enemy night bombers, and the success achieved in a limited time led to the belief that the night bomber would have been compelled in a short time either to modify his operations or to adopt an entirely different type of plane.

Ground Straffing: This form of action having proved so efficacious, it was continued during the Argonne offensive, and the enemy's troops were attacked by our pursuit planes with machine guns and light bombs. Our intelligence reports showed that a much desired effect was obtained, for the mere sight of any of our planes---no matter of what type---caused much confusion among the enemy.

Day Bombing: The Argonne Meuse offensive saw a great improvement in the work of the day bombardment group. The early history of day bombardment units had been one of heavy losses, not alone in our own service but in that of our allies. Several steps were taken to prevent this. The utmost stress was laid on gunnery, and constant practice soon began to have its effect. Formation flying was insisted upon, and the bombers were taught that a tight formation meant safety; a plane that left the formation was almost certain to be lost. Objectives now began to be attacked by the whole group, in-

stead of by a single squadron; and better cooperation was secured with pursuit. This reduced our own losses and increased those of the enemy.

Such is the demoralizing effect of bombing, that the enemy in an effort to prevent it will attack will all his available forces and at whatever cost. Our own tactics recognized this fact. As an example, on October 4, Dun-sur-Meuse and Landres-et-St-Georges were each hit with a ton and a half of bombs. Low clouds afforded many pockets for lurking enemy pursuit planes, and our bombers were attacked by a group of 30 Fokkers and Pfalz. They fell upon our 96th Squadron, which was in the lead, and which closed in and held these enemy pursuit planes at a distance. Two other bombing squadrons, the 20th and the 11th, following, attacked this enemy pursuit from the rear, shooting down two of them. A general fight then ensued, during which and when it was hottest, thirty Spads of the American 2d pursuit Group, according to plan, arrived on schedule time and attacked with vigor. The enemy, thus trapped, lost thirteen planes, while we lost only one.

As further proof of the efficacy of these tactics, over two thirds of all the enemy planes shot down during this Argonne offensive were destroyed by just such concentrations and under similar conditions.

The material effect of these bombing raids is also great. In one such attack on Bayonville 250 enemy troops were killed and 750 wounded. Again, these raids invariably drew enemy pursuit from the rest of the front, rendering it safer for our corps observation.

The most remarkable concentration of air forces during this offensive took place in the late afternoon of October 9, when something over 200 bombing planes, about 100 pursuit planes, and 53 tri-place machine, after concentrating in our rear area, passed over the enemy lines in two echelons. A total of 32 tons of bombs were dropped on the cantonment district between Wavrille and Damvillers, in which locality a counterattack had been anticipated throughout the afternoon. This concentration was strongly attacked by the enemy, and during the engagement 12 enemy planes were brought down out of control, while only one of our own planes of all this large number failed to return.

Balloons: Thirteen American balloons operated during this offensive. The were not inflated until the night of September 25, and the enemy is believed not to have been aware of their presence. Of particular note is the success that attended the maintenance of liaison. The balloon companies at all times kept pace with the general advance, one company covering a record distance of 32 kilometers in a day, over-shell torn ground. Nevertheless, telephone communication was established at each stage and information sent in to corps and division.

Americans with Royal Air Force B. E. F.: The tactical history of American pursuit would be incomplete without reference to American pilots and units with the Royal Air Force. Of the two hundred and sixteen pilots sent to the Royal Air Force in the Field, some served in British squadrons, but two wholly American aero squadrons, the 17th and 148th, operated under British wings, in all respects on the same footing as British units. Still other of the pilots trained in England, who were intended to be employed in the American night bombardment program, were sent to the Independent Force, R. A. F., and later returned to England to act as instructors in the A. E. F. school. Confirmed casualties inflicted upon enemy aircraft by Americans serving with the British totaled one hundred and ninety-eight, whereas their battle casualties were eighty, or a superiority of two and one half to one.

[The report continues with a short history of two squadrons, honors and awards, some general remarks, and a theoretical discussion.]

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Seventeen Months of Achievement: When, in April, 1917, the United States declared war on Germany, the Air Service of the American Army, then called the Aviation Section, Signal Corps, had a strength of only 65 officers and about 1,100 men. It possessed about 200 training airplanes, but not a single one of a type considered fit for service on the actual battle fronts, nor were any planes of this type being manufactured in the United States. There was no existing foundation of practical experience or knowledge upon which could be based plans for the development of an oversea force and for the placing of an aerial army in the air.

Seventeen months later, on November 11, 1918, in the Air Service, American Expeditionary Forces, there were 7,726 officers and 70,769 men, of whom 6,861 officers and 51,299 men were in France. (Of this number 446 officers and 6,365 men constituted the Balloon Section.) Some 765 officers and 19,507 men were training in England and the remainder training and fighting in Italy.

There were being operated 16 training schools for pilots and observers, and in addition American officers were being tained in three schools operated by our allies. From the training schools there had been graduated 1,674 fully trained pilots and 851 observers. There had been sent to the front 1,402 pilots and 769 observers. These schools were being operated with greater and greater efficiency, as evidenced by the fact that between November 11, 1918, and January 1, 1919, there were graduated 675 pilots and 357 observers.

From the Balloon School there had been graduated a total of 199 officers and 623 enlisted men, specialized, who were taught the operation of balloon winches, lookout work, machine gunnery and radio operation.

The development of the Air Service, A. E. F., during the time we were in this war was the result of much effort during which delays and technical difficulties were being overcome. It is proposed to give a brief account of the way in which the problems were met and solved.

Pre-War Information: Shortly before the declaration of war five officers of the Aviation Section, Signal Corps, had been sent to Europe. One was an observer, one was in the office of a military attache, and three were flying students. Owing to the short time they had been on this duty they had been unable to send to the United States much information of real value.

Developments in Washington and the First Program: To collect data, to coordinate the interests of the United States, and to provide for the production of aviation material, the Aircraft Production Board of the Council of National Defense began its work in Washington in May, 1917, just after the arrival of military missions sent by the French and British, which brought with them certain information concerning the character of the aviation equipment needed. A cable had been received from the Premier of France in which he urged the United States to form a flying force of 4,500 airplanes to be on the front during the campaign of 1918. This program, it was stated, would necessitate 5,000 pilots and 50,000 mechanics, and require 2,000 planes and 4,000 engines to be constructed monthly in American factories. The Aviation Section of the Signal Corps and the Aircraft Production Board adopted the program contained in this cablegram, and it was subsequently approved by the General Staff in Washington and became the bases of the whole development of American military aviation. The Joint Army and Navy Technical Aircraft Board in Washington was called upon to determine the number of airplanes which should be produced for this force. It reported that for service use on the front 12,000 planes and 24,000 engines would be necessary.

Creation of the Air Service, A. E. F.: Shortly after this appointment, the Commander-in-Chief of the American Expeditionary Force appointed Major T. F. Dodd, A. S. S. C., as Aviation Officer, A. E. F., and a member of his staff.

Upon his arrival in France in June, 1917, Lieutenant Colonel William Mitchell, A. S. S. C., one of the five officers previously mentioned as being on duty in Europe, succeeded Major Dodd as Aviation Officer. The Aviation activities were at once separated from Signal Corps control; henceforth the Air Service, A. E. F., was considered an organization on a footing similar to that of other combat arms of the Service.

First Air Program, A. E. F.: The Commander-in-Chief instructed his Staff to prepare at once a program for the A. E. F. The result of this work was the General Organization Project, approved July 11, 1917, and intended to be merely a preliminary outlining the desired tactical organization of the overseas forces. This project provided for only 59 air service squadrons to balance the then proposed number of ground troops. Later it was learned that the United States had adopted an air service program as proposed by the French, 4,500 airplanes on the front during the campaign of 1918. This number was the equivalent of about 260 aero squadrons, and, in order to conform to the United States plan, the additional 201 squadrons were included in what was known as The Service of the Rear Project, approved by the Commander-in-Chief, September 18, 1917. This program also included additional balloon companies in accordance with recommendations receiving from the French G. H. Q.

Growing Difficulties of Liaison Between Europe and America: It soon became apparent in Washington that questions concerning types of equipment to be manufactured and the materials required must be studies first-hand in Europe. It was essential to secure samples of the types of aeronautic equipment to be manufactured in the United States and all necessary technical data, such of which had never been committed to paper and which could be found only among those actually engaged in such work. Serious questions arose with respect to royalties demanded by the European Governments on behalf of their citizens who were inventors or owners of special processes and devices.

Without careful study on the ground it was obviously impossible to determine just what would be the requirements of a production program; what should be built in Europe; what in America; the assistance the United States could render the Allies or receive from them, the opportunity for training American personnel in European schools; or the relative priority of the various demands made by the Allies upon the United States.

Work of the Aeronautical Mission: In order that all these matters might be investigated with accuracy and dispatch, the Aeronautical Mission of the Aircraft Production Board was sent to Europe in June 1917, under the charge of Major R. C. Bolling, S. O. R. C. This mission included two flying officers of the Army, two officers of the Navy, a number of industrial experts, and 93 skilled mechanics and factory experts whom it was intended to place in factories for the purpose of securing first-hand practical information regarding methods of manufacture which could not be readily embodied in plans and specifications.

This mission made a thorough canvass of the production situation in England, France, and Italy. The principal matters with which it dealt during the first few months were: The principle of free exchange between the Allies and for the duration of the war of the rights to manufacture all classes of aeronautic material; the rapid transmission to the United States of sample airplanes, engines, and accessories, with data necessary for their production; the collection of general information needed for American producers; the choice of types of aircraft to be produced in the United States; the possibility of purchasing aviation material in Europe; the assistance the United States could give to the air service of the Allies, including the allocation of raw materials; the possibility of sending personnel for training in Europe; and the coordination and standardization of aircraft production in all Allied countries, with the consequent elimination of obsolete types wherever manufactured.

This Aeronautical Mission performed invaluable work in gathering and transmitting to the United States essential information and in bringing together more closely than

had hitherto been the case the Air Services of Italy, England, and France on questions concerning the production and allotment of material.

Procurement of Material: The studies of this Mission early convinced its members that no matter how optimistic were the promises of production in the United States, nothing in the way of finished and satisfactory aviation material could be expected to arrive in Europe from the United States before about July 1918. This meant that the Air Service, A. E. F., in order to participate in the spring campaign of 1918 must obtain elsewhere its necessary equipment.

A contract with the French, known as the Agreement of August 30, 1917, was prepared and signed by the French Air Ministry and the Commander-in-Chief, A. E. F. This contract provided that the French Government would deliver to the Air Service, A. E. F. by June 1, 1918, 5,000 airplanes and 8,500 engines. On its part, the United States was to furnish by November 1, 1917, certain specified tools and raw materials needed for the fulfillment of the French obligation. It provided also that the airplanes and engines tn be furnished by February 1, 1918, would be supplied even though the United States should be unable to deliver, on schedule time, its quota of materials and tools. It was upon the provisions of this agreement that the Air Service, A. E. F., planned its program of training and of putting squadrons in the field.

Motor Mechanics Return to U. S.: Small squads of the mechanics who had accompanied this mission were sent back to the United States from time to time, carrying to the Aircraft Production Board the lessons they had learned and valuable samples of aeronautical material. Eighteen of these men were later examined and commissioned in the Air Service.

Development of the Organization: The magnitude of the problem confronting the Air Service soon made it necessary to enlarge the organization. Colonel William Mitchell, still with his title of Aviation Officer, A. E. F., was given jurisdiction and control over the air service in the Zone of Advance, while Major Bolling, on account of the knowledge he had gained concerning questions of production, was given charge of aviation in the Zone of Interior, as it was then called. At this time, Major Bolling was active in the organization of an Interallied Aircraft Board which did important work coordinating the various air programs of the Allies and of the United States.

This organization, with one officer in charge at the front and an officer in charge at the rear, resulted in divided responsibility. General Orders No. 26, Headquarters A. E. F., August 28, 1917, appointed Colonel (later Major General) William M. Kenly, then of the 7th Field Artillery, Chief Aviation Officer, A. E. F. On September 3, 1917, General Kenly was announced as Chief of Air Service, American Expeditionary Force. Major (later Colonel) Bolling remained in charge of the Air Service, Line of Communications, with the title of Assistant Chief of Air Service, his headquarters being in Paris. Colonel William Mitchell became Air Commander, Zone of Advance. In the early part of September 1917, the offices of the Chief of Air Service and of the Air Commander, Zone of Advance, were moved to Chaumont, where were established the Headquarters of the American Expeditionary Forces.

Early Work in the Z. of A.: During the early autumn of 1917, the work in the Zone of Advance consisted chiefly of making plans and projects for future development. No air squadrons were then available for duty at the front except the 1st Aero Squadron, which had arrived in Europe on September 1, 1917, and after a period of training at Avord had been located at Amanty, near the I Corps School.

The main problems at the front were, therefore, the preparation of organization projects, the selection of suitable sites for airdromes and supply depots, and the study of air service tactics and strategy. These studies were made first-hand with the French and British air services and in connection with the operations of their ground troops.

First Air Depot: The construction of the 1st Air Depot at Colombey-les-Belles was begun upon the first available troops in October 1917. It was realized that the Air Service would need such a depot as a receiving and distributing point for personnel, material, supplies in general, and as a site for shops for engine, airplanes, and motor transport repairs which were not serious enough to require shipment farther to the rear. At this locality there would also be needed an airdrome to accommodate several squadrons. The buildings originally authorized covered 185,977 square feet but this authorization was increased in September 1918, to 587,293 square feet, of which by November 11, 1918, 357,363 square feet had been completed.

Problems of the Rear, Schools and Training: The task of the Assistant Chief of Air Service, Line of Communications, was the making of all preparations for placing the fighting units at the front, and the providing for their training, their equipment, and their maintenance. This was a huge and complex undertaking which necessitated great foresight and much organizing ability. The fall of 1917 was occupied particularly with the establishment of schools and training centers sufficient in number and capacity to provide for training air service personnel, flying and non-flying. The known lack of training machines and other essentials in America made it improbable that the United States could produce before January 1, 1918, more than 500 pilots, and these with no more than preliminary training. To meet the immediate emergency it was necessary to take advantage of schools already established by the Allies. As early as June 26, 1917, cables were sent to the United States calling for cadets who were there waiting flying training to be sent to Europe to be trained in French, English, and Italian schools. The officers of the 1st Aero Squadron and such other flying officers as could be spared from administrative or technical duties were sent to French finishing schools. A Training Section in charge of all this instruction was organized. Three training schools were immediately started. The site at Issoudun recommended by the French Military Mission to the United States was accepted, and during the latter part of July 1917, the construction of a center for advanced flying training was begun. A French school already in operation at Tours was taken over about November 1, 1917, with the intention of using it for preliminary training. Later this developed into an important center for training army corps pilots and observers. Another small French school already in operation at Clermont-Ferrand was also taken over in November 1917, to be used for the development of day bombardment pilots and bombardiers.

The Lafayette Flying Corps: On October 1, 1917, orders were issued creating a board of officers to examine those members of the Lafayette Flying Corps, then serving with the French, who desired to transfer to the American Air Service. This organization of American volunteers contained many experienced pilots trained in the best schools of France and serving in French squadrons on the front. Ninety of these men were eventually transferred to the Air Service, A. E. F., and gave individual assistance in building up our own pursuit aviation. Three of our pursuit groups have been commanded by former Lafayette flyers, and this Corps provided us also with a considerable number of squadron commanders, flight commanders, and experienced instructors.

Soldier Personnel: It was necessary to make provision for the instruction, classification, and assembly into squadrons of the Air Service personnel to be sent from the United States. The training of soldiers as mechanics and riggers was from the first a serious problem. Not only were such men arriving from the United States entirely unacquainted with foreign planes and engines, but few of them had been trade-tested and their officers were likewise inexperienced. Earnest efforts to establish a mechanics' school in France failed owing to the impossibility of obtaining suitable buildings and material for instruction. It, therefore, became necessary to train these men at the flying centers, although it was known that this system would result in decreased efficiency in these centers. So great was the shortage of personnel that these

enlisted men, while presumably undergoing training, had to carry on all of the work at the posts to which they were assigned and in many cases had to assist in their construction. Two hundred mechanics were placed in seven French airplane factories near Paris, where they served until January 24, 1918. There were assigned to French aviation to French aviation fields 475 soldiers, the nucleus of a much larger number which it was intended temporarily and for instruction to place in French schools in proportion to the number of American flyers being trained therein.

An important agreement was made with England on December 5, 1917, whereby a total of 15,000 mechanics were to be kept in England under instruction, and in addition a total of 6,200 laborers were to be assigned to temporary duty in that country. It was provided that these mechanics would be withdrawn for service in France when other untrained personnel was sent from the United States to take their places. It was expected that there would thus be established a constant flow of men trained in England under what was the nearest possible approach to service conditions and that such men would be ready when they reached France to take their place in our own squadrons.

Technical Section: A Technical Section of the Air Service was organized. It was to secure and compile technical information from every possible source. This section was also charged with the responsibility for recommending the types of airplanes, engines, motor cars, photographic, and wireless appliances, and all other apparatus and equipment to be purchased in Europe or produced in the United States.

Liaison Section: In accordance with the orders of the Chief of Air Service that all negotiations with the Air Ministries of Allied Government should be carried on by the Assistant Chief of the Air Service, Line of Communications, a Liaison Section was established in November 1917, which sooner or later acted as an intermediary in all questions of supply from foreign source.

Search for Material: The European markets were canvassed and such material as would serve our purpose was ordered. This included airplanes for service and training purposes, trucks and automobiles, hangers, and innumerable articles of equipment, instruments, and accessories.

Recommendation of Airplanes, De Haviland-4: In order to hasten the time when materials produced in America would be available, it was necessary to gather and forward to the United States all possible information on Allied Air Service and the equipment used by them and to make recommendations concerning the various types of airplanes, armament, motor transport equipment, and accessories to be put into production in the United States for use over seas. This called for much study and the exercise of good judgment on the part of the members of the Aeronautical Mission. Its first recommendation was that the DH-4 airplane be built in the United States. In the spring and summer of 1917 this machine, equipped with the Eagle Rolls-Royce engine, had been tried on the British front, where its performance in speed at altitude and in climbing ability surpassed that of other planes then in use over the lines. It was believed that this airplane, with the Liberty engine, of greater horsepower and lighter than the E Eagle Rolls, would be satisfactory for our use. Assurance was received from the United States that the first of these machines would be delivered in Europe by January 1918. As a matter of fact, the first deliveries in quantity of those machines in Europe were not made until June and July 1918, and by that time the supremacy of the DH-4 had been partially lost. This is an illustration of one of the difficulties always encountered in recommending any type of aircraft for production and for future use. If the type chosen is merely in the experimental stage it may turn out to be entirely unsuited for the purpose it was to serve; if it has passed beyond this stage and proven of value by actual use at the front, so rapid is the develojent that by the time it could be produced in the United States and delivered in Europe it may have been rendered obsolete by improved machines.

Recommendation of Pursuit Machines: These facts apply with marked emphasis to the second instance, the recommendation that no single-seater machines should be built in the United States for service at the front. The improvement in pursuit planes was so rapid that few types retained their superiority for more than six months. In the summer of 1917, the Spad with the 150 Hispano-Suiza engine had been in use for nearly a year, but although it still held first place among single-seaters, its supremacy was threatened by the Spad Monocoque with the 160-Horsepower Gnome Monosoupage engine. This plan was, however, still in an experimental stage, and though it was reasonable certain that the Spad would ultimately be displaced, it was by no means sure what would supersede it. The Hispano-Suiza Company had increased the power of their engine to 180 and even to 220-horsepower. The former did not give a sufficiently great increase in performance and the 220-horsepower was not at that time fully perfected. Of all single-seater types then being tried it seemed that the Spad Monocoque would be the machine of 1918.

To those charged with the selection of machines to be produced in the United States, it was plain that none of the pursuit type could be built in time to insure that they would not be out of date when actually placed in service on the western front.

The Allies took this same view and made urgent and persistant recommendations that the building of single-seaters be not attempted in the United States, while they promised to supply the Air Service, A. E. F., with all such machines as would be needed for its program. Simultaneously the Gnome 160-horsepower engine intended for use in the Spad Monocoque seemed to be a failure.

Influenced by all of these known facts, the United States was, therefore, advised not to attempt the manufacture of pursuit planes and that its greatest service could be rendered by confining its production efforts to the larger machines, which would probably be subject to fewer modifications and improvements, and to the manufacture of engines.

Furthermore, there was some evidence that the summer of 1918 would see the development of bi-place pursuit machines which would at least partially replace some of the single-seater machines on the front. The British Bristol Fighter, bi-place pursuit, had given a remarkable performance during the summer of 1917. Very fast and easily maneuvered, it had the advantage of four machine guns instead of two and was able to defend itself from attack from almost every direction. If it were possible to install the Liberty engine in this airplane it was thought that it would be eminently satisfactory for our use. Accordingly the production of this Bristol Fighter with the Liberty engine was recommended.

Such were the conditions and the recommendations made in July and August 1917, based upon the best information then available. This is what actually took place: The Spad Monocoque proved a failure; the Monosoupape Gnome as first produced had not the power of the original model, nor was it sufficiently reliable for service; on the other hand, the Hispano-Suiza 220-horsepower was developed so satisfactorily that the Spad thus equipped maintained its position as the leading Allied pursuit machine; the Liberty engine was not successfully adapted to the Bristol Fighter; and the deliveries of the DH-4 were so delayed that it had lost much of its effective superiority by the time it reached the Western Front. All of these facts are now well known but it is helpful to recall the picture as it appeared in the summer of 1917.

Allocation of Raw Materials: With the arrival from the United States of raw material for the Allies, it became necessary to allocate and distribute it. It had become apparent that one of the weaknesses of foreign aviation was the total lack of standardization which resulted in a system of unregulated private manufacture. This was notably serious in view of the shortage which existed of certain materials such as spruce, linen, and dope. To use up such valuable materials in the manufacture of anti-

quated airplanes made the situation the more critical. The dictation of what airplanes should be built was at that time a matter of great delicacy.

In order to bring about standardization, the Interallied Aircraft Board was created with Colonel Bolling as the first American representative, and it did most valuable work in bringing together the French, British, and Italian Air Services on these vital questions.

Construction: The construction of schools, warehouses, depots, industrial plants, and salvage and repair shops was an evident necessity in the development of the Air Service system of supply. The great scarcity of personnel and of material made it impossible to solve this problem fully until the summer of 1918. As considerable amounts of raw material collected at the ports in the early fall of 1917, warehouses for temporary storage purposes were needed. The training centers then under construction lacked labor and material. As airplanes from the United States were expected during the first months of 1918, plants had to be established for their assembly. Depots for salvage and repair of airplanes, while they would not be needed for some time, had to be started in order that there might be no delay after the Air Service commenced actual operations. The air Service building program evolved called for the immediate construction of 4,749,300 square feet of floor space.

Creation of an Organization: The creation from personnel then available in Europe of an organization capable of carrying on all these projects seemed at the outset a hopeless problem. Scarcely any American personnel trained in Air Service activities was available in Europe, and the necessity of retaining in the United States the small number of experienced men prevented assistance from that quarter. Even of clerical assistants, supply officers, and men with technical training, there was a woeful deficiency, with the result that France, England, Italy, and the entire American Expeditionary Force were combed for needed personnel. Nearly all technical communications and most current correspondence were in a foreign language, making necessary a number of interpreters and stenographers capable of taking dictation and writing in both French and English. In spite of all these difficulties and some wasted effort dissipated in needless friction, the accomplishments during the period from June until December, 1917, were of considerable magnitute and of the utmost importance to the Air Service of the A. E. F.

Outline of the Organization: The organization of the entire Air Service during this time had been approved by the Commander in Chief in September 1917. The Chief of Air Service, A. E. F., was in command both in the Zone of Advance and in the Line of Communications, responsible to the Commander-in-Chief for the efficiency of the entire Service. The Air Commander, Zone of Advance, maintained a staff comprising officers charged with administration, operations, information, and materiel department. He was charged with the organization and equipment of units formed in the Zone of Advance and with the actual preparation for the employment of what were then known as the tactical and strategical air forces. The Assistant Chief of Staff, Line of Communications, had under his control departments of administration, production, finance, transportation, and the technical section. The Director of Air Service Instruction, under the Assistant Chief of Air Service, Line of Communications, was in charge of personnel, materiel, instruction, and the transportation assigned for his use. These sub-branches of the Air Service communicated directly with each other, all matters of policy, however, being controlled by the Chief of Air Service, A. E. F.

CHAPTER V - REORGANIZATION AND DEVELOPMENT

Reorganization: In November, 1917, Brigadier General B. D. Foulois, Air Service, arrived in France and was placed in charge of all air service activities in the A. E. F.

on November 27, 1917. A reorganization of the Air Service, employing largely personnel which had accompanied the new Chief of Air Service from the United States, was effected. Officers were placed in charge of the following sections: policy, administration, technical, training and organization, balloon, personnel, and supply. Colonel Bolling was relieved as Assistant Chief of Air Service, Line of Communications, to assume the position of chairman of the joint Army and Navy Aircraft Committee, created with the approval of the War Department, in pursuance of a resolution of the Aircraft Board in Washington. Actual authority for the formation of this committee in the A. E. F. was later given by G. H. Q., and the Chief of Air Service was designated as its chairman. The purpose of this committee was to coordinate industrial with military and naval activities in Europe and the United States and to constitute the proper official channel through which should pass all communications with the Eruopean nations relative to aircraft material. During the early months of 1918 while the most strenuous development of the Air Service was being undertaken, this committee assisted largely in the coordination and allocation of raw, semi-finished, and finished aircraft products.

Shortage of Personnel and Equipment: The shortage of men and materials still constituted the most serious difficulty in carrying out the projects already initiated and in a further development of the Air Service according to its original program. It was clearly evident that there was not time to train personnel in the United States and that no facilities for such training existed in France, and at the beginning of December, 1917, the outlook in this direction was almost hopeless. Although such a contingency had not been contemplated in the agreement with the French of August 30, 1917, the French Government later claimed that the 5,000 airplanes which it had promised could not be produced by the personnel then available in its factories. It accordingly requested the United States to send 12,000 mechanics to assist in the French Motor Transport Service so that an equivalent number of their own men might be withdrawn for work in airplane factories. It was promised that thus the terms of the 30 August contract could be fulfilled. This request was approved by the Commander-in-Chief upon the recommendation of the Air Service, A. E. F. The Air Service in the United States undertook to organize the desired personnel. The men were concentrated, trade-tested, and organized into companies on a regimental basis upon tables of organization which contemplated their use primarily for service with the French Army. The first of these motor mechanic regiments did not arrive in France until February 24, 1918. This and the next regiment to arrive were assigned to duty with the French under an agreement made by the War Department in Washington in the early spring of 1917 at the time of the visit of Marshal Joffre's Military Mission.

Location of A. S. Production Center at Romorantin: It was still foreseen that no matter what assistance in the way of material would be received from the Allies, it would be absolutely necessary to erect a plant in which material received from the United States could be assembled. This plant, known as Air Service Production Center No. 2 was located at Romorantin and its construction started on 16 January, 1918, with a projected personnel of 19,000 men and an authorized area of buildings of 3,685,400 square feet.

Removal of Headquarters from Paris: In February, 1918, when the headquarters of the Line of Communications were transferred to Tours the air service personnel which had been on duty in Paris was likewise ordered to Tours. As, however, most of the material which was to be procured in Europe would come from French factories and as most of the factories producing such material were located in Paris or in its vicinity, as moreover the Technical Section of the French Service was likewise in Paris, it soon became apparent that it would be absolutely necessary to return the Supply Section to Paris, where it was re-located on April 30, 1918, and continued to perform its work.

Dependence Upon Foreign Production: In the early part of 1918, it became evident

that, until at least July 1, complete reliance would have to be placed upon foreign production, especially French, for all aircraft and other material needed for our air service program. It was also apparent that the French would be unable to carry out the terms of the August 30, 1917 contract, as their promises had been based upon too optimistic estimates of the production possibilities of their manufacturers, and the Air Service, A. E. F., was therefore confronted with the possibility that there would be grave lack of flying equipment for the squadrons which might be placed at the front. This prospect was made more serious by the very great enlargement of the French and British air programs for 1918, which demanded of both of these countries supreme efforts for the fulfillment of their own needs. These facts made it important for the Air Service to conclude new contracts for the production for its use of foreign airplanes, engines, and accessories. Fully apprised of the gravity of the situation, the Commander-in-Chief, A. E. F., abrogated the agreement with the French of August 30, 1917. Weeks of negotiation finally produced another contract with the French known as the Agreement of May 3, 1918, by which the French engaged themselves to supply us with aviation material equal both in quality and quantity to that supplied to their own forces and in proportion to the number of our divisions in France. This, however, was largely contingent upon the receipt of raw, semi-finished, and finished products from the United States. Owing to continued insistence by cable, there had been received by May 1, 1918, approximately 90% of the machine tools and raw materials called for by the original agreement of August 30, 1917. The New contract of May 3, 1918 and various conferences between the Headquarters of the Allied Commander-in-Chief and our own G. H. Q. assured the Air Service of sufficient material for the englartment it might be able to realize. The concluding of this agreement proved the turning point in the history of American aviation supply questions in France and laid the foundation of the supply for our efforts at the front.

Development of the Balloon Program: Fortunately for the Balloon Section of the Air Service, the balloon industry in France had been well developed through the previous ten years, and there were available industrial facilities for the production of captive balloons and the necessary accessories. Contracts were placed for such material with the French in September 1917, and there had also been drawn up for the Balloon Section a sound production program of material to be manufactured in the United States. The organized training and equipment for the Balloon Section therefore progressed steadily and with a minimum amount of difficulty compared with like problems in the heavier-than air-service.

One of the chief difficulties of the Balloon Section was the procurement of sufficient hydrogen and gas, and it became necessary to draw upon the United States for approximately 1500 tons of ferro-silicon and 238 tons of caustic soda. Special apparatus, such as winches and tenders, did not arrive from the United States in the quantities expected and this compelled us to call upon the French for such equipment, although a lack of raw materials for its production caused a shortage never quite made up until hostilities ceased.

CHAPTER VI - PERIOD OF EXPANSION

New Chief of Air Service: By General Order 81, G. H. Q., A. E. F., May 29, 1918, Brigadier General (later Major General) Mason M. Patrick was announced as Chief of Air Service, American E. F.

Problems: By this date the program for the ground troops of the A. E. F. had been greatly enlarged and it became necessary to employ the small numbers of Air Service personnel in such a way as to maintain in operation the numerous air service establishments. The development of the production center at Romorantin was pressed to the utmost.

The Acceptance Park which had been established at Orly, near Paris, was enlarged; the completion of the Aviation Instruction Center at Issoudun was hastened, as it soon became apparent that the expected fully trained personnel would not arrive from the United States in time and that this Instruction Center would be required to train large numbers of flying officers needed to meet the Air Service program. Another grave question was the procurement of sufficient aerial observers to meet the needs of the increased number of American divisions to be placed at the front.

202-Squadron Program: The most pressing problem at this time was the balancing of the air service program with the enlarged program for ground troops. The rate at which such ground troops arrived from the United States had been greatly increased by the utilization of British tonnage which had been made available after the opening of the enemy offensive in the spring of 1918, and a corresponding change in the Air Service program was imperative. Instead of being composed of one army of five corps, the American Expeditionary Force was now to be a much larger body. At the same tine while the shipment of ground troops from the United States was proceeding at this increased rate, the sending of air service personnel was absolutely stopped for some months. A balanced air service program to correspond to this increase and at the same time to develop on the front an air service in proportion to the number of divisions, corps, and armies then contemplated was sent by the Chief Staff, A. E. F., to the Chief of Air Service on July 29, 1918. From the Air service point of view, however, the delays already experienced in procurement of material and in the arrival of personnel made it imperative that the originnal air service program must be decreased rather than increased.

The Commander-in-Chief realized fully the existing conditions and that the Air Service could not carry out the enlarged program, and therefore approved a modification which covered the formation of observation squadrons to meet the requirements of the artillery and infantry and of only 60 pursuit, 14 day bombardment, and 27 night bombardment squadrons.

This revised program, submitted by the Chief of Air Service August 16, 1918 and approved on August 17, 1918, became known as the 202-squadron program and was based upon the very best estimates then obtainable of the total number of squadrons which might with great effort be placed on the front by the end of June 1919. It was formulated after consideration of the programs which each of the Allies expected to carry out by that date. It was also based upon a very careful estimate of the material which could be secured as indicated by the production probabilities in the United States and known conditions in the factories in France and England. The opinion that the personnel to carry out this program would be available was founded upon cable advices earlier received from the United States indicating what would be available for sending overseas.

It was thoroughly realized that the Commander-in-Chief and the authorities in the United States wished to place on the western front the largest and the most efficient air service which could be equipped and maintained.

Continued Problem of Personnel: The deficiency of commissioned and enlisted personnel previously emphasized was at all times a serious matter. Priority had been granted to the Air Service for approximately 7,500 men per month from November, 1917, and cables from the United States indicated that such numbers would be sent, but this personnel did not arrive. After March 21, 1918, the date on which the enemy broke through the Allied front, a practical embargo was placed upon sending from the United States of any other infantry and machine guns, which absolutely stopped the coming of Air Service personnel.

It was impossible to draw upon the mechanics trained in England, as this same embargo prevented the sending of untrained men to take thier places. One result of this lack of much-needed men was the inability even to maintain existing air service establishments in operation at full capacity, while their enlargement and undertaking of new projects was an absolute impossibility. The air service training centers planned and

under construction would need, to operate at full capacity, not less than 11,000 enlisted men. Since these men themselves had to be trained, results of any magnitude could not be expected until after a lapse of from 5 to 6 months from the time of commencing operations at these centers. The air service program at the front had contemplated active operation on a considerable scale by July 1, 1918. This meant that on January 1, 1918 there should have been available for work at the schools alone at least 10,000 men. On that date there were, however, in the whole Air Service, A. E. F., only 5,000 enlisted men, and these were nearly all entirely untrained. The imperative need of men for work in the Zone of Advance and at the supply depots continually decreased the small number of squadrons available for service at the schools. Inssoudun, which should have had not less than 6,000 men in February, 1918, was in that month reduced to 2,700, and this number could not be increased beyond 3,700 until August, 1918.

The arrival of even 10,000 men in the early spring of 1918 would have advanced the air Service program on the front by approximately four months, but it was not until the late summer that the arrival of air service troops in France in considerable numbers actually commenced.

Mobilization of Personnel: Coordination Staff: The distribution of these squadrons to their ultimate destinations in what was now called the Services of Supply (S. O. S), or in the Zone of Advance needed careful regulation in order that the real necessities at each station should be mat in the fullest measure possible. The mobilization of these squadrons and their distribution was first handled by the Personnel Section, Air Service, and later by what was called the Coordination Staff, created to provide a central body to ensure a thorough understanding and complete accord among all air service activities, excepting actual combat operations in the Zone of Advance to balance the needs of the different sections, to provide for the proper allocation of available personnel, and as a center of information concerning all air service matters. This staff developed plans which were carried out up to the date when hostilities ceased. All sections of the Air Service made their requests for personnel to this staff, which secured notification of the dates of arrival in France of all air service units, and was responsible that the necessary orders were prepared in advance so that there might be no delay in the movement of these troops after their disembarkation.

As it was found that the arriving squadrons were unbalanced, many of their men not having been trade-tested, practically all of them were sent to St-Maixent, where there had been established a concentration post for air service troops, and where facilities had been created for trade-testing and completing the organization and equipment of all squadrons before sending them to their destinations. This staff kept itself informed daily of the progress of the work at St-Maixent and kept constant track of the movements of all air service personnel throughout the A. E. F. It was also responsible for the assembly at proper times and places of all of the equipment intended for the squadrons going to the front, and for its delivery to the squadron supply officers, and in general for the regulation of the movements of all personnel and equipment so that the minimum delay would be experienced.

In addition, this staff made calculations of the personnel and material required to meet each part of the entire air service program. It maintained records of air service development, of the capacity of air service establishments, and of the demands made upon them. Its Accountability Division was charged with a systematic inspection of air service projects under development. The Plans and Progress Division was responsible for the provision of data for proposed development. Weekly progress reports covering all air service activities were prepared and issued.

Executive Section: The Executive Section succeeded to the duties of the Coordination Staff on November 4, 1918. When the process of liquidation became necessary, after November 11, 1918, the valuation of all sir service property was done by this section.

Personnel Section: The Personnel Section dates from July 23, 1917. Its duties, although on a smaller scale, may well be compared to those of the Adjutant General of the A. E. F. Upon it have devolved the maintenance of complete records of all personnel of the air service, the issuance of orders to such personnel, and other duties necessary in the distribution of all Air Service forces. During the first months of its operation it was also charged with recruiting in Paris, examining over 500 applicants from the American Ambulance and other American activities in France. The air service post office was likewise at first a branch of this Personnel Section. In February, 1918, it moved to Tours, where it has been maintained ever since.

Cable Section: Of the greatest importance in the administration of the Air Service is the Cable Section. In the early days the Assistant Chief of Air Service, L. of C., sent cables covering air service production problems direct to Washington through the American Embassy in Paris. There was a resulting initial saving of time, but an aftermath of mixed and incoherent references, and the transmission of cables to the United States without the sanction of the General Staff, A. E. F., led to a temporary lack of coordination of air service efforts and those of the remainder of the A. E. F. This was later corrected and the Cable Office was specifically charged with handling all such messages and with seeing that needed approval was secured before they were transmitted to the United States.

Information Section: The Information Section was first created at Air Service Headquarters, G. H. Q., in September, 1917. Its efforts were mainly directed towards the collection of such data as would be useful in the development of the Air Service, A. E. F.

The present Information Section is a growth of an Intelligence Section, Air Service Training Department, organized in Paris in December, 1917. During the closing months of the war it was a central collecting and distributing agency within the Air Service for technical, military, and aeronautical data. Its work was concretely expressed in comprehensive bulletins, of which 313 were issued. Secret documents of importance were circulated among the proper officers and general inquiries of all sorts were answered. Intimate relations were maintained with the French and British Air Services and with Washington by means of special offices who traveled between these centers. During the year 1918, 25,725 miscellaneous publications and 19,169 maps were distributed. Early in the year a French-English Aeronautical glossary was compiled after exhaustive research. In September, 1918, an information officer was appointed at each of the training centers. During the summer of 1918, preliminary work which was foreseen to be necessary for the compilation of a history of the Air Service, A. E. F., was assigned to this Section. The Armistice altered the situation and necessitated the rapid completion of this history. Colonel E. S. Gorrell, Assistant Chief of Staff, Air Service, was assigned to prepare an exhaustive record covering the narrative, statistical, technical, and tactical history of the Air Service. Having been assigned to this duty at Tours on January 9, 1919, such portion of the Information Section personnel as was engaged on this historical work was transferred to his direct control, leaving the remainder of the Information Section to bring to a conclusion the other work with which it was charged.

CHAPTER VII - THE WORKING ORGANIZATION

Organization Air Service, A. E. F., November 11, 1918: It seems appropriate that there should be given a statement of the organization of the Air Service, A. E. F., at the time when hostilities ceased and when it was a cohesive working body.

The Chief of Air Service A. E. F: Responsible to the Commander-in-Chief for the organization, training, material, equipment, methods, and all other matters affecting the efficiency of the Air Service was the Chief of Air Service A. E. F. The official

headquarters of the Air Service were at G. H. Q. and under the immediate supervision of the Chief of Staff, Air Service.

Major Branches of Air Service, A. E. F: The Chief of Air Service, A. E. F., established all general policies. For the administration of matters not affecting policies there were two Assistant Chieft of Air Service, one at Headquarters, S. O. S., and the other in Paris. There was also an Air Service representative in London charged with the responsibility for air service matters in Great Britain and Ireland, and an officer in Italy with similar duties. The Paris Office maintained liaison with the Allies and with the Air Service of the United States Navy. The functions, the duties, and the authority of the heads of each of these sections were clearly defined.

Assistant Chief of Air Service, Paris: The Assistant Chief of Air Service at Headquarters S. O. S. was charged with keeping personnel records, with the supervision of training, with the administration of air service centers in the S. O. S., and with the supervision of the Balloon Division, Air Service, which maintained schools for training and centers for equipment and repair. The most important sections of his office were those which actually conducted flying training, all balloon activities, and radio and photographic work.

Assistant Chief of Air Service, Paris: The Assistant Chief of Air Service, Paris, was in command of all air service personnel in that city. His most important duties were those connected with the supply of aviation material. He was responsible for the provision of the material and equipment necessary for the carrying out of the air service program. Under him were divisions making and supervising contracts with the allied and neutral governments and with individual concerns, receiving, assembling, and dispatching airplanes, engines, war material, and equipment secured from all sources, including the the United States: also the Technical Section, Night Bombardment Section, Aircraft Armament Section, the latter operating directly under the Chief of Ordnance, but in close accord with the Air Service. The Technical Section supplied advice on engineering questions, provided data and estimates for proposed developments and maintained an experimental flying field. It was likewise charged with the inspection and test of airplanes and engines and with their acceptance. The Night Bombardment Section supervised the American multi-engine night bombardment program, and worked in close accord with the other air service sections concerned in this project, while its London office was charged with the training of flying and mechanic personnel in England, and with the assembly in British plants of Handly-Page planes fabricated in the United States.

Air Service Construction: Construction of air service projects was under the control of the Director of Construction and Forestry. The Air Service Designs and Projects Section was responsible for selection of sites, the preparation and approval of plans, the necessary surveys and drawings, and for procuring the needed sanction of Headquarters for the execution of each project.

Mobilization of Flying Personnel: Flying personnel was supplied directly to the Zone of Advance from air service schools. Upon arrival in France flying officers were sent to the Air Service Concentration Barracks at St-Maixent, where they were instructed concerning the details of foreign engines and other apparatus until the Training Section gave notice that they could be received at any of the flying schools. In the preliminary schools in the United States, these officers had been assigned to some particular branch of aviation, pursuit:, army or corps observation, day or night bombardment. Subject to emergency calls from the Zone of Advance and to the preference of the pilot when not in conflict with immediate needs, this classification was followed in sending flying officers to the proper advance training air service centers.

The 1st Air Depot in the Zone of Advance gave daily notice of the needs at the front. Based upon this information, officers ready for active service were ordered to the 1st Air Depot and from there they were sent to the armies as they were needed.

Mobilization of Units: All air service troops arriving in France likewise passed through the Air Service Concentration Barracks at St-Maixent. The individuals were trade-tested and assigned to squadrons which were formed in accordance with tables of organization, ground officers being provided at this point. In case a squadron was being prepared for early assignment to the Zone of Advance, a squadron commander nominated by an army air service commander and approved by the Chief of Air Service was usually sent to join this command at St-Maixent. The squadron, as soon as it was in readiness, then moved to a training center, to the Acceptance Field at Orly, or to the Production Center at Romorantin, for temporary duty in order that men in specialized trades might gain some familiarity with their duties. Each squadron then proceeded to the 1st Air Depot, the date of its departure being determined by the availability of its equipment and flying personnel. The squadron supply officer with a detachment was sent to a supply warehouse to collect the squadron equipment and accompany it to the point of assembly. Pilots and observers were collected at the 1st Air Depot. The squadron commander with a nucleus of officers and soldiers, preceded the remainder of the squadron to prepare for its coming and to assure himself that the airplanes and squadron equipment were in readiness. Upon its arrival in the Zone of Advance, the squadron was reported to General Headquarters, G-3, for assignment to an army. Squadrons for instruction centers went directly fron St-Maixent to their destinations.

Movement of Supplies: The supply of airplanes, engines, and other replacement equipment for units at the front was maintained by a system of dispatch from factories and base ports through air service depots located and designed to provide the most direct transportation and to insure the immediate fulfillment of the needs of individual units. Aviation material was secured from two sources, European and American, and the supply system was built up accordingly. The Acceptance Field at Orly received and dispatched all material from European sources. The Production Center at Romorantin assembled all airplanes and engines received from the United States and dispatched them to their destinations. From these two major centers and also directly from factories in France, England, Italy, and the United States, engines, spare parts, and general air service equipment and accessories were shipped to depots by rail, by motor, and by air. The air depots supplied air parks, which in turn furnished supplies to the units actually operating at the front.

Interralation of Units of Supply: The service squadrons at the front were complete and self-contained, each with a machine shop truck when these could be supplied. For material not with the squadron or for work which the squadron itself could not do, it applied to the air park, where a limited quantity of spare parts for immediate needs and where facilities for making minor repairs and for the installation of new engines were maintained. These air parks were organized to care for from one to nine squadrons and their personnel varied in number in accordance with the work to be done. Repair work which could not be done at the air park was performed at the air depot twenty to fifty miles further in the rear and designed to supply from thirty to fifty squadrons with engines, spare parts, ammunition, armament, radio, tools, special clothing, and general accessories. The air depots also undertook airplane salvage. Further back in the S. O. S. were stores of supplies, including full squadron equipments and all spare parts. All major repairs, overhaul, and rebuilding of engines, was carried on at the air Station Production Center No. 2. Much salvage work was also done at this establishment.

Air Service Command at the Front: The Air Service was organized upon the principle that at the front it is a combat (not a staff) arm and is to be employed in combination with other similar arms of the Service. The units of the Air Service are organized as integral parts of larger units, divisions, army corps, armies, and the G. H. Q. Reserve. They are therefore commanded in the full sense of the word by the commanding generals of these larger units, whose decisions are executed by their

General Staffs. Responsibility for the performance of the allotted task rests upon the air service officer commanding the unit or units involved. The Air Service originates and suggests employment for its units but final decision is vested in the commanding general of the larger units, of which the Air Service forms a part. Since the Air Service is a combat arm, the principles which govern its use are similar to those of other such arms:

(a) Concentration for offense and defense. This is executed by reinforcing corps and army air services by units from the G. H. Q. Reserve, when such exists.

(b) Commanders of larger organizations exercise direct control over all units, including air service units, in their command. There is no separate chain of tactical command in the Air Service.

CHAPTER VIII - DIFFICULTIES

Importance of Technical Difficulties in the Air Service: The problems confronting the Air Service, A. E. F., and the difficulties which arose at every stage of its development were of a peculiarly intricate and technical nature. The distance of 3,000 miles between the western battle front in Europe and the base of supplies in the United States was an obstacle of no mean proportions. When we declared war there had not been manufactured in the United States a single airplane or engine considered fit for use on the western front. The manufacturers in America had had no experience in the technical aeronautic developments since 1914, nor in the production of service airplanes. The Allied governments after 2 1/2 years of experience were continually faced with questions of engineering and procurement due to the development of new types of aircraft and engines, to the promising performance of experimental products, and to the subsequent failure of some of them. When we entered the war there was everywhere a serious shortage of such vital things as machine tools, seasoned wood, dope, castor oil, and linen.

The Changing Methods of Aerial Warfare: One of the major problems faced by all air services was the difficulty of keeping abreast of progress in this newest arm of warfare: Specialized pursuit aviation cannot be said to have been wholly developed until the fall of 1915. Systematic long distance bombardment came somewhat later and day bombing was not fully developed until the last year of the war. Infantry liaison was early attempted and continually used, but even at the close of hostilities it had not been perfected. It was not until the spring of 1918 that night reconnaissance by aircraft became of great importance. The Allies owed mainly to night reconnaissance their foreknowledge of the coming of the final German attack on the Marne on July 15, 1918.

The Change in Airplane Design: Progress in airplane construction had been equally rapid. A machine that dominates the air one day may be totally obsolete six months later. A complex construction program involving a vast amount of technical detail cannot be changed within a few days to meet each radical invention or improvement in design. The ceaseless competition between belligerents is illustrated by Germany's effort during the last year of the war to dominate the pursuit field. She placed on the front in rapid succession no less than six new types of monoplace machines, the Pfalz, the Fokker tri-plane, two types of Fokker bi-planes, the Siemons-Schuckert, and the Junker monoplane. The experience of the French has been that ten months must ordinarily elapse between the official acceptance of an airplane of new type and its appearance in numbers on the front. An Air Service desiring to place on the front the largest possible number of machines of best types and with the least delay, is faced on the one hand with a bewildering succession of changed or improved designs and on the other by the complexity of a modern industrial quantity production program. The result is a compromise, and we can hope for nothing better.

Difficulties in Allied Aviation: In no spirit of criticism it may be remarked that the Allies themselves from the beginning of hostilities in 1914 had met a series of difficulties and disappointments in the development of their aviation programs. In general their difficulties and failures were in many respects similar to those of the United States. A complete knowledge of the conditions and capabilities of the aeronautic factories was for a long time not available to the respective governments. There was not adequate definite government supervision of manufacture. Wastage inevitable in any air program occurred from time to time. When we remember our own experiences with the Bristol Fighter, the many changes necessary in the Liberty engine, the De Haviland Plane, and all other aviation equipment produced in the United States, it is not surprising to note that a number of like instances occurred during the development of Allied aviation from the meager foundation existing in 1914.

Need for Initiative: An air program can be successful only by encouraging individual initiative, invention, and experimentation, following which there must be the necessary abandonment of unsuccessful types. Much wastage is inevitable. A great variety of types of airplanes and engines have been under construction in the Allied countries but very few of them may be considered as entirely successful. In order to secure air supremacy, the Allied Nations have at all times been forced to maintain large experimental fields and other expensive organizations which play no part in actual aerial warfare. The successful development of Allied airplanes, engines and accessories has come only after lengthy, discouraging, and costly attempts. Just as the DH-4 airplane did not reach the front until much of its superiority had disappeared, many Allied airplanes were built and used at the front at times when they were obsolescent, for example, the Sopwith 1A-2, the Farman, and the Avion Renault.

Need for Comprehension Before Criticizing: The difficulties which we encountered in our attempt to develop night bombing are curiously parallel to those of the French, British, and Italian Air Services. It follows that the air programs of any two nations will show a remarkable similarity until more fundamental and precise knowledge of the science of aviation is available. The mistakes made cannot be considered as unusual nor as avoidable. Each disappointment, each failure of judgment, might have been, and in many instances, was, duplicated in the case of every warring nation. Criticism of the mistakes made by the United States Air Service frequently indicates that those who make it fail to comprehend the subject of which they speak rashly.

Problem of Trained Personnel: As has been said over and over again, the lack of trained personnel was one of the most serious obstacles to the execution of our Air Service program. On account of the lack of training facilities in the A. E. F., it was understood that the United States would undertake the task of organizing and training the sorely needed commissioned and enlisted specialists. It was necessary, however, to establish at once in the A. E. F. training centers for all types of flying instruction, for it was soon realized that the American schools were incapable of the immediate production of a sufficient number of pilots and observers. No small difficulty in carrying on such training was the necessity for developing standardized instruction for American personnel which would fit in properly with the scheme of instruction employed in foreign schools to which American students had also to be sent.

The supply of enlisted personnel was from the first mainly a physical problem for the A. E. F., the procurement of a sufficient tonnage to transport the needed troops. A number of factors, however, combined to raise this to a point of supreme importance, second to none in its relation to air service development. Facing the Air Service at all times was the newness of the aviation forces in the United States, the practical non existence there of mechanical training centers, the variety of the types of foreign planes, airplanes, and tools with which our mechanics would have to deal, and the great amount of construction necessary in the A. E. F.

Ignorance of Equipment Needed: The problem of the supply of equipment and material was further complicated by the lack of knowledge in the United States of exactly what was needed for air forces at the front or how to undertake the production of such equipment. Types of planes for service use were not known with technical exactitude, nore were American manufacturers familiar with drawings, tolerances, or materials necessary for their production. Lack of tonnage likewise was a serious hindrance to our giving aid by sending raw materials to the Allies.

Importance of an Efficient and Adequate S. O. S: An efficient air force at the front cannot be maintained without a highly efficient supply service and the maintenance of many large warehouses, depots, and other installations. The building program was necessarily a large one and it was early realized that a large number of construction troops and a vast amount of raw material must be procured at once in order that this program might keep pace with the ever-growing needs of the Air Service it was intended to place at the front.

CHAPTER IX - SCOPE OF ACTIVITIES AND GENERAL REMARKS

Air Service Activities in England: Although there was delay in sending untrained personnel to England to replace trained mechanics and thus permit them to be sent to France, ultimately 71 squadrons thus trained in England did reach France with our armies In all a total of 211 squadrons and further additional large detachments of Air Service troops were at some time during 1917 and 1918 on training duty in England at the 70 or 80 airdromes which were operated jointly by American and British troops.

The first American detachment for flying training in England of one officer and 53 cadets arrived at Liverpool September 2, 1917. By December 21, 1918, 203 untrained cadets and 176 officers from the R. A. R. schools in Canada and the United States, and 80 casual officers with preliminary flying training had arrived for preliminary Air Service training in England. Of this number 216 were sent for service with the R. A. F. in the field completely trained; 96 were sent to the A. E. F., 20 were transferred for final training in France, and 60 were returned to the United States upon the signing of the Armistice; 83 officers sent to England for special training as instructors had been returned for special training as instructors had been returned to France upon its completion.

From pilots trained in England on Sopwith Camel airplanes, two complete American squadrons, the 17th and 148th, with American enlisted personnel, were formed and served with the H. A. F. in the field until November 1, 1918, at which date they were ordered to join the American Second Army. The record of these two squadrons, as well as the records of the individual American pilots who served with British squadrons, was most brilliant. A number of the individual pilots were decorated by the British for deeds of great gallantry, and the squadrons were most highly commended by the officers under whom they served directly, as well as by the General Officer Commanding, Royal Air Force in the Field.

Some of the personnel for the Handley-Page program which completed its training in England was assigned to duty with the British Independent Force, R. A. F., and later returned to England to act as instructors in the American school which was conducted there. This personnel also while in France rendered most efficient service and was highly complimented by the Commanding General of this Independent Force.

Handley-Page Agreement and Night Bombardment Section: In order to provide for the equipment necessary to engage in night bombing operations, after much discussion and preliminary negotiation an agreement was concluded with the English Government 26 January, 1918, by which the United States undertook to fabricate parts for Handley-Page machines, which parts were to be shipped to England and there assembled in factories by

English workmen. This agreement covered also the sending to England from the United States of a certain number of laborers to be employed primarily in the construction of airdromes and acceptance parks to be utilized by night bombardment squadrons which were to be organized in the United States and sent to England, where they would receive their final service training, the pilots, after sufficient instruction, to fly planes to France and the squadron personnel to be sent to France simultaneously.

The Night Bombardment Section, Air Service, on June 28, 1918, established an office in London to supervise all work under this agreement. The Paris office of this Night Bombardment Section selected six airdromes in France and planned an air park and a depot, much of the latter of which was constructed.

This night bombardment program covered the development of 30 Handley-Page squadrons. All of the work under this Handley-Page agreement was stopped abruptly the day after the Armistice was signed. No Handley-Page night bombing squadron ever reached France, although two such squadrons had completed their training in England, and there was available other partially trained personnel for the rapid organization of sufficient additional squadrons as the planes became ready for use. There was a delay in the shipment of fabricated parts from the United States, and the result of this inability to forward these parts on schedule time was the failure of the United States to put any Handley-Page night bombing squadrons at the front.

Air Service Activities in Italy: A number of flying officers were also sent to Italy for training and after having been given courses on Caproni machines, 65 of our pilots saw service with the Italian squadrons at the front. In addition 17 American pilots had been assigned to the Italian Naval Station at Foggia-Renatico, for operations against Austrian naval bases. Two American officers were killed on the Italian front when their machine was shot down in combat. From January 20 to November 2, 1918 these American pilots flew 587 hours over the lines and took part in 65 bombardment missions. The proportion of American to Italian flying personnel on the Italian front ranged at various times between 20 and 30%. All of this American flying personnel was highly commended by the Commanding General of the Italian Air Service. Forty-one of them received Italian War Crosses and eight received other decorations.

On his visit to Italy in July, 1917, Major Bolling collected valuable information from the Italian Government concerning its ability to prepare aeronautical equipment for the American Air Service in France. In August, 1917, a verbal arrangement was made for the purchase of 500 S. I. A. [Societa Italiano Aviazione] airplanes and 200 Caproni planes. The 450-horsepower Caproni was at that time a successful, but highly out-of-date type, bombing machine. The 600-horsepower Caproni was still in the experimental stage. Of the S. I. A. planes ordered, only 50 were ever built and these proved a disappointment. None of the Capronis were ever built for us.

Further study of the Caproni plane and further information concerning its performances warranted the issue of instructions in the fall of 1918 to conclude a definite contract for obtaining a considerable number of such machines. There was difficulty in meeting the conditions imposed by our Air Service, but finally a favorable and practicable agreement was concluded whereby the United States Army and Navy Air Services were to receive one-sixth of the monthly production of Caproni airplanes, beginning in October, 1918. Tentative plans were also made for securing a factory whose output would be reserved exclusively for American use.

According to the original agreement made with the Italian Government in the summer of 1917, 500 pilots were to he trained in Italy. A more definite contract was made on April 1, 1918, in which the course of training was clearly prescribed.

In connection with the training of American pilots in Italy many difficulties were encountered. The training center at Foggia was about 450 miles from the base of supplies, which were scarcely ever available in sufficient quantities, causing much loss of time and some dissatisfaction. In all, 206 Americans received preliminary

flying training in Italian schools, of which 106 were given special bombing training.

The DH-4 Airplane and the Liberty Engine: The first DH-4 airplanes were received from the United States in May, 1918. A number of minor changes were necessary in the first planes received before they were regarded as entirely fit for service at the front. While great improvements in airplanes had been made during the time which elapsed between the sending of the recommendation to the United States for the building of the DH-4 plane and its actual appearance in France, and while the supremacy which this plane held in 1917 was largely a thing of the past, the Liberty Engine with which the DH-4's were equipped proved equal to the highest expectations of its designers and builders. Combining great power with unusual reliability and great lightness of weight, it is one of the most successful aeronautical engines ever produced, and the confidence of the Allies in its performance was shown by their eagerness to secure more Liberty engines than we were able to furnish. The fact that it could be produced in great quantity and that its spares were standardized, made it a most valuable asset for the American Air Service, and perhaps the greatest single material contribution of the United States to aviation.

The first use made of the DH-4 airplane fitted with the Liberty engine on the western front was on August 2, 1918, when a patrol 18 strong of the 135th Aero Squadron in formation went from the airdrome at Ourches along the lines. The pilots and mechanics of this squadron had been trained in England.

Up to November 11, 1918, a total of 1213 DH-4 planes and 2,083 Liberty engines had been received overseas, all of those 628 planes had been sent to the front. Some of these American-built planes were used at A. E. F. flying schools in order that the pilots who were to fly them at the front might have the proper amount of training on them before they were sent into action.

Inequalities in Pay of Aviators: Before our declaration of war with Germany and while the development of military aviation in the United States was in its infancy, under peace conditions then existing it had been considered equitable to adjust the pay of flying officers according to their ability and experience. Three ratings had therefore been established: the Reserve Military Aviator, the Junior Military Aviator, and the Military Aviator, with increases of pay of 25, 50, and 75% respectively, calculated upon the pay of their line rank. Participation in active operations changed radically the conditions which had made this adjustment of pay equitable, and furthermore, owing to the developments in flying, these arrangements no longer represented the ability of their holders to pilot machines. The Air Service, A. E. F., therefore proposed a cable which was transmitted to the United States, October 18, 1918, recommending the abolition of these grades and the establishment of a just and equitable system of additional pay for all flying personnel engaged in regular and frequent aerial flights.

Temperament: Much has been heard during the present war of what has been called temperament of flying officers. The truth is that the flyer is no more temperamental than any other healthy young man and is equally anxious to live up to the best traditions of the profession of arms. It is a fact that the insignia worn by flying officers is more conspicuous and that they are more readily identified than officers of other branches of the Service. This largely accounts for criticism which has been directed at flying officers as a class and for the statements sometimes made that these officers were more prone than others to commit breaches of discipline. Such statements were investigated with great care from time to time, not only by direction of the Chief of the Air Service but by the Inspector General's Department, and all reports indicated without exception that the behavior of Air Service officers was in no degree more blameworthy than that of any other officers of the American Expeditionary Force.

Morale and Esprit de Corps: In the Air Service, as in other branches. nothing

contributes more to success than the cultivation of the best possible esprit de corps. In fact, this is probably more important in the Air Service on account of the voluntary nature of the duties performed. This becomes apparent when it is remembered that it is impossible to teach a man to fly or become an observer against his will and that it is extremely difficult, even after he has been taught, to utilize his knowledge fully except with his own most hearty cooperation. While companionship and inspiration of example are never lacking in the midst of the dangers attending work done in time of war by ground troops, the flyer, on the other hand, is practically alone in the air and is often the final judge of his own conduct under fire. It is evident at once that the very highest morale is essential to the success of an Air Service in active operations. Similarly in the case of the enlisted personnel belonging to this Service, not every man can be made a good mechanic, nor can his failure to become one render him amenable to discipline or reflect upon him in any way. The work of these men is judged mainly by their ability to care for intricate mechanisms, and the relation of the members of a squadron to the officers who pilot the machines is to a great extent that of advisors and guardians to men whose lives depend upon the advice and the care given.

Discipline: It is thoroughly realized that discipline is an essential to the success of an army. The air service officers and men must be as well or even better disciplined in the true sense of the word than those of any other combatant arm. The nature of the duties performed by these men is mentioned in order to call attention to the necessity for bearing these facts in mind and for exercising control over this personnel intelligently.

Relations with Other Branches of the A. E. F: The administration and development of the Air Service has been in many ways dependent upon important aid rendered by other arms. The Director of Construction and Forestry has been charged with the construction of all air service projects. The Aircraft Armament Section, while acting in close liaison with the Supply Section, Air Service, has been under the direct control of the Chief Ordnance Officer. The Medical Research Boards have compiled most valuable information and rendered indispensable service in a field previously undeveloped in the United States. A large portion of the radio work of the Air Service has been done in close cooperation with the Signal Corps. The Motor Transport Corps, since August, 1918, has been in charge of all transportation supplied to the Air Service. The uninterrupted supply of gasoline and lubricating oil was assured by the Quartermaster Corps. All gasoline came from the United States and castor oil was procured largely from the French. In all, there was supplied for the Air Service, 4,825,697 gallons of aviation gasoline and 617,815 gallons of castor oil. All of these other branches lent their aid and gave hearty support to the Air Service, A. E. F.

Observers: The procurement and training of observers for the Air Service presented many difficulties. Officers who are to act as aerial observers should have sufficient general staff training to enable them to know what to look for, to recognize what they see, and to report accurately and intelligently the result of their observations. While it was not possible in this war to secure considerable numbers of officers so trained, this fact must be borne in mind in the future and all such observers must be given this thorough training in order that the work done by them may be of real value.

Relief Organizations: The Air Service, A. E. F., is deeply indebted to the relief organizations which operated at its centers and with some of its squadrons at the front. The Red Cross and the Y. M. C. A. have at all times been present and have rendered invaluable assistance at periods when the only comforts and cheer for officers and soldiers alike were procured by the unremitting efforts of these two bodies of workers. The canteens, clubs, libraries, and messes wherever established by these or-

ganizations were of the greatest value to the Air Service at times when such facilities were sorely needed.

Liquidation and Retrenchment: When it became evident that the signing of the Armistice was possible, steps were taken to prepare the way for the liquidation of Air Service property and contracts. On November 5, 1918 the French Under-Secretary of State for Aeronautics was verbally informed that in the event of the signing of an armistice the Air Service, A. E. F., could probably cancel all orders and cease its activities and was requested to be ready to furnish a statement showing our total liabilities to the French Government. This was followed two days later by orders to all air service stations and depots to prepare a complete inventory and definite records which would be of use in winding up these business affairs. The Legal and Disbursing Division was instructed to prepare at once a statement of all air service obligations, while the Order and Acceptance Division and the purchasing Division were instructed to place no further orders except for small amounts of material necessary for immediate use. Information as to incomplete contracts was collected. Upon the signing of the Armistice, contracts with the French Government were immediately cancelled and notice was served that no further deliveries would be accepted. At the same time work on all air service projects was discontinued and a cable was sent to the United States asking that no more air service supplies be floated.

Air Service representatives in England and Italy were directed to conclude all business under their supervision with the least possible delay, to cancel all obligations and to negotiate equitable settlements for the approval of the Chief of Air Service, communicating direct with him upon all questions of policy and asking instructions concerning all settlements which would involve large disbursements or considerable quantities of material.

Steps were taken to cancel all informal agreements and to stop deliveries under them in France, England, Italy, Switzerland, and Spain. An Air Service Liquidation Board was appointed and sat daily in Paris, investigating and reporting upon all questions concerning these business settlements. Commanding officers of all schools and other air service stations were ordered to prepare supplies and equipment for immediate shipment to Romorantin, where they were to be classified, put into stock, shipped to the United States, salvaged, or otherwise disposed of as directed by the Chief of Air Service. The supply and depot officers were directed to estimate the amount of material which would be needed for replacements for the aero squadrons which were to be kept with the armies. Ordnance supplies were disposed of as outlines in G. O. No. 41, Headquarters S. O. S., September 2, 1918.

A board of officers was constituted to investigate the status of all material being produced for the Air Service in French factories, to ascertain the amount of such material and its degree of completion.

There were some 1,600 separate outstanding orders with French merchants and the value of the undelivered material thereunder amounted to approximately eighteen million francs. Everyone of these orders was carefully examined and adjustments were made with the creditors. In practically all cases the dealers were quite willing to settle on fair terms. Many of them accepted complete cancellation of their orders without compensation. Where material which could be of use was actually finished deliveries were accepted, and in some cases where the material was either incomplete or would not be needed in the Air Service the settlements were made by agreeing to pay to the dealers sums which would avoid any loss on their part, the salvage value of the material being fixed with care.

The French Government expressed a desire to take over the Air Service installations at St-Jean-de-Monts, Tours, Issoudun, Aulnat, and Orly, at a fair valuation, to assume all obligations toward land owners and to arrange for the payment by the United States

of a reasonable rental covering the period of occupation. Subject to any general policy which might be adopted by the A. E. F., this offer was accepted.

Throughout all of this period of retrenchment and liquidation every matter of an important nature received the personal attention of the Chief of Air Service.

CHAPTER X - TRAINING

The Problem on April 6, 1917: When the United States declared war there were in the army 65 flying officers. Of them a few had seen active service in Mexico and the rest either recent graduates of the school ar San Diego or still under instruction. None of them had ever flown a modern service airplane, and the majority had been trained on a system of controls differing wholly from that in use on planes in Europe. No observers or bombers had been trained, and practically no specialized instruction, as the term is now understood, had been given. From this nucleus, an Air Service numbering thousands of trained flyers was to be developed and placed in service on the western front within the shortest possible time.

Necessity for Schools Overseas: It was evident from the first that as much as possible of the enormous training program involved would have to be carried out in the United States. Only preliminary training, however, could at first be given there, because there were no machines in the United States suitable for advanced training and no pilots qualified to give advanced instruction. The necessity of large schools and training centers in Europe for advanced and specialized training was therefore obvious. It was also necessary to make use of Allied Schools to the greatest extend possible, until such time as American installations came into operation.

Acceptance of the Issoudun Site: The French had recommended the prompt construction of a large American school, at a site some eleven kilometers from the town of Issoudun, and had offered to make arrangements for the land and construct the necessary seven miles of railway. In June, 1917, this site was examined and accepted, but owing to the necessity of building the railway and the delay in the arrival of materials, construction was not started until August 18, 1917.

Creation of the Training Section: On July 2, 1917, a Training Section was tentatively created by order of the Aviation Officer, A. E. F. The Section was subsequently divided into five divisions, viz: Personnel, Records, Material, Training, and Inspection and Intelligence. Officers assigned to the Section were placed in charge of pursuit instruction, bombardment instruction, aerial gunnery, and observation. A number of assistants were added from officers and cadets sent to Europe for training, and the necessary clerical personnel was recruited from civilians found in Paris. At this time there were no officers qualified by training or experience to take charge of the higher phases of aviation instruction, and the officers assigned to special instruction duty knew little or nothing of the subjects in which they were called upon to instruct. In addition to their organization work they had therefore to perfect themselves in their subjects by such training and investigation as was possible under the circumstances.

The Cadets: It had become apparent, in the early summer of 1917, that a sufficient number of pilots with preliminary training could not be expected from the United States in time to meet the program then in contemplation, and that it would be necessary to make use to the utmost of Allied schools in Europe, both for preliminary and advanced training. Based on assurances of Allied Air Services that opportunities would be furnished in their schools for the training of a large number of untrained men, the United States was asked on June 26, 1917, to send overseas one hundred cadets a month, beginning July 1, 1917. A number of eligible Americans, who were in France, where most of them had been serving in the Ambulance Corps, were examined by an aviation examining

board and enlisted for flying training. In all, approximately two thousand three hundred cadets, without preliminary flying training, were sent to Europe or enlisted overseas.

Difficulties and Delays: The preliminary training of those men did not proceed as contemplated. The assurance of the Allied governments with respect to vacancies in their schools, was based on the arrival of the cadets during the summer of 1917. Some few of them arrived during August and September, but the majority did not reach Europe until October, November, and December. The loss of the favorable training weather, the increase in the Allied Air Services programs, which made it necessary for them to utilize their schools to the utmost, and the then existing situation on the Italian front, all combined to defeat, in a large measure, the plan for early preliminary training, with the result that most of the cadets were thrown back on the American schools for this instruction. The only American school where primary flying could be taught was the school at Tours, which had been taken over from the French on November 1, 1917. The school at Issoudun, planned for advanced training, had no machines of the type required for preliminary training, nor could these machines be obtained. It was in fact impossible to supply a sufficient quantity of them for the school at Tours. A number of cadets awaiting training were, however, placed at Issoudun, where the enforced inaction, and the fact that from time to time they were called upon to assist in the absolutely necessary construction work which this post was carrying on under the most difficult conditions owing to shortage of personnel, led to great dissatisfaction. The situation on January 1, 1918, presented a most discouraging aspect; one thousand and sixty cadets were then in Europe awaiting training, for whom no training could be provided. These men for the most part had been honor graduates of ground schools and had been sent abroad as a reward for their good work and high qualities. At the rate at which training was then proceeding it would have required ten months to a year to place them all under instruction. Only the high caliber of the men themselves prevented a complete loss of morale under these conditions. It was necessary to withdraw from the schools all cadets who could not be placed in training and to concentrate them at the Air Service Concentration Camp, St-Maixent, to await their turn. This step was taken in January, 1918.

Commissioning of Cadets: Another unfortunate feature was that cadets who had remained in the States were now arriving as commissioned officers, having received their commission on completion of their preliminary training there. In many cases these men had entered the service later than the men who had been sent abroad and were there awaiting training. The result was deemed so unjust that a plan was presented to the Secretary of War, on his visit to the A. E. F., and approved by him, to commission all all cadets in Europe with the rank they would have had had they been commissioned at the date of their graduation from ground school. The commissions so given were temporary, in the sense that if any of the cadets holding them did not successfully complete their flying training in Europe, the commissions would lapse and the cadet would fall again to enlisted status and be returned to the United States. This plan went into operation during February and March, and all cadets in Europe were commissioned under it.

The Limiting of Primary Training in A. E. F: By good fortune training proceeded somewhat more rapidly than had been anticipated, and owing to this fact, and to assistance rendered by the French and British in creating vacancies in their schools, practically every cadet in Europe was placed in training by May 15. By the middle of July, 1918, preliminary training in American schools had been practically completed, so far as all the cadets were concerned, and the question was presented whether preliminary training could not be continued for the benefit of deserving enlisted men, many of whom had enlisted in the Air Service with the idea that they would eventually be taught to fly. It seemed desirable also to give instruction to a number of officers who were

performing duties which it was thought would be better performed by them if they were practical flyers. On the other hand it was clear that in order to meet the program the schools would be forced to the utmost to give finishing and refresher courses to men already trained, and that the continuance of preliminary training would seriously impede production of finished personnel. The decision was finally reached to establish the general principle that no preliminary training would be given thereafter in the A. E. F., but to make exceptions in the cases of a number of enlisted men, whose applications had already been approved by the Examining Board, and in the case of officers whose training was deemed necessary for the more effective performance of their duties.

The Squadrons Recommend Men for Training: It was also decided to call on all squadrons of the A. E. F. periodically for a recommendation of one or two exceptionally qualified men per squadron, who should be given training as a reward for the excellence of their service. These calls were made during August and September, and a number of enlisted men were given training as a result of the recommendations so made. The excellent showing made by these men leads to the conclusion that it might have been advisable in the first instance to withhold from aviation students both their wings and commissions until such time as they had fully completed their training and were actually ready to go to the front. Though the wisdom of this course could hardly have been foreseen at the inauguration of the system in the spring of 1917, its advantages seem to be sufficiently proved to warrant its adoption in the future.

Issoudun: The situation which confronted the Training Section in the beginning of the autumn of 1917 was, to say the least, disheartening. Construction of the main American Center at Issoudun had been seriously delayed, owing to lack of materials and shortage of personnel. It was imperative to get this Center into operation as soon as possible, and also to establish schools of observation, bombardment, and aerial gunnery. Efforts were concentrated upon Issoudun. The first French planes were delivered there in October and a provisional school put in operation on October 24, 1917. The situation was, however, very unsatisfactory, as the barracks and accommodations at the school were of the crudest kind, and it had been impossible to build roads before the rainy weather made the camp a sea of mud. The flying field itself was newly sown and mud thrown from the wheels of the airplanes broke propellers almost as fast as they could be put on. No machine shops had been established and no materials for their erection were at hand, nor were there any machine tools or power available. All mechanical work had to be done in two machine-shop trucks brought from America. It was clear that a great amount of time and labor was necessary before the school could function effectively.

Tours: On November 1, 1917, the French school at Tours was taken over by the American service. This school was originally intended for observation training, but the necessity of giving preliminary training to cadets required that it be devoted to this use. The school was poorly equipped and had a capacity of not over one hundred students a month.

Clermont-Ferrand: In November, 1917, the French school at Clermont-Ferrand was also taken over for bombardment training. This school was small and by no means ideally situated. It was, however, the only school already constructed that was available, and the shortage of men and material did not at the time permit of entering into a new construction project. Training in day bombardment commenced at this school about December 1, 1917, and was continued throughout the war.

St-Jean-de-Monts: Numerous proposed sites for an aerial gunnery school were examined, but none found satisfactory, as all of them involved an amount of construction impossible at that time. It was thought that an aerial gunnery school required either a large expanse of water or an uninhabited stretch of country over which shooting could be done.

Neither of these conditions could be found readily in locations convenient to

railway transportation, or adapted to rapid completion. This problem seemed almost insurmountable until a place adapted for shooting over water was finally discovered on the west coast, near St-Jean-de-Monts (Vendee). The project for the construction of a school to graduate three hundred pilots a month was submitted for approval on the 10th day of March, 1918. The difficulties encountered in the construction of this school were very great. The site was located some ten miles from a railway, and all materials had to be hauled over roads by truck. The field itself was covered with trees and traversed by banks, which had to be leveled and resown, and construction was delayed by lack of men and material. The uselessness of commencing operations before the completion of shops and the means of maintaining planes in commission having been amply approved in the past, instruction was not started until August 9, 1918, when the school was practically completed.

Training of Mechanics: The training of mechanics presented extreme difficulties from the beginning. The handful of experienced airplane mechanics in the United States at the outbreak of the war had been retained there, for the most part, in order to operate the United States schools, and the enlisted personnel of squadrons sent to Europe was composed largely of men with no mechanical experience whatsoever. Even those who did have mechanical experience were wholly ignorant of the European engines, on which they were called upon to work. This condition threatened to be so serious that every effort was made to alleviate it. Five hundred mechanics, arriving in England on September 15, 1917, were stopped at Southampton and diverted to British schools; some two hundred were placed in factories in and about Paris, where they assisted in the construction of airplanes and motors, and two hundred and seven were sent to the French Mechanician School at Bron (Rhone), for training.

Drawbacks of Training Mechanics in Flying Schools: Shortage of personnel, necessary for the construction of Issoudun, and the working of other Air Service schools, soon made these methods of instruction impracticable and the majority of the air service enlisted men received up to January 1, 1918, got only such training as they could pick up at schools in connection with the duties which they were called upon to perform. This system of training mechanics in flying schools proved unsatisfactory from the first. It not only reduced the efficiency of the schools but caused constant disorganization when squadrons were withdrawn from the school for service at the Front.

Contract with British December 5, 1917: It was the early appreciation of this situation which led to the making of the contract with the British authorities on December 5, 1917, whereby it was agreed that a pool of fifteen men should be kept constantly in England, working and training in British schools and factories. As additional men were added to this pool it was contemplated that the surplus over fifteen thousand could be organized into squadrons from such men as had received training in England, and withdrawn to France for service. This scheme would have worked satisfactorily had enlisted personnel arrived from the United States as promptly as promised, and had it not been necessary to curtail the number of air service troops sent to Europe in the first half of the year 1918. As it was, it operated seriously to reduce the manpower available for work in France, and this at a time when ample force was absolutely necessary to lay the foundations of the large production which the schools were expected to turn out in the following summer.

Training in Italy: The Italian Government had offered to erect a school in Italy, with a capacity of five hundred students. This offer was accepted in the autum of 1917, and a school at Foggia (a city about three hundred and sixty kilometers southwest of Rome) was constructed by the Italians for the use of American flyers. Instruction in preliminary flying was started on September 28, 1917, and continued during the autumn and winter. In all about four hundred and fifty students were sent to this school for preliminary training. On January 19, 1918, an extension to the camp

was opened and the school was made to include advanced training on S. I. A. biplanes, and bombardment training on the Caproni bombardment plane. In all, four hundred and six pilots graduated from the preliminary course, of whom one hundred and twenty-one subsequently graduated from the bombardment course.

Unsatisfactory Results at Foggia: Training in Italy, however, did not prove satisfactory. The preliminary training was carried out on Farman airplanes, this being the only type procurable. It developed on the return of graduates to France for advanced training that the Farman plane differed so much from the planes on which they had to continue their training that almost as much difficulty was experienced in teaching them as would have been the case had they received no flying instruction. In the advanced training, the S. I. A. planes in use at the school, although exceedingly good as far as performance was concerned, showed certain structural weaknesses which led to their being condemned for school purposes. The training in Caproni flying was reduced to small proportions by lack of Caproni planes, spare parts, and labor at the school. Nor did this training, when complete, qualify men for night bombardment according to the standards set on the western front. The ninety-six men who completed the course were placed with Italian squadrons, where they rendered creditable service on the Italian front.

Furbara: In the spring of 1918 an attempt was made to establish a school of aerial gunnery at Furbara, Italy, and instruction was started on April 24. Lack of machines and the distance from other training centers, which made it difficult to carry out the scheme of instruction deemed necessary, resulted in the abandonment of this project after two classes (fifty-two pilots) had gone through the school.

Training in French Schools: The French at all times gave as much assistance in training American pilots and observers as the equipment of their schools and the exigencies of their program permitted. In all four hundred and forty-four students were graduated from preliminary training in French schools. These men received from twenty-five to thirty hours instruction in Farman and Caudron planes, thus materially lightening the burden of preliminary training in the A. E. F.

Aerial Gunnery at Cazaux: By far the most important contribution made by the French to the American air service training, was the finishing course in aerial gunnery which they permitted the American Air Service to give, under their supervision and direction, at their aerial gunnery school situated at Cazaux (Gironde). This work, which commenced on December 28, 1917, in a large measure neutralized the delay in getting an American aerial gunnery school into operation, and overcame the early difficulties caused by our lack of machine guns and ammunition. In addition to the above, twenty-four bombing teams were given some training at Le Crotoy; one hundred and forty-eight pilots completed an intermediate course in Nieuport and Sopwith flying at Avord, and about one hundred pilots and observers had experience in French squadrons at the Front. French instructors and advisers rendered valuable service.

Training in British Schools: The training in British schools covered three phases; the training of cadets who had no previous flying training, the training of officers who had received preliminary flying training in the Royal Air Force schools in Canada and the United States, and the training of casual officers who had received preliminary training and included selected officers sent from France for specialized instruction in higher phases of training. The training of cadets commenced on September 4, 1917, by the arrival of a detachment of fifty-three cadets and one officer, at the British School of Military Aeronautics at Oxford. In all, two hundred and four cadets were completely trained, one hundred and seventy-six officers, trained at the Royal Air Force schools in Canada and the United States, were also completely trained, and casual officers to the number of one hundred and sixty-two received some training, making a total of five hundred and forty-two men who received training in England. This number includes six observers and eighty-three officers who were re-

turned to stations in France, where they were used as instructors. In all, two hundred and sixteen pilots were sent to the Royal Air Force in the field, and operated either with the British or in the two American pursuit squadrons (17th and 148th) which were completely trained and equipped by the Royal Air Force, and operated on the British Front. Ninety-six completely trained pilots were furnished direct from British Schools to the American Air Service. Twenty-three cadets were also given preliminary training at the British School at Vendome (near Tours), France.

Our Debt to the R. A. F: The assistance given by the Royal Air Force to the training Section, of the Air Service was invaluable. While the contribution in completely trained pilots delivered to the American service was small, the value of the training given to instructors in methods of instruction in flying, gunnery, bombardment, navigation, and night flying cannot be overestimated. The British officers, furnished to the Training Section as instructors and advisers performed in all cases the most valuable work. The price paid to the British by the American Air Service for the training of American pilots, and the assistance rendered them through American personnel in England and their use of American pilots in active service on their front, were by no means disporportionate to the benefits received.

Training in the United States: It became apparent during the autumn of 1917 that such school installations as could be provided in Europe, would be wholly inadequate, even under the most favorable circumstances, to give full courses in advance and specialized training to the number of pilots and observers required to meet the army program. If the number of men necessary for this program were to be passed through the schools of the A. E. F. all that could be accomplished with men and material available would be to give finishing and refresher courses, and to provide facilities for transformation to the actual machines they would use in service. In accordance with this the United States was advised by cable, dated November 23, 1917, that it would have to assume the burden of the complete training of all aviators sent abroad. This burden was assumed by the United States in cable 645-R dated January 15, 1918, and the most strenuous efforts appear to have been made to provide the installations necessary to carry it out. It was estimated that the advanced schools of the United States would begin during June and July, 1918, to turn out pilots, fully trained or at least very far advanced in pursuit, bombardment, observation, and gunnery, as well as observers and bombers. These estimates were based upon information received from the United States by cable and otherwise during the spring and early summer of 1918, to the effect that schools for advanced and specialized training were in operation. Efforts were accordingly directed to gearing the schools in the A. E. F. to meet this situation.

The output of trained personnel from the States was, however, delayed, and up to the time of the Armistice the schools in the A. E. F. were required to bear a much larger proportion of the burden than had been contemplated. One realizes the extreme difficulty of placing a large and thoroughly trained flying personnel into service when it is considered that in spite of unlimited efforts to train this personnel in the United States, not a dingle American trained pursuit or observation pilot and only eight bombing pilots, who could be said to have received complete training in the United States, reached the front before November 11, 1918.

Observation Flying and its Importance: The program of the war in the year 1918 has clerely demonstrated the fact that the work of the observer and observation-pilot is the most important and far-reaching which an air service operating with an army is called upon to perform. This was neither the general nor public impression at the time of the entry of the United States into the war. The spectacular elements of aerial combat, the featuring of successful pursuit pilots, and the color of romance which was attached to the work of men whose only business was to fight in the air,

combined to create a popular idea of the importance of pursuit duty. This idea has from the beginning proved a serious handicap to the development of other branches of the Air Service. The impression was rendered more difficult to combat by the fact that the airplanes used for pursuit work are in general more difficult to pilot than planes used in observation or bombardment, with the result that a tendency has existed to select the best flyer for pursuit duty. The idea that pursuit was a higher and more desirable form of aviation duty than observation permitted the entire flying personnel of the Air Service, with the inevitable result that observation pilots and observers lost caste among their fellows, and during their training periods, and before true state of affairs was revealed to them by active service, tended to resent assignment to this duty or to regard such assignment as proof of their own lack of ability.

Observation Training: The training of observers in the A. E. F. commenced in the autumn of 1917, upon the arrival of the first brigades of artillery in France. Observers were detailed from these brigades and the first air work was given by a French squadron stationed at Le Valdahon. This training was soon supplemented by the opening of a station at Amanty, and by the sending of qualified artillerymen to serve with French squadrons operating on the front. Only a very small number of observers could be trained in this way and their training was limited to the use of observation with artillery.

Tours: It had been decided to use the school at Tours as a center for training observers and observation pilots, but the pressure to give preliminary training made it impossible to use this school for training of observers until January 16, 1918. On this this date the observation school was opened and the first class of two hundred students commenced their training. Five other finishing schools were put in operation during the winter and spring of 1918. These were: Chatillon, Souge, Le Valdahon, Meucon, and Coetquidan. At all of these schools observers who had finished the course at Tours were given actual practice with either infantry or artillery or both. The increase in the strength of the ground army in the spring of 1918, and the consequent large increase crease in the number of observers and observation pilots needed, made their production during the recent summer and autumn the most pressing Air Service training problem.

Lack of Observer Personnel: Up to June the chief obstacle to the training had been lack of installations and equipment. At this time, however, it became apparent that the observer personnel which was being received by the Air Service was becoming insufficient, both in number and quality. Urgent calls were made upon the United States, but it soon became evident that sufficient personnel would not arrive from there in time to meet the requirement. Of 725 observers called for in June and July, only 145 arrived in August, 86 in September and 149 in October, or a total of 380 who could be made available for front line work before the cessation of hostilities. To meet the deficiency a large number of officers was detailed to observer schools from the artillery during the summer and autumn of 1918; of these, 825 passed the flying examination and commenced training. In all 1250 observers commenced training in the A. E. F. and 831 graduated. The large percentage of the men who failed to qualify for observer work is the result of two factors: The very high standard required for the modern observer, and the fact that it is impossible to instruct a student in this extremely technical and arduous duty unless he himself desires earnestly to serve in this capacity. In the last phase of the war the work of the observer was constantly becoming ing more diversified, more important, and more difficult. The training of a large number of men able to do this work effectively, is today, and apparently will continue to be, one of the most difficult problems confronting the Air Service.

Pursuit Training: The school at Issoudun was primarily intended for advanced and pursuit training, and all pursuit training has been carried on there. After a thorough course in advance flying, the student was carefully drilled in acrobatics, formation

flying, and combat, with camera guns installed on machines. He was also in some cases given special training in night flying. the application of which to pursuit work was developed to a successful result by the British during the last few months of the War. After graduation from these courses the student was given a full course in shooting from the air, either at Cazaux or the American school at St-Jean-de-Monts or (in cases where preliminary gunnery training had been received in the United States) on a shooting area recently established near the school of Issoudun itself. In all, 766 pilots were graduated as pursuit pilots with complete training, including aerial gunnery. Up to the close of hostilities 627 of these men were sent to the Zone of Advance. the balance being retained as instructors, testers, and staff pilots.

Day Bombardment Training at Clermont-Ferrand: Bombardment training was started on December 1, 1917, at the school at Clermont-Ferrand (Puy-de-Dome), taken over from the French. The installation for this work was very modest, only two squadrons of enlisted personnel and 20 Breguet airplanes being available. The 17 pilots who were first to arrive had received preliminary training only and had not only to be taught to fly Breguet airplanes but also to serve as instructors to train future classes. The method of training was developed from the French and British systems, and was directed to impress on the students the possibility and need of precision bombing. The first class of students arrived in February, 1918, but training was delayed owing to the fact that 10 of the 20 Breguet machines had to be set aside for use at the front, and no other machines could at the time be obtained. It was not until September, 1918, that the school received DH-4 planes, and most of these machines even then were without bomb racks. The graduates of Ellington Field, the bombing school in the United States, never arrived in sufficient number to keep the schools running to capacity, and lack of personnel hampered throughout the production of trained men. In all, the school trained up to December 1, 1918, 212 bombing pilots and 262 bombers. The average number of airplanes at the school for this purpose was 60.

Night Bombardment Training: Owing to the small capacity of the school at Clermont-Ferrand and the location of the field, which was situated in a valley surrounded by mountains and stretch of country on which no landings could be made, night flying could not be taught at Clermont-Ferrand, and it was necessary to establish night bombardment training in a separate school. The airplanes contemplated for use in night bombardment were Handley-Page planes equipped with two Liberty engines. The parts of these machines were to be fabricated in America and shipped to England to be assembled. None of them became available before the cessation of hostilities.

During the spring and summer of 1918 approximately 20 pilots and 6 observers were selected for training as instructors in night bombardment and sent through British schools and then to the British front for further experience. There were the only offices fully trained in night bombardment. In the latter part of September, 1918, an American School in night bombardment was opened at Ford Junction, in the Chichester Training Area, England, but the delay in receipt of airplanes prevented any effective instruction being given up to November 11, when the center was evacuated and all personnel returned to the United States.

Aerial Gunnery: To provide facilities for training in aerial gunnery constituted one of the most difficult problems encountered by the Training Section of the Air Service in France. When the United States entered the War, the importance of gunnery training was only beginning to be realized, and up to this time many British pilots, and most French pilots, had been forced to take the air without having fired one shot from a synchronized machine gun mounted on a service machine. The French Government was reluctant to permit the promiscuous firing of machine guns from the air, except in districts where inhabitants were not likely to be injured, and this made necessary the erection of a school either near a large stretch of water, or in some very

sparsely inhabited area, which was most difficult to find in France. In addition to these difficulties the delay in supply of machine guns and machine gun ammunition from the United States made even effective ground training impossible during the early stages. The extent of the installation required may be gathered from the fact that it was necessary to give a course in aerial gunnery to all flying personnel, pilots, observers, and gunners who were sent to the front.

Vital Importance of Accurate Shooting: The correctness of the idea that a fighting airplane should be regarded mainly as a moving platform for a machine gun has been fully demonstrated, and it is hardly too much to say that the length of a pilot's life at the front is directly proportionate to his, and his observer's, ability to shoot. Up to the date of the Armistice little assistance could be expected from the United States, owing to the lack of service type machines equipped with synchronized guns available there for training. Moreover the long delay necessarily intervening between the completion of training in the United States and the arrival of the pilot in Europe necessitated in all cases further refresher courses.

Gunnery Training November 11, 1918: At the time of cessation of hostilities training in gunnery was being carried on by the Air Service at St-Jean-de-Monts. which had a capacity of between 500 and 600 pilots and observers a month. In addition, shooting was being done from the air in the areas adjacent to the schools of Issoudun, Tours, Clermont-Ferrand, Chatillon, Souge, and full courses in ground gunnery were being carried on coincident with flying training at all principal schools. The camera gun was also extensively used in combat and other practice maneuvers, and constant shooting practice, both ground and aerial, was given to all pilots in squadrons at the front, at times when their services were not required over the lines. The gunnery training of pursuit pilots had by this time been transferred from Cazaux to Issoudun and St-Jean-de-Monts, but the French school was still instructing approximately 100 observers and gunners per month.

Casualties in Training: On November 11, 1918, a total of 199 pilots and observers had been killed at training centers; 159 were students undergoing instruction and 40 were instructors, testers, and transfer pilots. Of these accidents 19 deaths were due to collision in the air, and of the rest, a great many can fairly be ascribed to motor failure and lack of judgment or poor flying on the part of the pilot. The balance must be put down to causes unknown. Classification into the particular maneuver which the machine was performing at the time of the crash, such as stall, *vrille*, sideslip, dive, etc., is not very helpful, since these effects have probably in all cases resulted from the fundamental failure to maintain sufficient flying speed.

Greater Danger in Pursuit Training: Examination of the figures, however, shows that the number of fatalities increases rapidly with the use of small, fast machines. Thus, with the Avro or similar type of preliminary training planes, only one death for 3,000 and 4,000 hours need be anticipated, while experience has pointed out the greatly increased risk of training on such machines as the Sopwith Camel, Dolphin, and Spad. Of course, the fact that these machines are, as a rule, used for the more advanced and dangerous work such as combat, gunnery, and acrobatics, has an important bearing on any comparative figures.

Hours per Fatality: In the schools of the A. E. F. the hours flown per fatality vary from 2,738 for preliminary training, to 1,023 for advanced and pursuit training. The general average is 1,173 hours per fatality, It seems a safe conclusion that approximately one fatality per 1,000 hours is to be expected in advanced training under war conditions. The proportion of fatalities to graduation in the A. E. F. shows one fatality to 90 graduates in preliminary work, one fatality to 9.2 graduations in pursuit training, and an average of about one fatality to 50 graduations in observation and bombardment. The total average appears to be one fatality for every 18 completely trained flying officers available for service.

The Use of Parachutes: No method of entirely preventing casualties in flying training has been found. It is true that parachutes were successfully used on the front by the German Air Service during the last few weeks of the war, to enable pilots and particularly observers, whose machines had been shot down or set on fire at great altitudes to land without injury. This use of these appliances is, however, most recent, and is still in the experimental stage. The question was being studies at the close of hostilities and some examples of parachutes and their attachment to the plane had been procured and a number ordered. While experiments indicate that the parachute will eventually prove of service in furnishing means of escape to pilots and observers whose plane catches fire or breaks in some vital part at high altitude, their value in preventing casualties in training seems doubtful, as by far the greater proportion of accidents in training are the result of conditions which occur at altitudes so low that the use of a parachute would be impossible.

The Normal Method of Keeping Down Casualties: For the present at least it seems that proper flying rules, rigidly enforced, prompt elimination of inapt pupils, constant care in the maintenance and testing of planes, and careful attention to the health and morale of the flyers themselves are the only method by which training casualties can be kept down.

Training Accomplishments: In considering the results accomplished in Air Service training in the A. E. F., it must he borne in mind that the efforts made had constantly to be directed toward production of trained personnel on an enormous scale. The delays which are always incident to large scale production, and which were so fully evidenced in the production of ordnance, slips, and airplanes during the present warm affected equally the production of trained personnel. A school to turn out 20 pilots a month might be constructed and put in operation in three weeks. A school to turn out 800 pilots a month will take a year before it settles into running order. In order to reach a fair judgment of the results accomplished, the figures of the trained personnel turned out must be considered in connection with the development capacity of the school and installations at the time of the cessation of hostilities.

Salient Facts: * * * The following figures, however, deserve particular notice. By November 11, 1918, there had been graduated in the A. E. F. 1,674 fully trained pilots and 851 observers, of whom 647 were aerial observers and remainder bombers and gunners. Of the personnel graduated, 1,203 pilots and 749 observers were sent to the Zone of Advance before the close of hostilities, the balance at that date being held on duty as instructors, testers, and transfer pilots. The training of 349 students was permanently discontinued owing to physical disability, inaptitude, and other causes. Fatalities in training totaled 199. A total of 2,941 airplanes was furnished in the schools for training purposes, and 149,889 hours were flown in training to November 11, 1918.

Final Capacity of Schools: As bearing on the developed capacity of the schools at the date of cessation of hostilities, it should be noted that in addition to the above, 675 pilots and 357 observers were graduated during the period from November 11, 1918, to January 1, 1919, bringing the grand total of fully trained flying personnel, piloting and non-piloting to 3,557. At the close of hostilities the Air Service was operating 11 schools overseas of which 7 were constructed by American Forces. Personnel was also under training in 3 schools under the jurisdiction of Allied Services.

Morale: The most important element in the success of a flying school is morale. It is impossible to teach a man to fly or become an observer against his will, and in fact no really satisfactory results can be accomplished unless students, as well as the mechanics and workmen, are animated by the highest *esprit de corps* and most earnestly desire to succeed themselves, and to have the Service make a creditable showing. Owing to a number of causes, of which perhaps the technical nature of the service, its novelty, and the danger involved in training, are the main ones, the morale of flying schools is

more sensitive and more easily affected than that of other military institutions. It is essential that the officers in charge be men of character which will command respect and inspire the highest confidence in their subordinates. It is well for them to be masters of the subjects taught and willing themselves to perform any of the exercises which they order their students to perform. In this manner only can the necessary respect and confidence be inspired.

Discipline: In order to maintain the requisite *esprit de corps*, the elimination of undesirable and unfit students must be prompt and rigid. The discipline enforced must be of a character which will not only keep the pilot out of trouble at the school, but will fit him to assume heavy individual responsibility. It must be remembered that in action the pilot is necessarily his own master and that treatment of him as a school boy, and not as a man, during the course of his instruction, though it may have trouble at the time, will tend to produce an irresponsible and worthless officer. The principle should be to give the students, especially when commissioned, such liberty as will tend to let them find themselves during their course of instruction and those who are not able to comport themselves properly under such conditions should be eliminated.

Delays in Training: Must be avoided as much as possible, also excessive purposeless flying. Experience indicates that most men are at their best between approximately 100 and 300 hours, and then they rapidly lose keenness after flying more than the latter amount at schools. In short, great care must be taken to do everything to encourage the highest morale obtainable, and all factors which militate against it must, wherever possible, be eliminated.

The Industrial Side of a Flying School: Flying training differs primarily from all other forms of military training, in the amount of special equipment required, its enormous cost, and the difficulty of maintaining it in a serviceable condition. A flying field, to render efficient service, must be in effect a factory on a large scale. It must have shops with the latest high speed machinery and storehouses for the carrying of enormous quantities of spare parts. This aspect of a flying school is sometimes overlooked, but it becomes evident when the machine shop, construction, repair, and supply activities of a large school are considered.

Issoudun Cited as Typical: The main shops at Issoudun comprise a machine shop, a foundry, a magneto repair department, an acetylene welding room, and a room for instrument repair, where the most delicate instruments could be wholly remodeled, repaired, or rebuilt. In addition, the Aero Repair Department is equipped to repair or construct any portion of an airplane, including wings, spars, struts, and even cables. At a time when this school was averaging 500 to 600 flying hours a day, the shops were called upon to turn out, after complete overhaul, 100 to 120 motors a week, and the Aero Repair Department to rebuild from the ground up, out of spares and salvaged parts, more than 20 airplanes a week. When it is considered that the complete overhaul of the simplest aviation engine requires approximately 100 man-hours, and that 32 full working days are required for the rebuilding of a plane, the magnitude of the above figures become striking. This work moreover did not include top overhaul and minor (in some cases even major) airplane repairs, which were made at the outlying fields of the school, each of which had its own shops.

The Need of Standardizing Training Planes: Bearing in mind the factory element in a school and the number of highly trained mechanicians required to carry it on, the necessity of reducing so far as possible the number of types of airplanes used at any one installation becomes evident. Owing to the fact that the Air Service could not secure in Europe the types of training machines which it desired, but had to take such machines as were procurable, no less than 32 types of airplanes were at various times in use at Issoudun; 17 types of Nieuports alone being constantly in service. This resulted in the supply department of that school having to carry approximately 44,000 separate airplane parts and 20,000 different engine parts. The amount of supplies re-

quired at a school of this size is enormous. Between 50 and 100 carloads of material have been received at Issoudun in a single day. While the difficulty of conducting the factory end of this school could of course be diminished under ideal conditions, it is clear that this element of the flying school must always constitute the most important part of its installation, and any disregard of it or of the railroad communications which are necessary to make it possible, will result in failure.

Training of Engineer Officers: The training of the engineer officers who must conduct these factory activities, and supervise the maintenance of planes, in squadrons and at outlying posts, requires careful attention. It has been found that the only men competent for this work were men who, before entering the Army, had had practical mechanical experience as a part of their professions or means of livelihood. No academic course can fit men to supervise properly these activities. The mechanics used for the actual labor are in many cases highly trained workmen, with long experience, and the result of placing them under the immediate command of officers less experienced than themselves is disastrous.

Fine Quality of Enlisted Personnel: During the past year, the work of the enlisted mechanics of the Air Service, in shops and squadrons, has been beyond praise. Drawn, in many cases, from highly remunerative trades, they pursued these same trades in the A. E. F., under the dullest and most difficult conditions and for the modest remuneration of the soldier, with an enthusiasm and success deserving the highest commendation. On frequent occasions, to offset lack of man power, work was carried on in shop throughout the night so as to have the planes ready for use in the morning, and extra work outside of hours was more the rule than the exception.

The Layout of a School: In order to permit the expansion of a school to any measurable size, its activities must be divided between outlying fields. Failure to appreciate this fact leads to many expensive installations, which are either wholly wasted, or the use of which is seriously impaired by the fact that they are concentrated at one point. The number of machines which can be used effectively, without danger of collision, on any given field, no matter how large, is limited. A considerable increase in flying can only be accomplished by placing fields at a distance of some two or three miles from the main field, in order to provide the necessary air room. These separate installations must be self-contained and able to operate independently; their only relation with the main field being reliance upon it for supply and major airplane and engine repairs. At the date of the Armistice, 10 separate fields were in operation at the school at Issoudun. Of these fields, the first three, devoted to the more elementary training, were clustered about the school headquarters. The 7 additional fields were wholly separate and complete installations, placed at a distance of several miles from the main camp. In addition, a landing field was reserved for use of the acrobatics class, no installation being placed there, however. This system permitted indefinite expansion, established a high *esprit de corps* at the different fields, and permitted ready comparison as to the respective merits of officers and engineers in charge of the commands.

Selection of Flying Instructors: In air service training, as in all other training, the ability and character of the instructors is the most important factor making for success or failure. The greatest possible care should be given to the selection of flying instructors. Not every man who is himself a good flyer can impart his knowledge. The instructor, in addition to being an excellent flyer, must be able to analyze his pupils thoroughly, and to impart his knowledge in the manner in which it can best be assimilated by them. It is an advantage, and of course lends great weight to the instructor's work, if in addition to his qualities, he is a man who has had actual experience on the front, but the mere fact of having experience on the front by no means qualifies him as an instructor. The work done at all times by instructors and testers cannot be too highly praised. They were drawn necessarily from among men

of exceptional ability as pilots, who possessed, in addition, qualities of character far above the average. Their duties at schools were not only monotonous, but in some cases, as in testing and combat instruction, extremely dangerous. It presented little chance for their advancement and defeated their one great ambition to serve over the lines. The patience and uncomplaining devotion to duty of our instructors can never receive sufficient recognition.

CHAPTER XII - THE SUPPLY SECTION

The Fruit of a Vast Effort: On November 11, 1918, there were forty-five American squadrons working along one hundred and thirty-seven kilometers of the western front. These forty-five fighting units represented the fruit of a vast and far-reaching effort in which every section of the Air Service played its part, and one of the most intricate problems involved in this effort, that of equipment and supply, was met and solved by the Supply Section.

Activities of the Supply Section: The Supply Section handled all aviation material from its arrival or purchase overseas to the moment of its final distribution to training centers or to units in the Zone of Advance. At the close of hostilities, the quantity of aviation freight had reached a daily average of five hundred tons. The Material Division, which had charge of incoming material at the seven base ports, had a personnel of twelve hundred and handled as many as one thousand seven hundred requisitions and thirteen hundred manifests per month. A system of depots was established and operated by the Supply Section to store and distribute material; the principal one of these, the first Air Depot at Colombey-les-Belles, handled an average of eighteen tons of a wide variety of material per day. The most important air service project in France, Air Service Production Center No. 2 at Romorantin, planned, maintained, and operated by the Supply Section, was in itself a huge industrial enterprise. It was here that the DH-4 planes received from the United States were assembled, tested, and equipped with all accessories. From May 11, 1918, when the first American-built plane arrived in France, to the close of hostilities, a total of one thousand and eighty-seven DH-4 planes was assembled at Romorantin, and, of this number, six hundred and twenty-eight were dispatched to the front. During the same period, Production Center No. 2 had also salvaged three hundred and eight planes and a great number of engines, reclaiming worn-out or crashed material which would otherwise have been a total loss to the Service. In order to meet the two hundred and two squadron program, had the war continued, there would have been necessary at Romorantin a personnel of more than twenty-five thousand. At the close of hostilities there were fifty acres of covered floor space, five hundred and nine acres of prepared flying field, and a personnel of twelve thousand officers and soldiers.

Purchasing in Europe: The Supply Section purchased all material which the Air Service found it necessary to procure in Europe. A total of five thousand one hundred and fifty-one airplanes was secured from European sources---France alone furnishing us with four thousand eight hundred and seventy-four. An average of spare motors in the proportion of 1.4 was maintained for service planes brought overseas, and our squadrons were furnished with quantities of spare parts fifty per cent in excess of those furnished by the French to similar units.

Orly: Three weeks after the site had been located on the map, the Aviation Acceptance Park at Orly was built and in operation. This park was used for the reception of foreign built planes, which were equipped with machine guns, instruments, and other accessories at Orly before being flown to the front. On November 11, 1918, there was at Orly a personnel of three hundred and twenty-three officers and two thousand two

hundred and eighty-three enlisted men. The park was designed to equip twenty-five planes daily, but during active operations, as many as ninety-one planes have left the field for the front in the course of a single day. Although military conditions often made it necessary to dispatch planes when the weather was far from perfect, only six ferry pilots lost their lives in a total of four hundred and three thousand and eighty-four miles of aerial travel, or an average of one life lost in a mileage equal to nearly three trips around the world. At the close of hostilities, every requisition for airplanes from the Zone of Advance had been met, and there remained on hand, in parks and depots, a surplus of two-hundred planes, fully equipped and ready for dispatch to the front.

Personnel: On November 11, 1918, there were in round numbers three thousand officers and twenty thousand soldiers engaged in the work of supplying the Air Service in France.

Control of Depots: The control of air depots, in time of war, constitutes a delicate problem. Fighting forces on the front believe that they appreciate the needs of the front better than anyone in the rear, and consider that the control of air depots should be in their hands. It cannot be denied that this is a reasonable standpoint, but it is also true that the front can never understand the ever-changing conditions of supply and demand at the base. On the whole, in order to maintain a smooth and systematic method of furnishing material to the fighting units, it seems best in the light of experience that the air depots should be controlled by the man responsible for supply.

The Flow of Supply: There were two sources of supply for material of the Air Service in France: Europe and the United States. Supplies from America arrived at the seven base ports, at each of which an officer of the Supply Section was stationed. American-built airplanes with engines installed were sent from the ports direct to the Air Service Production Center No. 2 at Romorantin, where they were assembled, equipped, and dispatched by air to air depots in the Zone of Advance. Other supplies from the United States were dispatched from the ports to depots in the S. O. S., such as Clichy and Romorantin. From these depots, material was forwarded by rail or motor truck to air depots in the Zone of Advance. Airplanes and engines purchased in Europe were received at Aircraft Acceptance Park No. 1 at Orly, equipped with armament and accessories, and flown to air depots in the Zone of Advance. Other supplies purchased in Europe were received in the depots of the S. O. S., and forwarded by rail or motor truck to air depots in the Zone of Advance. At the close of hostilities, Colombey-les-Belles was the air depot which provided for practically all the needs of the Air Service on the front. Aided by camouflage, its location behind the lines made it remarkably free from aerial attack, and safe from any reasonable advance of the enemy forces. It acted as a base of supply for our air parks, which were located conveniently close to the airdromes and were capable of serving from one to nine squadrons each. From the air depot at Colombey-les-Belles, supplies were forwarded to the air parks by motor transport, and airplanes, held in reserve in the hangars of the air depot, were flown to the squadron when need for them arose.

The Airplane and Motor Division: The Airplane and Motor Division of the Supply Section placed orders and accepted deliveries from the French of airplanes, engines, and spare parts. As the French were unable to furnish fully equipped airplanes, it was necessary to equip and test every plane dispatched to the schools or to the front. The acceptance park at Orly was organized under direction of this Division, and when American-built planes began to be assembled at Romorantin, a system was organized for dispatching planes from that center as well. Every plane bought in Europe was subjected to a rigid test and inspection before acceptance. Test groups, consisting of a pilot, an inspector, an airplane mechanic, a motor mechanic, and a clerk, went the rounds of the French fields where airplanes awaited our acceptance, and each plane in this way received a trial flight and a careful inspection by experts. Out of all the

planes presented by the French for acceptance, only two thousand one hundred were accepted when first presented. After defects had been remedied, five hundred and ninety-seven planes were accepted after one rejection, and one hundred and ninety-one after two rejections; a few planes were accepted after as many as six rejections, which were necessary in order to enforce the remedy for serious defects. The majority of rejections were due to poor quality of material, but many were due to poor flying qualities developed in the trial, or to engine trouble discovered either on the ground or in flight.

It was the original idea of the French Government to deliver its planes to us at Le Bourget, near Paris. During March, 1918, the Germans bombed this place and destroyed several Spad airplanes already accepted by the American Air Service. The French then notified us that we would have to establish an acceptance park of our own, as they quite naturally refused to assume responsibility for American property; Orly was the result. Orly will be remembered as one of the most compact, efficient, and notable projects of the Air Service in France. On March 31, 1918, the field existed only in the minds of its founders; on April 6, the first lot of airplanes was accepted there, and at the close of hostilities there were seventy-eight hangars, scores of barracks and buildings, several miles of cinder road, and complete water, light, and telephone facilities. The average length of time between the arrival of a plane and its dispatch, fully equipped and tested, to the front was two to three days. More than ninety-seven percent of these planes reached their destination safely, and eighty-six per cent arrived at the front without forced landings. There were dispatched from Orly to the front altogether more than one thousand eight hundred planes fully equipped and three hundred and thirty-two unequipped, as well as one thousand which were sent to the various ous American schools throughout France. In addition to the acceptance park at Orly, the Airplane and Motor Division operated two depots; one at Vinets, where planes and spare parts were stored in the Zone of Advance, and one at Chatenay, where great quantities of spare parts for planes and engines were concentrated, at a point readily accessible to the front, but at a reasonably safe distance from the enemy.

Materiel Division: The Materiel Division of the Supply Section maintained and operated port clearance offices and base and intermediate depots, kept stock records of all material handled by the Division in France, prepared tonnage priority schedules, and maintained records of tonnage allotments, kept records of aviation production in the United States, received all accomplished requisitions for general aviation material, and prepared forecasts for general material to be purchased in Europe and statements of that to be procured from the United States. The work of this Division may be judged from the fact, that, up to the close of hostilities, it received more than ten thousand requisitions, issued more than seven thousand six hundred manifests, and made more than four thousand three hundred purchase recommendations. Its personnel grew from one hundred and fifty in December, 1917, to one thousand two hundred and thirteen on November 11, 1918. The base depots operated by the Materiel Division were located at Clichy, Tours, and Romorantin, and the intermediate depot was placed at Is-sur-Tille. The latter depot made shipments to more than forty different units of the Air Service, exclusive of isolated shipments to individuals, and to one-half of these consignees the depot made regular shipments at weekly intervals or oftener. More than ninety per cent of all orders received were acted upon and the material placed in the hands of the forwarding agencies within twenty-four hours. Aviation clearance officers were maintained at the ports of St-Nazaire, Bordeaux, Le Havre, Brest, Marseille, La Pallice, and London. The tonnage that passed through these ports was enormous, including, as it did, gasoline, oil, airplanes, engines, and all other aviation material received from the United States.

Purchasing Division: This division of the Supply Section was organized to supply the Air Service with whatever materials and supplies it was necessary to procure in Europe, thus forming a central purchasing agency to control all buying for the Air

Service, A. E. F. A somewhat complicated procedure was necessary before the French Purchasing Boards and the French government would approve our orders, and for this work a special department of the Division was organized, whose function was to visit the various French bureaus each day, to place our orders before the proper officials, and thus to obtain the promptest action possible.

Transportation Division: The function of the Transportation Division of the Supply Section was to secure transportation for the Air Service units. Owing to the shortage of transportation throughout the whole A. E. F. and the fact that on August 15, 1918, the Motor Transport Corps took over entire control of allocation of transportation in the A. E. F., the problem was chiefly one of liaison with G-4, G. H. Q., and with the Motor Transport Corps. To carry on this liaison work to the best advantage, air service transportation officers were attached to the First Army, to the Second Army, and to the Office of the Chief of Air Service at G. H. Q., A. E. F. Routine liaison work with the Motor Transport Corps, and G-4, S. O. S., was carried on by the Assistant Chief of Transportation in the office of the Division at Tours.

Disbursing and Legal Division: The foundation upon which the Disbursing Division of the Supply Section, first organized in August, 1917, built its structure was the clause of the Aviation Supply Contract negotiated with the French Government on May 3, 1918, which provided that the French Government should furnish us with aviation materials of the same quality and shape as those furnished its own units. There is not space in this report to enlarge on the complex and delicate work performed by the Disbursing Division, but its experience has thrown light on certain basic facts which seem worthy of mention. It has been proved that initial appropriations in time of war should be large enough to meet any possible demands, and that such appropriations should not be designed to cover a specified period, but should cover the emergency as long as it exists. Regulations governing the method of expenditure should be made to conform to the laws of the country in which business is being done, rather than to the requirements of a set of rules made in peacetime in accordance with the laws of the United States.

Oxygen Equipment Division: The task of the Oxygen Equipment Division of the Supply Section was to organize the supply, installation, and maintenance of equipment to furnish oxygen for pilots flying at high altitudes. The investigation of the Medical Board has proved the great value of oxygen under these circumstances. The Division on November 11, 1918, was in a position to cover the maximum needs of the Air Service. During the summer of 1918, it was necessary to purchase a certain amount of equipment in France, but at the close of hostilities oxygen equipment was beginning to arrive from the United States.

Hangar Division: The duties of the Hangar Division of the Supply Section were purely administrative, as the personnel for handling and erecting hangars was supplied by depots and other stations of the Air Service. The problem of supplying hangars was like the airplane problem, for it was necessary to obtain simultaneously large quantities of material both from Europe and from the United States. This was not easy, as the French had few hangars to spare, and during the German advance in the spring of 1918, the hangar situation was grave. Steel hangars did not begin to arrive from the United States until July, 1918, and in August, deliveries began on hangars which had been ordered from the British. At the close of hostilities all requisitions for hangars had been filled, and there was a reserve of some two hundred steel hangars at Romorantin.

Information Division: This division of the Supply Section was charged with compiling the Equipment Manual, which included also general information on aerial armament, photography, quartermaster, radio, transportation, medical, and chemical warfare equipment. The scope of this manual was broadened in order to assist future squadron commanders, who would probably be selected from among pilots on active duty and not entirely familiar with all the branches of their new work. The Information Division acted also as a central information office for the Supply Section.

Production and Maintenance Division: The Production and Maintenance Division of the Supply Section, which formed a major part of the organization of Air Service Production Center No. 2, saw the growth at Romorantin of as industrial community of ten thousand where, ten months before, a pine forest stood. Planes and engines arriving from the United States were sent to Romorantin for assembly, equipped with armament and accessories, and dispatched to the front. Damaged planes and engines from all parts of the front were sent to Romorantin for salvage and repair, a valuable service of reclamation. At the close of hostilities Romorantin was a large manufacturing plant, complete in every detail and equipped to assemble engines and airplanes, to make tests, and to do armament and photographic work of all kinds. With its equipment and skilled personnel, this plant could produce equally well a delicate instrument or an airplane engine. There was also a supply depot for general aviation supplies and equipment, a depot for raw material, steel hangars, and construction supplies, and a large spare parts depot for American planes and engines. The total construction at Romorantin amounted to more than two million eight hundred thousand square feet; thirty-six thousand square feet; thirty-six thousand linear feet of roads had been laid, there were 55,000 feet of railroads, and four hundred and twenty-five acres of flying field. This construction was accomplished only by the utmost determination and ingenuity; at one time, the shortage of lumber became so serious that it was necessary to erect a sawmill to cut up timber felled in clearing the grounds for flying fields. On another occasion, when it became impossible to obtain demountable barracks, special barracks were designed and built out of the packing cases in which DH-4 planes were shipped. The Production and Maintenance Division opened its office at Romorantin on March, 31, 1918. On April 1st, the first work of preparing for airplane assembly was bebun, and when the first DH-4 plane arrived at Romorantin, on May 11, 1918, there was a crew of thirty-five men available to begin its assembly, testing, and dispatch to the front. On November 11, 1918, there were one thousand one hundred and one men available for DH-4 assembly work. During many months, particularly while preparations were being made for the American offensives, Romorantin was kept going day and night. The record for the dispatch of planes to the front was established when sixty planes were dispatched in one day. Of all the planes dispatched to air depots at the front, two hundred miles away, only five and one half percent have been crashed en route, and one quarter of these crashes were due to fog, rain, and other causes beyond control. No casualties have occurred to air service production center pilots on the field at Romorantin, and only two lives have been lost on ferry duty. Regarding the work of salvage and repair, eight hundred and eighty-nine DH-4 planes and two hundred and ninety-five planes of foreign make were received in a damaged condition. Deliveries of repaired planes were small as compared with planes received, but it must be kept in mind that no plane was sent to Romorantin if it was possible to repair it elsewhere. If major repairs of engines had been permitted at squadron airdromes and air parks at the front, the number of spare parts required to keep complete stocks at these points would have been enormous, and it, therefore, was necessary to centralize the major repairs of engines at Romorantin. In spite of the great difficulties arising from the shortage of spare parts for foreign engines, the Engine Repair Department has acquitted itself well. Spare Parts Depot No. 2, which was located at Romorantin, handled all the spare parts for Liberty engines and DH-4 planes used in France. Up to the close of hostilities, this depot had received more than two thousand six hundred propellers and issued more than one thousand six hundred; two thousand seven hundred and six Liberty engines were received and one thousand one hundred and ninety-nine were issued. The depot had received one thousand five hundred and twenty-six wings and issued one thousand and thirty-eight. A total of more than three thousand seven hundred and fifty tons of material was handled by this Depot.

The London Branch: In order to obtain from British sources supplies which it was becoming more and more difficult to procure in France, the London Branch of the Supply Section was established, on June 18, 1918. Several airplane orders had been placed through the British Government, and this fact also made it desirable, for purposes of inspection, acceptance, and dispatch to France, to establish an office in London, where the movements of airplanes could be recorded, and to which ferry pilots could report and receive instructions. The officer in charge of this branch reported to the Aviation Officer, Base Section No. 3, S. O. S., and also to the Chief of the Supply Section in Paris. In the beginning, the work of the London Branch was somewhat hampered by the fact that the British Air Ministry could be approached only by permission of the General Purchasing Agent in Great Britain. On August 21, the Chief of the Supply Section authorized the London Branch to initiate all air service purchases necessary in England, and the General Purchasing Agent of Great Britain was instructed to that effect by the General Purchasing Agent of the A. E. F. The London Branch also acted as purchasing agent for the Night Bombardment Section with the British authorities or in the open market. In the beginning, British inspection was employed for all planes dispatched to France, but it was found later that some friction was avoided by American inspection of the SE-5 planes sent from England.

Projects and Designs Division: This division had charge of the selection of sites for projects, obtained the necessary approvals, prepared projects for construction, and made surveys and lay-outs. In the beginning, this Division had charge of the actual construction, but later all construction work for the Air Service was turned over to the Director of Construction and Forestry, Corps of Engineers.

The 1st Air Depot: In closing this brief account of the activities of the Supply Section, it is fitting that mention be made of the 1st Air Depot at Colombey-les-Belles. Lying eleven miles south of Toul, this site was chosen as a convenient location for an advance supply depot, and on November 11, 1918, Colombey-les-Belles was the only large air depot in the Zone of Advance. Nearly all planes and supplies for squadrons operating on the front were received at Colombey-les-Belles, and a large amount of repair work on planes and engines of a nature which could not be done in squadrons, was done at this depot. Construction began on November 1, 1918, and seventy-five per cent of the original project was complete on April 5, 1917. At the close of hostilities, ninety officers and two thousand soldiers were engaged in carrying on the work of the depot; transportation, advance supply, quartermaster, machine-shops, airplane repairs, and airplane acceptance and replacements. During the month of September, 1918, two thousand five hundred and ninety-five requisitions were handled. These requisitions were from units in the Zone of Advance, and each one comprised from forty to fifty itesm. At the time of the Armistice, this air depot was supplying twenty-three headquarters groups, eighteen observation squadrons, seven bombardment squadrons, twenty pursuit squadrons, twelve park squadrons, eight photographis sections, and twenty-three balloon companies. Between April 1 and November 11, 1918, it dispatched more than two hundred and six thousand gallons of transportation gasoline, nearly two hundred and eighty thousand gallons of aviation gasoline, more than one hundred and sixty-seven thousand gallons of special fighting gasoline, more than forty-seven thousand gallons of castor oil, and twenty-seven thousand gallons of mineral oil. It was only on the day that the Armistice was signed that the Quartermaster Department took over the gasoline and oil business of the 1st Air Depot. The airplane repair department received more than one hundred and seventy-five crashed planes in August, 1918, and of these fifty-two were builtlt and returned to service; in all, the 1st Air Depot rebuilt and returned to service two hundred and thirty seven crashed airplanes. On the airplane acceptance and replacement field, many hundred planes were often in storage at one time. Since the Armistice, all squadrons demobilizing for return to the United States have turned in their airplanes and air service equipment to this air depot.

CHAPTER XIII - THE TECHNICAL SECTION

Origin and Functions: Technical questions pertaining to aeronautics were first handled in the A. E. F. by the Aeronautical Mission of the Aircraft Production Board. Upon the dissolution of this Mission and the return of most of its members to the United States, an officer who had been one of its members remained in Paris, assigned to the Air Service, Line of Communications, and especially charged with the responsibility of obtaining technical information for the use of the Air Service. The organization which was gradually built up from this origin became the Technical Section, Air Service, whose function was the preparation of aeronautical data to be sent to the United States, the recommendation for the placing of orders for material to be used in the Air Service, and the selection of types of airplanes, instruments, and equipment for immediate use. The work of the Section was done by divisions specializing in airplanes, engines, airplane instruments, metallurgy, order and acceptance, chemistry, technical data, history and research, and drafting. In conjunction with the duties of the Section there was maintained an aviation experimental field. Of these nine divisions, seven formed part of the initial organization. One other division, Armament, was later transferred from the province of the Technical Section. The entire trend of the work of this Section was toward the practical, rather than the theoretical. Experimental work was done only when necessary in the betterment of existing material. Work of a research nature was not developed until the fall of 1918, and then only to secure information as to the comparative value of different types of aviation material. By making recommendations and suggestions regarding the best types of materials obtainable, the Technical Section aimed toward the highest degree of efficiency in the Air Service.

Growth: In August, 1917, one officer was engaged in the technical work of the Air Service, A. E. F. In November, 1917, the total personnel was fifty, of whom nineteen were officers. At the close of hostilities the section possessed a roster of one hundred and twenty-six officers, two hundred and seventy-six soldiers, and fifty-five civilians; a total of four hundred and fifty-seven, of whom twenty-six officers and one hundred and ninety-three soldiers and one civilian were located at the Experimental Field, American Aviation Acceptance Park No. 1, at Orly.

Summary of Duties of Technical Section: In its relations to the development and improvement of the Air Service, A. E. F., the Technical Section was charged with a large number of most important duties and with direct responsibility for aeronautical progress. To the Chief of Air Service it gave information accompanied by recommendations on the technical problems which faced the Air Service. In view of the entire lack of standardized equipment of all kinds, the Technical Section was charged with the approval of all new designs in airplanes, engines, and accessory equipment before their official adoption and purchase. The Technical Section decided all questions of airplanes and airplane equipment, with the exception of armament, photographic and radio material, which concerned the Section only as regards problems of installation. The investigation of new equipment, as well as experimental and test work necessary in the development of aviation equipment under production, was under control of this Section. Data on the performance of all airplanes, engines, and accessories in field service and determination of their comparative values were a portion of the information which was collected and organized. When such information made it evident that changes and modifications should be made in any type of equipment, the approval of the Technical Section was called for. The preparation of specifications and orders for the procurement of aeronautical equipment in the United States or from foreign governments was a portion of its duties, as was also the inspection for acceptance of the material received from foreign governments. With especial regard to the collection and proper fil-

ing of information, the Technical Section prepared instructional manuals and descriptive pamphlets and bulletins concerning the operation, maintenance, adjustment, and repair of the various types of airplanes and equipment in use, and compiled for reference in this connection complete technical files and bulletins giving the results of studies and investigations with which it was concerned.

The Airplane Division: The most important accomplishment of the Airplane Division of the Technical Section was the improvements which it effected in the DH-4 airplane. Investigations and recommendations were made, and approval obtained, for the installation of protective gasoline tanks on the DH-4 and other types of airplanes. At the close of hostilities the first lot of these tanks, which were then in production, had arrived at the 1st Air Depot. A DH-4 airplane was remodeled into a DH-9 type for the purpose of obtaining information relative to the performance of the latter machine. In liaison with the Aircraft Armament Section, armored seats for the protection of pilots were designed, and a DH-4 airplane, equipped with eight machine guns for ground straffing purposes, had been dispatched to the Zone of Advance. Mud guards to prevent the breaking of DH-4 propellers by flying mud were designed and sample sets produced. Studies were made in the design of camera suspensions to apply to the DH-4 and Salmson 2A2 airplanes. The Nieuport training machine was somewhat remodeled upon recommendations of this division.

Engine Division: The Engine Division, which dated from November, 1917, made like contributions with respect to engines. It had investigated the changes necessary to improve the design and fittings of the Goime 160 h.p. engine for the Nieuport Type 28; these planes, as modified, were ready for delivery at the close of hostilities. In connection with the installation of protective tanks on the DH-4, the Selden Pump non-pressure gasoline system was installed. Successful investigations were conducted regarding oil, spark plug, and ignition troubles, as encountered with Liberty and other engines. Experiments in carburetion and various other engine tests were carried out at the Experimental Field for the information of squadrons at training centers and with the Armies.

Airplane Instrument Division: Since October, 1917, recommendation concerning the purchase of different types of airplane instruments has been in the hands of the Airplane Instrument Division of the Technical Section. This Division has assisted the Supply Section in obtaining prompt deliveries and has superintended the installation of instruments on airplanes at the Aviation Acceptance Park. During its existence, the Instrument Division has completed forty separate tests of airplanes, under conditions as nearly as possible approximating those at the front. Studies were made of British and French methods of testing. Following special experiments which were made on various types of parachutes, recommendations were made as to the most efficient types. A large number of new designs of instruments were investigated and reported upon with a view to their adaptability to the material in use and their probable success.

Metallurgy Division: With respect to the comparative qualities of the metals used in airplanes, in engines, and as fittings, the Division of Metallurgy has conducted exhaustive laboratory experiments. Availing itself of the laboratory facilities generously offered by the Citroen Works, the Metallurgy Division has supervised all tests made in connection with metals used by the Air Service. It has analyzed broken parts of engines and metal fittings of airplanes and made recommendations concerning the proper specifications of metals to be used. It has likewise maintained inspection at the plants supplying metal products, recommending as it saw fit that certain changes be made in the manufactured products.

Order and Acceptance Division: The work of the Order and Acceptance Division has been concerned solely with orders placed with foreign governments for aeronautic material and with the inspection of this material. Since April, 1918, this Division has flight-tested all foreign-built airplanes submitted for acceptance. Upon the signing

of the Armistice, the personnel of the Division then engaged in acceptance work was transferred, by request, to the French Board for the acceptance of airplanes. This placing of Americans on the French Board of Acceptance came as a consequence of the thorough inspection service previously maintained by the members of the Order and Acceptance Division.

Chemical Division: The Chemical Division collected information relative to the standardization of airplane dope, the methods of camouflage, and the fabrics in use, and compiled chemical data of interest to the Air Service. It obtained analyses of water, gasoline, oil, varnish, glues, and paints in order to facilitate future orders for these materials.

Technical Data and History and Research: The Divisions of Technical Data and History and Research were among the last organized. Their special functions were the collection and compilation of technical information in such form as to make it of practical service. Particular attention was paid to obtaining the most accurate historical information available bearing upon the design, employment, and history of the different types of airplane material; this has been done with a view to having concise and accurate information after the war.

The Drafting Division: This division has furnished drawings and blueprints as needed by the different divisions of the Technical Section and by other Sections of the Air Service. During its existence it has completed a total of fourteen hundred tracings and drawings, and seventy-five thousand blueprints.

Experimental Field: In connection with Aviation Acceptance Park No. 1 at Orly, an experimental field was maintained, where were conducted airplane and engine tests, and experimentation in equipment. The aerial testing of radio apparatus was largely the duty of this field in the early days of its inception. It also assisted in the acceptance of the Marlin synchronized machine gun for use on the DH-4 and other American airplanes. At this experimental field was performed also the work made necessary by the changes in the types of planes and by the adaptation of planes to meet the requirements imposed by service at the front.

Liaison: Through special officers detailed for this work, the Technical Section maintained a close liaison with the air services of the Allies. At London a branch office of the Technical Section was established to devote itself exclusively to obtaining information regarding aeronautical progress in England. The Section was particularly closely allied to the French Section Technique, from which much valuable information was obtained. A Technical Officer was also stationed in Italy. At the Production Center at Romorantin, officers representing the Section assisted in solving the technical problems which arose. Technical questions arising in the Zone of Advance were taken up and acted upon through representatives of the Technical Section, who traveled between Paris, the 1st Air Depot. and the squadrons at the front.

Value of Section: The Technical Section of the Air Service has rendered material assistance in connection with the procurement of technical equipment and supplies. It has given sound advice on important aeronautical questions. The permanent files of technical information which have been collected have been and will hereafter be of great value. It has cooperated heartily with all branches of the Air Service. In these ways the Technical Section of the Air Service has proved its worth and has demonstrated that such a body composed of experts in the different lines must be maintained as a component part of the Air Service as an aid in future development of aeronautics.

CHAPTER XIV - THE BALLOON SECTION

No Balloon Service Before the War: The United States Army had almost no balloon service previous to our declaration of war. On December 28, 1917, four companies,

comprising the 2d Balloon Squadron, arrived overseas and were assigned to artillery training centers in the S. O. S.

Size of the Balloon Section: The General Organization Project, as amended and completed by the Service of the Rear Project, for the American Expeditionary Forces, called for sixty-nine balloon companies, and the revised project, approved by G. H. Q., A. E. F., on August 17, 1918, provided for a total of one hundred and thirty-three companies by June 30, 1919. According to the latter schedule, seventy balloon companies should have arrived in France by October 31, 1918. There were actually, at the cessation of hostilities, a total of thirty-five companies operating in France, of which two had been organized from balloon casuals in the A. E. F. Of these, twelve were stationed at artillery firing centers and balloon school in the rear, six assigned to armies were en route to the Zone of Advance, and seventeen were serving with the First and Second Armies at the front. On November 11, 1918, the personnel of the Balloon Section consisted of 446 officers and 6,365 soldiers. Of the officers, the 230 were commissioned in the Air Service, and the remainder attached from other arms for duty as instructors or observers. Only fourteen officers of the Balloon Section were on a non-flying status.

First Arrival at the Front: The 2d Balloon Company arrived in the Toul Sector on February 23, 1918. Although many American aviators were serving with both British and French squadrons before that date, this was the first completely equipped American Air Service unit assigned to the I Army Corps, to which were assigned the first American units to take their places at the front.

Training: Valuable training in the regulation of artillery fire was obtained in France by sending all balloon companies as they arrived overseas, to artillery firing centers in the S. O. S. They remained at these stations until relieved by newly arrived companies from the United States, and were then assigned to a quiet sector on the front for battle training. Although it was intended to give observers and maneuvering officers a full course of instruction in the United States, it was not at first possible to do so without seriously delaying the arrival overseas of balloon troops. This condition made it imperative to establish a balloon school in the A. E. F. The school was first located at Cuperly (Marne), close to the French Balloon School of Vadenay, from which valuable technical assistance was secured. The enemy advance in the latter part of March, 1918, made necessary a hasty move, and Camp Souge was chosen for the new location. The first classes at Souge began on May 5th, and from that time a new class for observers and maneuvering officers was started on the 6th of each month, including December, 1918, the month in which the activities of the school ended. The classes graduated a total of 199 officers and trained 623 soldier specialists, who were taught the operation of balloon winches, telephone line work, lookout work machine-gunnery, and radio operation. It was necessary to maintain the school in France for the instruction of observers detailed from the Artillery and other arms of the A. E. F., as well as for the instruction of Balloon Section enlisted men seeking commissions in this branch.

Failures to Qualify: Twenty per cent of the officers taking the observers course, and twelve per cent of those taking the maneuvering course, failed to qualify. It was found that officers with no previous balloon experience were not qualified to follow the advanced instruction given at the Balloon School unless given preliminary training of three or four weeks with a balloon company. Attached officers who were found unsuitable as observers were returned to their own arm of the service. Officers commissioned in the Air Service and found unsuitable for balloon work were assigned to supply or other administrative duties, provided that they were properly qualified; if not, they were reported for reclassification and assignment to other arms of the A. E. F.

Operations: In the S. O. S., 4,224 ascensions were made, covering 3,721 hours; in the Zone of Advance, 1,642 ascensions were made, covering 3,111 hours; this gives

a total of 5,866 ascensions, with a duration of 6,832 hours. Artillery adjustments numbered 623 in the S. O. S., and 316 in the Zone of Advance, making a total of 929 (each artillery adjustment comprising all the shots fired at one target). Balloons were attacked by enemy planes on 89 occasions. Thirty-five of our balloons were burned in this way, and nine were destroyed by shell fire. Our observers jumped from the basked 116 times, and in no case did the parachute fail to open properly. One life was lost because pieces of the burning balloon fell on the descending parachute. Several observers were injured in rough landings, and two were captured when, during a high wind, the cable of their balloon broke and they were blown into the enemy lines.

Summary of Surveillance Reports: A summary of general surveillance reports from balloons includes the following totals; enemy shell bursts reported, 12,018; enemy planes sighted, 11,856; enemy balloons reported in ascension, 2,649; enemy batteries observed firing, 400; enemy infantry seen, 22 times; enemy traffic on roads and railroads reported, 1,113 times; smokes, fires, and flares reported, 2,941 times; explosions and destructions reported, 597.

In the Offensives: The 1st and 2d Balloon Companies took active part in the operations north of Chateau-Thierry during the latter part of July, 1918, while serving with the I Army Corps. Both these companies kept up with the advance at all times, the 2d Company building six different balloon sheds within ten days. During the St-Mihiel offensive the balloon troops with our First Army consisted of fifteen American and six French companies. In the Argonne battle, fifteen companies, including two French companies, operated with the First Army. There were four American companies with the Second Army.

Shortage of Balloon Troops: The few companies available attempted in every possible way to make up for our serious shortage of balloon troops. The 2d Balloon Company, for example, was sent to the front in February, 1918, and from that time until the signing of the Armistice, it was only once relieved from front line duty, and then for a period of only one week. From the beginning of the second battle of the Marne until November 11, 1918, this company was almost continually engaged in open warfare. The service of the 3d and 4th Companies was almost as strenuous. It is doubtful if the combat troops of any other arm of the service have operated so continuously at the front. Whatever measure of success has been attained by American balloon troops with the Armies has been due to the determination of the personnel to overcome all obstacles and to work to the limit of human endurance in order to do their share toward defeating the enemy.

Equipment: There has been no occasion on which a balloon company of the A. E. F. has been unable to operate because of lack of equipment. Owing to the failure of companies to arrive as rapidly as desired there was on hand on November 11, 1918, sufficient equipment to maintain the thirty-five companies for one year. Balloon equipment was procured either from the French or from the United States on requisition through the established agencies of the Supply Section. The distribution of special equipment was left to the balloon supply officer. It was handled, with a minimum of paper work, by troops in the field. The first ten companies to arrive overseas were completely supplied with French equipment, since replaced in constantly increasing quantities by equipment arriving from the United States.

Balloons and Winches. The two principal items of equipment were balloons and winches. Twenty Type R balloons of French manufacture were secured at first, after which American-made balloons were received in sufficient quantities and constantly improving quality. In all, 265 American balloons were received, thirty being furnished to the French and fifteen to the British upon their requests. Losses of balloons included thirty-seven burned by the enemy, one because of the cable breaking, five destroyed by shell fire, and twenty-five condemned on account of long service. For the year ending October 1, 1918, the French requirements were four and four-sevenths balloons per com-

pany per year. Our statements to the United States were based on an allowance of six balloons per company per year. The French double engine balloon winch, known as the Caquot, was considered the most efficient developed up to this time. Fifty of these were obtained from the French. Although they were reproduced in the United States, none of American make reached France. The early adoption by the Aeronautical Mission of the Aircraft Production Board of the successful French Type R balloon and Caquot winch, and their immediate reproduction in the United States, proved a wise procedure and resulted in a great saving of time.

Hydrogen: The supply of hydrogen was assured by pooling all our resources, including chemicals and cylinders, with the French. Most of the gas was produced by commercial plants under contract with the French Government. The average price paid for hydrogen was practically the same as that paid to commercial plants in the United States. A total of 51,345 cylinders were received from the United States, of which 34,545 were filled with gas when received. For the production of hydrogen, 1,857 tons of ferro-silicon, sufficient to produce more than eighty-two and a half million cubic feet, were shipped to France. The total amount of compressed hydrogen received from the French was only a little more than seven million cubic feet, or about one eleventh of the quantity obtainable from the ferro-silicon shipped from the United States. The average daily consumption of hydrogen for a balloon company in active operations was found to be 2,600 cubic feet. Our contribution of chemical for the manufacture of hydrogen made it practicable for the French to expand their protection balloon service to an extent that would not otherwise have been possible.

Plans for a Large Hydrogen Plant: In order to prepare for the Air Service Program to June, 1919, and to supply the demand for hydrogen to inflate the small balloons for carrying propaganda into enemy countries, plans were made to construct near Paris the largest hydrogen plant in the world, with a production of one-half million cubic feet daily. This plant would have been in operation by March 1, 1919.

Transportation: The statement that equipment and supply were satisfactory refers only to air service equipment. Several balloon companies were at times unable to operate on account of the shortage of transportation, and the efficiency of others was greatly reduced by the same cause. On November 11, 1918, the balloon companies had only forty per cent of the transportation allowed them by the approved tables of organization. The change from trench warfare to open warfare involved no particular difficulties for our balloon companies except those caused by the lack of sufficient motor transportation.

Balloon Barrages: Although the American Army did not undertake the installation of barrage balloons for the protection of cities and factories, the Balloon Section procured samples of French equipment both for the balloon school at Souge and for shipment to the United States. In addition to this, a field officer was sent to the French Protection Balloon School, where he took the complete course of instruction and visited many of the French protective balloon installations. Sufficient information is therefore in the hands of the Balloon Section of the Air Service to provide protective service whenever necessary.

The Repair Depot: The inspection and repair of balloons, adjustment of cordage, repair of parachutes, etc., was accomplished at the Repair Depot, first established at Is-sur-Tille, and later removed to larger and more satisfactory buildings at Romorantin. This depot inspected and adjusted 163 balloons, made complete sets of rigging for 71, and extensive repairs on 28. Seventy-four parachutes were repaired. The depot was called upon also for other varieties of fabric work, such as aerial targets for the Air Service.

General Remarks: The procurement of balloon observers by assignment from the artillery only, a plan which was effective until August, 1918, was not satisfactory. When artillery officers were detailed as balloon observers against their inclinations, the

result was a waste of time and effort. The procurement of balloon equipment by the Supply Section, and its distribution by the Balloon Section, gave entire satisfaction. The life of our balloons can be materially lengthened when it is possible to provide hangars for their protection; under existing circumstances company requirements should be estimated at six balloons per company per year. Experience in the field proved the value of carrier pigeons. Except for dirigible and airplane use, the basket type parachute is preferable to the individual type, and it is suggested that all parachute fabric should be treated with fireproof solution. The French Type R balloon was satisfactory, but a similarly shaped balloon, of the extensible type, is preferable on account of greater economy of gas consumption.

CHAPTER V - THE AIRCRAFT ARMAMENT SECTION

Origin of the Section: Shortly after our declaration of war, a preliminary survey of the aircraft armament situation was made by officers of the European Aircraft Mission of the Aircraft Production Board. During the summer of 1917, questions pertaining to armament were handled by air service personnel of the Technical Section of the Air Service, and in November, 1917, four Ordnance officers were attached temporarily to the Technical Section.

Placed Under Ordnance Control: The aircraft Armament Section is now a unit of the Ordnance Department, but works in intimate liaison with the Air Service. Up to the spring of 1918, the Aircraft Armament Section acted mainly as a technical adviser to the Air Service, as all supplies of armament and ordnance material were under control of the Supply Section, Air Service. On April 15, 1918, however, an agreement was made between the Chief Ordnance Officer and the Chief of Air Service (superseding the tentative agreement of December 13, 1917), whereby the Aircraft Armament Section took over the supply and control of all armament material. A special system of supply, under exclusive Ordnance control, was organized and has so functioned up to the close of hostilities.

Early Difficulties: It was contemplated that the Air Service should procure airplanes as rapidly as possible from the Allied governments, and in planning to obtain these planes it was specified that they should be turned over to the American Service fully equipped with armament. The Allied governments, however, proved unable to deliver the planes equipped as contemplated. It became necessary, therefore, to arrange for the manufacture of a variety of parts and accessories which could best be made in French factories, and it was for this reason that the Aircraft Armament Section was located in Paris, the industrial center of France. It soon proved undesirable, however, to have all of the manufacturing and installation work done in these factories, and in order to expedite matters a machine shop at Courbevoie, a suburb of Paris, was taken over from a private concern and developed until it provided a large proportion of the manufacturing facilities demanded by the Section's program.

Installation Fields: At Orly and at Romorantin, installation fields were established for the purpose of installing armament equipment on airplanes as they were delivered to us by foreign governments and from the United States. Up to the close of hostilities, 1,672 airplanes were equipped with armament at Orly and 1,331 at Romorantin. This Section was able at all times to meet the delivers of foreign-built planes as well as to meet delivery of those built in America. Facilities were provided for the modification of equipment, for running in and testing machine guns, and for modifying the various types of bomb-dropping apparatus which had to be adapted to the classes of bombs purchased from different sources.

Personnel: This Section has developed from a personnel of one officer in August, 1917, to five on November 1, 1917, and to 3,216 officers and soldiers on November 19, 1918, including all the armorers working in squadrons, and 995 men in training at the

armament school, St-Jean-de-Monts. On the date of the Armistice it was handling approximately 2,600 items of armament for the Air Service of the A. E. F.

Organization of the Section: The Aircraft Armament Section was divided into four branches:

1. Engineering
2. Equipment
3. Supply
4. General Control and Administration

These branches were all located at the Paris Headquarters. The installation field at Orly was devoted to work on foreign type planes, while the field at Romorantin was devoted to American-built machines. This Section also maintained personnel working in conjunction with the Air Service, in advance, intermediate, and base depots, such as Colombey-les-Belles, Behonne, Vinets, and Chatillon.

The Paris Depot: At 10, rue Huyghens, Paris, the Section had its own depot, which in connection with those mentioned above, worked to keep the squadrons equipped with ammunition and armament material. The main machine shop at Courbevoie looked after the manufacturing of small parts, and certain other classes of work were still done in factories about Paris. At Orly, St-Jean-de-Monts, the Clermont-Ferrand experimental fields had been establidhed, where the various glasses of armament material were tested.

The School at St-Jean-de-Monts: At St-Jean-de-Monts, under the auspices of the Chief Ordnance Office, there was a training school for ordnance personnel, including supply officers, ordnance officers, and armorers, for duty with squadrons. This school trained practically all of the three thousand men who were prepared for service in the field, approximately one thousand of whom were under instruction when hostilities ceased.

The Engineering Branch: The function of the Engineering Branch of this Section was to design and develop machine-gun parts, airplane cannon, gun mountings, sights, synchronizing gears, bombs, bomb gears, link fabric belts, armor plate for airplanes, etc. It becaue necessary to design armament material for production in France, pending its production in the United States. Problems of installation of American armament on foreign planes were met almost daily, and overcome only after much study and experience. An idea of the amount of designing and drafting this made necessary may be had from the fact that at the time of the Armistice there were over three thousand blueprints in the files of the Engineering Branch. The trouble with the Marlin guns is a typical instance of the emergencies which had to be met. The first consignment of these guns arrived in February, 1918, but was not accompanied by any drawings, and it was found that the type of gun in quantity production contained no synchronizing gear connections. In order to mount it, the guns had to be rebuilt and the plane altered. Finally, in August, when a serious shortage of Vickers guns seemed possible the French government consented to make the necessary changes in the machines being delivered to us. The gun connections had been already designed and placed in production, and during August, 1918, Marlin guns were mounted on Spads for the first time. In October, 1918, Salmson airplanes, also prepared to mount the Marlin, were delivered to us. Armament studies had been made for mounting these guns on other late-model service planes (including the Breguot-Liberty and Le Pere), though the cessation hostilities prevented the parts from being manufactured.

Liaison with the Front: In order to anticipate the needs of the squadrons and familiarize armament officers and pilots with new devices, an experimental officer made frequent trips to the Zone of Advance. These trips put the Engineering Branch in touch with changing conditions at the front, and were the means, for example, of introducing the Marlin gun to our pilots, a few weeks before it was regularly installed on new planes.

Equipment Tables: The Engineering Branch has prepared detailed descriptions of the armament material in use, as well as complete equipment tables for the latest service planes. The files also contain armament specifications for the service planes used by the French and British, and studies of the armament of German planes are now being made.

Difficulties Encountered: There has been scarcely an item of armament material in which some changes or development were not necessary. Some of the more important difficulties encountered overseas by the Engineering Branch were: the confusion caused by the .303 and .30 calibre machine guns; remodeling the ground type Vickers for air work; arranging the Marlin gun to fire by means of the French mechanical synchronizing gear and equipping it with a jam preventer; modifying the Lewis gun for use in the air; and designing practical machine-gun mounts, bomb racks, etc.

Standardization: In the past, the matter of armament standardization has not been entirely satisfactory; practically all airplanes, for instance have been designed to use certain specified armament, making change of armament extremely difficult. This phase of the subject seems worthy of study for a number of years to come, or until the existing material which is satisfactory and serviceable shall have been utilized. The Vickers and the Marlin have proved satisfactory. Armament installation should be regarded with an eye to no single gun or synchronizing gear. The French airplanes, redesigned to receive the Marlin gun, had been so arranged that either the Vickers or the Browning could be installed, with no great changes. This example seems worthy to be followed by the designers of aircraft armament layouts for some time to come.

Bomb Unit: This unit of the Engineering Branch was intrusted with the study and design of bombs and pyrotechnic material. The problems constantly met and solved were parallel to those encountered by the machine gun unit. It was necessary to make a close and constant study of all the accomplishments of our Allies in this phase of modern warfare, in order to bring our bombing equipment up to the high standard attained by other Services. In America, bombs different in type and character from those of our Allies were being manufactured. In order to drop these bombs from the foreign-built planes with which, it was contemplated, the American Air Service was to be equipped, it was necessary to construct new types of bomb suspensions, releases, gears, sight mounts, etc. The Bomb Unit, both through the study of foreign practice and by actual experiments, was able to meet all demands placed upon it by the Air Service, and has now in its files material which will form a splendid basis for further development of this important weapon of war.

Equipment Branch: In the beginning, the Equipment and Engineering Branches of the Section were conducted under one head, but with an increasing demand for the armament of planes, it became necessary to separate the two. The Equipment Branch provided for the production of armament material and accessories in French factories prior to the establishment of our own machine shops and continued this production in our own shops and installation fields when the demands of the Air Service necessitated their establishment. The duties of the Branch consisted in the inspection before delivery, the installation, and the maintenance of armament material, up to the point at which such material was totally lost to the Service, either through loss over the lines, or complete destruction. It was charged also with the salvage of material not completely destroyed, and acted as liaison agent with the squadrons in receiving weekly letters from their armament officers, who pointed out difficulties encountered, kept track of the expenditure of ammunition, and reported on any inventions or experimental work done at the front. In October, 1918, the aircraft armament officer on the staff of the Ordnance Officer of the First Army became the liaison agent of this Section. The Equipment Branch published weekly bulletins of information useful to officers and agents of the Aircraft Armament Section in improving the service.

.30 and .303 Calibers: One of the chief difficulties encountered by the Equipment Branch was caused by the differences in caliber of the ammunition used by the French and American Air Services. In order to use our ammunition it was necessary to install new ammunition boxes on the planes, a step which appears simple, but which in reality could only be done in the factory, before the airplanes were delivered to us. After several months of effort, and in view of a shortage of Vickers guns, the French finally consented to build our planes with .30-caliber ammunition boxes, thereby relieving this Section of a great source of trouble.

At Orly: By the end of June, 1918, a large number of planes had been accepted by the American Air Service and flown to Orly for their equipment. As the armament of these planes proceeded, it was found necessary to form an installation unit to mount the guns, sights, etc., a testing unit to test the synchronization of the guns, and an inspection unit to see that the material was perfected and the installation properly done. As the guns received from the United States were new and stiff and it was considered necessary that armament on planes leaving Orly should be ready to be used in combat, with the possibility of jams reduced to a minimum, a running in plant for machine guns was installed. The armament of foreign built planes at Orly continued until the close of hostilities.

At Romorantin: The history of the Equipment Department at Romorantin is a record of the arming of the American DH-4 airplanes for active service. About May 18, 1918, when the first shipment of these planes was received, it was discovered that it would be necessary to complete the armament, run in the machine guns, and make the necessary changes. A large plant and an adequate force became necessary. Day and night shifts were worked from July 25 to November 11, at which date the armament personnel numbered 511, of whom 31 were officers.

The Handley-Page Question: The Equipment Branch of the Aircraft Armament Section followed closely the attempts of the Air Service to procure planes for night bombardment purposes, and had worked out problems incidental to the arming of the Handley-Page machines, which were to be assembled in England. When the signing of the Armistice put an end to this activity, the materials received were reboxed and reshipped to the United States.

The Supply Branch: The Supply Branch of the Aircraft Armament Section procured, produced, maintained, and distributed supplies of aircraft armament material. It received requisitions, placed orders made deliveries, maintained warehouses, and kept the records involved in these transactions. The Supply Branch was authorized to draw material from the Ordnance Department, or to purchase it from foreign governments, this latter under a definite system of requisitioning.

First Depot: In April, 1918, an inventory of all aircraft armament material was made, and the first armament depot established. An adequate system was provided for buying from French warehouses and factories through the Purchasing Division of the Air Service. About the middle of August, the warehouses of the several depots were so well stocked that demands for double supplies of armament for a prospective drive were met with very little difficulty. About July 1, 1918, a typical layout of buildings necessary for armament supply officers at Air Depots was furnished to the Designs and Projects Division of the Air Service. In October, 1918, the Supply Branch formulated a table of unit equipment designed for the maintenance of supplies on the bases of the number of guns with which the unit was equipped.

CHAPTER XVI - THE PHOTOGRAPHIC SECTION

Accomplishment of the Section: The Photographic Section of the Air Service, during the short period of its existence, has placed our aerial photography on the same high level as that of the Allied Armies. Requirements of the Air Service for photo-

graphic supplies and personnel in the Zone of Advance have always been promptly met, but this at times was accomplished by a narrow margin and not without sacrifice elsewhere

Personnel: Since October, 1918, the soldier personnel has been sufficient to meet all requirements, and on November 11, 1918, the photographic personnel in the A. E. F. was large enough to meet the Air Service Program up to January, 1919. There existed a shortage of specialists, owing to the fact that qualified officers with the training necessary for this work were difficult to obtain, and it was not until November 6, 1918, that this serious shortage was relieved.

Training in the U. S: The Photographic Sections arriving from America were of excellent material, and their training, received at the Rochester School of Aerial Photography, was highly satisfactory.

Equipment: In the United States, at the time of our declaration of war, aerial photography was almost unknown, and it was necessary to make a study of the material used by our Allies with a view to selecting and producing in quantity for our Air Service the latest and most satisfactory equipment. Meanwhile, it was realized that the Photographic Section, to fill the immediate needs, must depend on European sources of supply. Owing to the depleted conditions of these markets, it was extremely difficult to secure the required materials in Europe, for what raw material remained available was of low grade, particularly in the case of plates and paper. Bromide paper was at one time almost unobtainable, and until the opening of a new bromide paper factory near Paris by an American photographic manufacturer, the skill of the Photographic Section was taxed to the limit to obtain the desired results on a less satisfactory paper. Since the arrival of American materials, the photographic work produced shows an improvement of at least fifty per cent. Up to the close of hostilities, fifteen photographic section equipments had arrived from the United States. In April, 1918, the Photographic Section prepared an equipment list which was adopted as standard for the A. E. F.

Lens Difficulties: The most serious problem on the hands of the Section during the early days of its service was that of securing photographic lenses. It was only after the most persistent effort, first exerted in the Summer of 1917, that this matter was finally brought to the attention of the highest French authorities, and the question placed before an Interallied Board. Under the direction and guidance of the French Service Geographique, the production was soon increased and the output placed on an allocation basis entirely satisfactory to our Air Service.

Transportation: With the exception of the electrical generating set, the American photographic trucks and trailers proved better than the French. The American set had a capacity of only one kilowatt, and was not of standard voltage. The standard 110-volt equipment permits the use of local current when available. At the front, the Section was seriously handicapped by lack of the authorized motorcycle transportation.

Training in the A. E. F: As there was no American personnel available for this purpose, the photographic training of pilots and observers at Air Service Training Centers was generally entrusted to the French,and it was not until shortly before the close of hostilities that the Section was able to send its own instructors to the more important centers. In July, 1918, the Air Service considered the establishment of a specialist course in aerial photography at one or more of the training centers, but the project could not be put into effect before the close of hostilities.

Cinema Training Films: Through the Interallied Photographic Conference, arrangements had been made for the mutual exchange of motion picture training films. The films made by the British and French for this purpose cover a considerable range of subjects, and it was intended primarily to use them for the benefit of Training Schools

in America. At the close of hostilities, the first consignment of these films had just been received from the French.

Operations: The Photographic Section developed and finished all the aerial photographs made at the various training centers, as well as at the front, and was entrusted with the production of training films, identification photographs of Air Service personnel, and photostat work.

At the Front: Although the normal output of the Photographic Section working with squadrons at the front might properly be considered mass production, it is true that special occasions arise when this mass production is inadequate. Early in the war, this mass production was assigned to G-2, but during the first part of the Argonne offensive, it was found necessary to call on the Photographic Section of the Air Service to meet the enormous demands for photographs. In view of the success with which this impromptu work was achieved (56,000 prints being produced and distributed in four days), a project to have the Photographic Section of the Air Service take over such work in the future was submitted to the General Staff, A. E. F., in October, 1918, and approved. Within one week, three base photographic laboratories were established; one with the First Army, one with the Second Army, and one as a base laboratory for all armies and G. H. Q. These laboratories were equipped with apparatus for making enlargements and large direct copies of assemblages and mosaics, as well as for speedy production of the enormous quantities of reprints from the aerial negatives required previous to an offensive.

Output of the Section: In spite of the fact that our greatest quantities of photographic work were produced during periods of poor light and unfavorable weather conditions, new speed records were established. The maximum amount of work planned for a photographic section was ten thousand prints per day. Photographic Section No. 5 made a record of eleven thousand five hundred prints in one day.

With the First A. O. G: The First Army Observation Group, which was charged particularly with long distance reconnaissance, became a specialist photographic group, and as such produced an unusual number of valuable photographs. Although the tables of organization contemplated but one photographic section to each observation group, it was necessary to assign two complete sections and equipments to this group. During the few clear days which preceded the offensive of November 1, the activity was such that these sections produced ten thousand photographic prints in one day, and it is recorded that, at one time, this group of two squadrons had fourteen cameras over the lines.

The De Ram Camera: In August, 1917, the De Ram automatic plate camera was selected by the Air Service, A. E. F., as the most desirable aerial camera for use during the campaign of 1918. In spite of meager facilities, the De Ram camera was successfully produced in France and it received its baptism of fire in the Argonne offensive, where it was employed by the observation groups with the First Army. With this camera, the observer is not obliged to crouch in the fuselage, continually changing plates and making exposures, but is entirely free to use his eyes, and his machine gun when necessary. In one case, two of our planes, engaged in a photographic mission, were attacked by several of the enemy. They succeeded in driving off the enemy planes and shooting down two of them, without in any way interfering with their photographic work, which was successfully and automatically accomplished throughout the fight by the De Ram camera.

A Word of Praise: The long hours and working speeds required of the laboratory forces during periods of activity made the work very arduous, particularly the night work, in closed and stuffy dark rooms. The men fully realized the importance of their work and the necessity for speed, and their tenacity, through these long periods without sleep or relaxation, was admirable.

Relations with the Allied Services: The Photographic Section is especially indebted to the numerous officers of the Allied Photographic Services with whom it has

come in contact. The French Mission has rendered valuable services to our aerial photography in all its branches, and the Photographic Branch of the Royal Air Force has always been most generous with any material required.

Work on Military History: As the Sections were still mobilized for active service, new work was undertaken after the Armistice. The classification and filing of all aerial negatives was undertaken, and every effort made to complete the photographic side of the military history of the war. Ground photographs were made of all the important points pictured in aerial photography, so as to make the latter as intelligible as possible, both for future training purposes, and for military history. Steps were taken to obtain from the French and British photographs of areas in which American units had fought in liaison with the Allied forces---areas which, in many case, had not been covered by our Air Service. In these aerial pictures will be read the history of our contribution to the great struggle, and they will depict the sum total of man's ingenuity turned to a work of devastation.

CHAPTER XVII - THE RADIO SECTION

Origin of the Section: Before the formation of the Radio Section, the Technical Section of the Air Service, which began its operations in August, 1917, handled all questions concerning Air Service radio. During this period the Technical Section, in its advisory capacity, and after extensive technical investigation of British, French, and Italian apparatus, caused an order to be placed (by the Signal Corps for the Air Service) with the French Government for about one million dollars worth of Air Service radio equipment. The formation of the Radio Section of the Air Service was authorized on April 9, 1918, and the preliminary work necessary to provide an immediate supply of apparatus, and to install this apparatus on airplanes, was at once undertaken.

Technical Development: Throughout the operations of the A. E. F., all technical development in the production of radio apparatus for use on airplanes was in the hands of the Radio Development Section of the Signal Corps in the United States, and the assistance of radio experts of the Research Division of the Signal Corps, A. E. F., was given to the Air Service in the most generous and satisfactory manner.

Equipment: Equipment purchased from the French government was used to fill the needs of the Air Service as regards apparatus for radio liaison with the Artillery, and a total of 1,688 installations of this radio apparatus on airplanes, both for training purposes and for actual operations, was made in the A. E. F. up to the close of hostilities. Electrical material for the heating and lighting of airplanes, as well as apparatus for illuminating airdromes for night flying operations, was also purchased from French sources.

Radio Telephony for Interplane Communication: Samples of airplane telephone apparatus received in the A. E. F. during May, 1918, were turned over to the Research Division of the Signal Corps, and flying facilities for testing this apparatus were provided at the experimental field of the Technical Section, Air Service. It was intended, provided the apparatus fulfilled active service requirements, to commence training in voice-command flying at the Seventh Aviation Instruction Center (Clermont-Ferrand) on a sufficiently large scale to permit the simultaneous operation of as many bombing squadrons as possible, using this system. Owing to various technical and mechanical defects, the details of which have already been covered in reports by the Research Division of the Signal Corps, the apparatus did not prove satisfactory. None of this apparatus was employed in operations on the front.

Night Flying by Radio Direction: The navigation of night flying airplanes by radio direction, which was developed by the Royal Air Force in England during January and February, 1918, was investigated, and an extensive program for using this system in

our own night bombing operations was adopted. A radio installation detachment of sixty men who had been given previous training in British radio schools was established at the Handley-Page factory in Oldham, Lancashier, in readiness for the commencement of the American Handley-Page construction program at that point. Pending the development of apparatus in the United States, a contract was placed with the British for five hundred and fifty special radio navigation sets to equip our night bombing airplanes. A school for the instruction of flying personnel in the night navigation of airplanes by radio direction was established at the training and mobilization field of the Night Bombardment Section, Ford Junction, England. This school was opened on September 15, 1918, and twenty-eight officers and seventy soldiers were enrolled as students, though none of this personnel completed the prescribed course before the signing of the Armistice.

Radio Liaison with Artillery: In August and September, 1917, the Chief of the Technical Section, Air Service, made a study of air service radio communication as regards cooperation with the artillery, and after conferring with officers of the Italian, French, and British Air Services, it was recommended by him that the Air Service, A. E. F., should take immediate measures to provide its own personnel for the operation of special stations to receive airplane radio signals at batteries and higher artillery commands. The system by which such ground stations are provided and controlled by the Air Service itself had been in effect in the British Expeditionary Forces since the inception of fire control by airplane radio in December, 1914. The subject was referred to the Chief Signal Officer, A. E. F., and, based on his recommendations, an agreement was approved on October 10, 1917, whereby the Signal Corps was to have charge of radio stations for communication with airplanes. For this reason, no action was taken by the Air Service toward the development of a force of radio operators to conduct its liaison with the Artillery.

Division of Responsibility: The establishment by the Artillery of a separate radio organization to maintain both its interior ground liaison and its communications with airplanes had, however, been approved in the United States, and artillery brigades arriving in France after January 1, 1918, included certain radio personnel for the service. It was found, however, that this personnel had not had a sufficient course of training before arriving in France. Under General Order 30, Section VII, paragraph 3-F, G. H. Q., A. E. F., February 15, 1918, the Signal Corps was required to supervise artillery radio stations, both in training and operations, including stations for communication with airplanes. The personnel for maintenance of radio equipment on airplanes was included in air service tables of organization of January 15, 1918, and also in the revision of these tables as approved by G. H. Q., A. E. F., on September 8, 1918. A situation was thus created by which three separate divisions of the responsibility for radio efficiency ensued between the transmission of a message from an airplane and the delivery of the message to the artillery command concerned. There was the responsibility of the air service squadron commander, charged with the correct procedure of his observers in using the radio apparatus on the plane, and the efficiency of the radio detachment of his squadron which maintained it; the responsibility of the Signal Corps radio officer charged with supervision of ground artillery stations; and that of the artillery radio officers and operators, who reported direct to commanders of their own batteries or other units. This division of responsibility did not make for efficiency and there were many cases of failure in liaison between artillery and aero squadrons dispatched to conduct fire control missions.

Training of Squadron Personnel: A shortage of suitable personnel in the spring of 1918 made it impossible for the Air Service, A. E. F., to conduct the advanced training necessary for its squadron radio officers and radio mechanics, and the radio school established in connection with the Second Aviation Instruction Center, on May 23, 1918, was supplied with instructor personnel by the Radio Division of the Signal Corps. The

school was well equipped and efficiently conducted, and up to the close of hostilities, a total of thirty-seven air service radio officers and one hundred and sixty-one radio mechanics and operators for squadron maintenance duties were given final training and "refresher" courses and assigned to squadrons in the Zone of Advance.

Final Agreement with Signal Corps: General Orders 132, G. H. Q., A. E. F., September 10, 1918, charged the Chief Signal Officer, A. E. F., with general supervision and control of all radio operations, including those of the Artillery, Air Service, Tank Corps, and other special services. Based upon this order and because the Signal Corps had previously provided instructor personnel for the training of aero squadron radio officers and radio mechanics, an arrangement was concluded on October 2, 1918, by which the Chief Signal Officer assumed responsibility for the training of all personnel of the Air Service requiring radio instruction; the development and supply, through the regular channels of the Signal Corps, of all radio equipment for the Air Service, and the installation of all radio equipment on airplanes. Air Service radio personnel was also to receive technical orders and operating instructions from the supervisory radio officers of the Signal Corps, and the reserve supply of airplane radio apparatus was transferred to the Supply system of the Signal Corps. Up to the close of hostilities no changes were made in airplane radio installation or methods of operation.

CHAPTER XVIII - THE MEDICAL CONSULTANT

Medical Responsibility for Flying Fitness: In considering the medical aspects of aviation, one salient fact has been emphasized by our experience in the present war: The need of the utmost discretion in selecting flying personnel, and of the most constant and skillful care of pilots and observers, while in training and in active service at the front. The basic principle is a simple one---the proper medical responsibility for flying fitness---and medical officers of special knowledge and ability should be at all times attached to the Air Service, and provided with the proper facilities for a study of the problems involved.

The Medical Research Laboratory: In order to arrive at a knowledge of the problems that arise in connection with flying fitness, it is necessary to investigate the general conditions which affect the efficiency of pilots, to make experiments and tests to determine the ability of pilots to fly at high altitudes, to develop by test and experiment the best means of providing oxygen for pilots flying at high altitudes, and to study and develop the tests to which candidates for flying commissions are subjected. With such investigations in view, a Medical Research Board was organized at Mineola on October 18, 1917. The officers composing this Board were physicians and surgeons of the highest quality, and specialists in the various departments of medicine covered by their investigations. The work of the Medical Research Board in the United States was from the first successful; its personnel increased and it developed, a complete and specialized laboratory equipment. On August 6, 1918, a group of 48 officers and soldiers, divided into four units, embarked for service in the A. E. F. The most important of these units was assigned to the Third Aviation Center at Issoudun, where its equipment was set up and a complete medical research laboratory established. The splendid work of this organization is recorded in detail in its report. Tests and recommendations were made in regard to the personnel then under flying instruction at Issoudun, and a very interesting series of special investigations were conducted, concerning the condition of successful flyers returned from the front. It is not practicable as yet to give any conclusion as to the results of this investigation, for the material collected, of unique value in the history of aviation, must be carefully compiled and studied before the essential facts are reduced.

Special Leaves and Rest for Flyers: An important constructive accomplishment of the Medical Consultant's office was the acceptance by G. H. Q. of the proposal that aviators be put on a separate leave basis from that in force throughout the Army. The experience of both the French and English air services has demonstrated the fact that flying men should have frequent rest and change of scene. The methods in use by our Allies might be improved by controlling places of recreation, so that the flyer may have a thoroughly agreeable change, with amusements and sports, away from centers of population. Flying fitness is so intimately dependent on personal conduct and standards that no amount of legislation alone will produce the results desired; it is only through the active cooperation of the flyers themselves that we may hope to maintain the morale and *esprit de corps* which make for the maximum of efficiency.

CHAPTER XIX - CONCLUSION

A Tribute to our Allies: No account of the activities of the Air Service, A.E.F., would be complete without paying due tribute to the assistance rendered by the Air Service of the Allies. From the time of our declaration of war they threw open to us their sources of information, cooperated with us in every possible manner, and supplied us with much of the material we lacked so sorely. In all of the relations between our Air Service and those of the other powers alongside of whom we fought, there was ever present the finest spirit of helpfulness and cordiality. France in particular, on whose ravaged soil the decisive battles of the Western Front have been fought, supplied us, in spite of her own vast effort and dire need, with material without which our Air Service would have found it impossible to operate. England and Italy likewise aided us to the full measure of their ability.

A Tribute to the Air Service Personnel: Whatever measure of success the Air Service, A. E. F., attained was above all other things due to the splendid qualities of its officer and soldier personnel. The squadrons actually at the front worked untiringly, the flying officers displayed great gallantry, and the ground officers and the soldiers in the squadrons worked continuously, faithfully, and intelligently to make this Service count for something in the war, to keep the equipment in order, and to promote efficiency. But much of the great task of carrying on a modern war is, however, performed far from the sights and scenes of battle, unstimulated by the heat of struggle, and without hope of glory. In the offices, in the shops, in the hangars, at depots, production centers, and at schools, the soldiers of the Air Service have labored tirelessly at duties which were often irksome and monotonous. Their contribution to our victory was a large one, it was given in full measure, and in all cases they put into their work the best that was in them.

Conclusion: In the course of the development of the Air Service overseas mistakes have been made and disappointments have been encountered, as was inevitable in the building up of a new and highly technical arm. As we consider these errors with a view to their avoidance in the future, one fact stands out most prominently, one common source of all of our difficulties becomes apparent; these failures were the unavoidable result of our unpreparedness and of the necessity for actually preparing for war while hostilities were in progress.

Respectfully submitted,

MASON M. PATRICK,
Major General, U. S. A.,
Chief of Air Service, A. E. F.

ACTIVITIES OF THE CHEMICAL WARFARE SERVICE

(JULY 5, 1917, TO MARCH 15, 1919)

ORGANIZATION

Order Establishing Gas Service: The preliminary outline for the establishment of a Gas Service, A. E. F., was contained in G. O. No. 8, Hq. A. E. F., July 15, 1917. The Chief of Gas Service (C. G. S.) was charged with the conduct of the entire gas and flame service, both offense and defense; supply and control of personnel; procurement of supplies and material; and control of all experimental work pertaining to gas warfare. The Corps of Engineers was charged with supplying personnel and material for gas and liquid fire offensive. Personnel and material for gas defensive was to be supplied by the Medical Corps under supervision of the Chief of the Gas Service. All gas bombs, gas shell, and other similar material were to be supplied by the Ordnance Department.

On August 18, 1917, Lt. Col. Amos A. Fries, Engrs. (later Brig. General) was assigned as Engineer in Charge of Gas. On September 4, 1917, Lt. Col. Fries received a cablegram promoting him to Colonel of the 30th Regiment of Engineers, U. S. A. (Gas and Flame Troops).

Upon the organization in July, 1918, of the Chemical Warfare Service Colonel Fries became Chief of the Service. Except when on sick leave in October, General Fries acted as Chief of the Service until December 2, 1918, when he left for the United States. During the sick leave of General Fries, and after December 2, 1918, Colonel E. N. Johnston acted as Chief of Chemical Warfare Service.

Authorization of Gas Service Organization: The Gas Service was definitely authorized by G. O. No. 31, H. A. E. F., September 3, 1917, and the Chief of Gas Service was charged with the organization of personnel, the supply of material, and the conduct of offensive and defensive measures.

Organization of Service: During September, October, and November the Chief of Gas Service enlarged the organization of the Service. He visited the British and French Headquarters and conferred with their experts regarding organization. The organization for headquarters Gas Service included the following Sections: Administrative, Intelligence, Offensive, Defensive, Supply, Ordnance, Medical Director, and Laboratory.

The tables of organization for the Gas Regiment called for 1 headquarters, 2 Stokes, and 4 cylinder and Livens companies. Personnel was proposed for army, corps, and division headquarters, and Line of Communications including depots, filling stations, and training units.

In the interest of economy of personnel and transportation, it was intended to group the offensive, defensive, and school sections of the Gas Service, wherever possible. It was proposed to detail division chemical advisors, and possibly corps and army advisors from the Sanitary Corps because the Engineer Corps did not have sufficient officers with the requisite chemical training. Transfer of these Sanitary Corps officers to the Engineer Corps was, however, proposed.

Liaison with G. H. Q.: With the establishment of Services of Supply, (G. H. Q., A. E. F., G. O. No. 31, February 16, 1918), the Chief of Gas Service transferred his office from Chaumont to Headquarters, S. O. S. The A. C. of S., G-4, desired to have a representative of each service of supply attached to that section, and hence, the Chief of Gas Service left a representative at G. H. Q. His duties were to represent the Chief of Gas Service in all matters pertaining to supplies. He also did intelli-

gence work, which consisted in reading the G-2, G. H. Q., day book, extracting all matters relating to chemical warfare, and forwarding the material to the Intelligence Section, Gas Service, at Tours.

Later, all Gas Service matters requiring attention at G. H. Q. were forwarded through the Gas Service representative because experience showed that these matters received better attention if presented personally, and the various sections of the General Staff found it was more convenient to refer all matters pertaining to the Gas Service to the representative of the service, who either provided the information, or secured it from the Chief of the Service.

Reorganization of Gas Service: Because of the absolute need of fully coping with the tremendously increased demands upon the Gas Service, the Chief of Gas Service, on March 5, 1918, after a conference with his advisors, determined to effect an immediate reorganization commensurate with the broadening activities of the Service, and to press for the establishment of a Gas Corps.

The Gas Service was reorganized so that there were three main divisions: Military, Technical, Production and Supply. The function of the Military Division was to care for all problems relating to gas offense and defense and the securing and disseminating of gas intelligence; the Technical Division functioned through the laboratory and experimental field in attacking problems requiring research along chemical, pharmacological, ordnance, and engineering lines; and the Production and Supply Division was to provide all supplies required by the Service.

On May 1, 1918, a further reorganization of the Service took place. The principal changes were: The separation of the Offense and Defense branches of the Military Division into separate and distinct divisions of the Service, and the transfer of the Intelligence Section to the Technical Division.

Necessity for Separate Gas Corps: Ever since the original organization of the Gas Service in the fall of 1917, the need for the establishment of a separate gas corps had been growing more and more apparent. The commissioned personnel, consisting at that time of some 200 officers, had been drawn from practically every branch of the service, and still held commissions in these diverse branches. Under such conditions, it was practically impossible to obtain merited promotions or to obtain new personnel of desirable caliber from other services. Both the British and the French had started with makeshift services, and had been forced by bitter experience to effect complete reorganization.

As time went on, the necessity for a separate Gas Corps became more and more apparent. The great battles of the spring of 1918 made unmistakably clear the importance of gas warfare. Gas and smoke in vast quantities were used by the enemy in his great offensive, and proved very effective. During the preceding year, gas warfare had been still in the experimental stage; the spring of 1918 found gas a weapon of importance, and indications pointed to still further developments.

Accordingly, on May 1 the Chief of the Gas Service presented to the Commander-in-Chief a comprehensive statement regarding the relation of the United States to gas warfare and the resultant definite need for the establishment of a Gas Corps.

These recommendations of the Chief of the Gas Service for the organization of a Gas Corps were favorably received at G. H. Q. The number of officers required and various other details of organization were, of course, subjects for considerable discussion and required time for their final settlement. But it was plain that the authorities at G. H. Q. realized the importance of the project.

Authorization of Chemical Warfare Service: On June 3, a cable was sent by the Commanding General, A. E. F., to the Chief of Staff, U. S., recommending the establishment in the National Army of a separate Gas Corps. Papers covering the details of organization, as approved at G. H. Q., A. E. F., were forwarded by courier. Action was

at once taken in the United States; and on June 28 a cable was received which indicated the creation of a Chemical Warfare Service along the lines outlined for the proposed Gas Corps, which was finally authorized by G. O. 62, W. D., June 28, 1918. It was not until July 13, however, that definite authorization of the organization was obtained. On that date the Chief of Staff, U. S., approved the organization of Chemical Warfare Service. The Gas Corps, under a different name, was now an accomplished fact, and the way was opened at last for development adequate to the needs and opportunity of gas warfare.

The Gas Service, A. E. F., became the Overseas Division, C. W. S., with a total authorized strength of 916 officers and 7,624 enlisted men, and was increased on October 8, 1918, to 1,315 officers and 17,205 enlisted men. * * * The duties of the divisions were as follows:

Office of the Adjutant: The office in the Adjutant's office cared for all the matters requiring the attention of the Chief and Assistant Chief of the Chemical Warfare Service. All cablegrams were received and sent from this office.

Defense Division: This division was responsible for the training of all troops in defensive measures to be employed against gas. Its duties included the selection, instruction, and supervision of gas officers in the field; the supervision of all gas defense schools; and the training of isolated units in antigas measures. This involved the frequent inspection of units in the field to make sure that all protective measures were understood and were being carried out. Close contact with the Medical Corps had to be maintained to provide the most efficient treatment for gas casualties, and the best preventive measures. Cooperation with other divisions of the C. W. S. was also necessary, in order to develop new and improved means of protection. In short, all measures looking to the most complete and efficient protection of our troops against gas were within the province of the Defense Division.

Offense Division: This division was charged with the responsibility for all offensive operations, including not only the operations of gas and flame troops, but also the use of gas, smoke, and incendiary materials of the artillery, infantry, and other branches of the service. This responsibility included the work of providing proper equipment for troops employing gas, smoke, or incendiary materials for offensive purposes, and of providing instruction in the proper use of such equipment. It involved the careful study of all hostile and allied gas operations with a view to the discovery of improved tactical methods in gas warfare. The Offense Division was charged with the initiation of activities for gas troops, and with the devising of new methods for the offensive use of gas material. One of its most important duties was the determination of the proper gas, smoke, and incendiary materials to be employed in artillery shell, projector drums, trench mortar bombs, and infantry grenades, as well as furnishing designs and specifications for same. In brief, it was the duty of the Offense Division to provide by all prossible means, men and material for subjecting the enemy to the most effective gases in the greatest possible quantities and in the most effective way.

Production and Supply Division: This unit was responsible for procuring all supplies needed by the Chemical Warefare Service, A. E. F., and for maintaining sufficient stocks of such supplies. To fulfill its functions properly, the division was required to operate factories and filling plants in England and France, to requisition supplies from the United States, to purchase supplies in England and France, to store gas supplies and to operate storage depots in England and France, and to follow up transportation so as to insure the proper delivery of supplies. The division was to investigate the supply situation in the United States and Allied countries, and determine whether any article was to be acquired in the United States or in foreign markets.

Technical Division: The headquarters office of the Technical Division maintained

general supervision over the work of the Paris Laboratory and Hanlon Field. Research problems were suggested, and all reports on the results of research were distributed from this office. The information contained in the numerous technical documents received from the Allied Services was digested and catalogued so as to furnish a ready source of information to the other staff branches, and to the field organizations. Technical advice and information on special problems was furnished to the various C. W. S. divisions.

Intelligence Division: The Intelligence Division was charged with the securing of information from the front regarding enemy gas discipline and hostile gas offense plans, American and Allied methods of defense and offense, numbers of gas casualties; and scientific data from the Chemical Warfare Service Laboratory and Experiment Field, the C. W. S., U. S., and the Allies Its duties included the preparation of digests of information, weekly summaries, and special bulletins, and their distribution to the proper authorities. Enemy and allied documents were translated, and the translations distributed. The Intelligence Division also served as an information bureau at the disposal of the C. W. S. division and section chiefs.

Personnel Officer: The Personnel Officer was charged with the procuring of personnel for all departments of the C. W. S., and the distribution of such personnel among the various divisions in accordance with the qualifications of officers and men, and the requirements of the various divisions. He was to establish and control such casual camps as might be required for C. W. S. officers and men, and also to control and operate the schools required to train newly arriving C. W. S. personnel.

Gas Staff Officers With Troops: G. O. 79, G. H. Q., May 27, 1918, defined the duties of gas officers to be attached to the staffs of unit commanders. Army, corps, and division gas officers were to be appointed by the Chief of Gas Service from the personnel of that service. Regimental and battalion gas officers were to be appointed by the unit commanders.

This order had a very important bearing on the work of gas officers, and made it possible for them to work more effectively by placing responsibilities, and defining duties of the various gas officers. It relieved regimental and battalion gas officers, and gas N. C. O.'s from all duties which might interfere with their gas activities.

The order was further amended by G. H. Q., G. O. No. 107, July 2, 1918, which stated that gas officers should be consulted and advantage taken of their technical knowledge and advice in the preparation of all plans involving the extensive use of gas, whether by artillery or other means.

G. O. 183, G. H. Q., October 21, 1918, authorized the following Chemical Warfare Service personnel for army, corps, and division headquarters:

The Chief Gas Officer of any Army was to be a colonel and was to be provided with four officer and 15 enlisted assistants. The Chief Gas Officer at corps headquarters was to be a lieutenant colonel and was to have 4 officer and 12 enlisted assistants. The division gas officer was to be a major and was to be provided with 3 officers and 12 enlisted men as assistants.

Medical Gas Officers: To aid in securing efficient treatment of gas casualties, the Medical Director of the C. W. S. succeeded in securing authorization for division medical gas officers, G. H. Q., G. O. No. 144, Par. 8, August 29, 1918.

The work was entirely new, and so a four day course of instruction was given these officers. The sessions were held at the Ecole de Pharmacie, Paris, October 7 to 10, 1918. These medical gas officers were responsible to the Chief Surgeon. They were of considerable assistance to division gas officers in many ways.

Organization and Training Center: When it was learned that two battalions of gas troops would arrive in October and two during each succeeding month, it became apparent that increased billeting and training facilities would be required. It was decided to establish an organization and training center near C. W. S. headquarters. A suitable

area was found near Chinon for four battalions of gas troops. The system of training to be instituted was drawn up and approved by G-5, and authorization for the necessary construction was obtained. Plans were drawn for a camp in the Landau-du-Richard, where the French had constructed a complete set of trenches and gun emplacements, and a range was laid out. A site for an officers' school and casual camp was obtained near the range.

All personnel arriving from the United States were to have been sent to Chinon for training according to the requirements of the various divisions of the service. Every officer was to be given, first of all, a thorough military training, and also elementary gas instruction to fit him for the more intricate and detailed work of the offense and defense courses at the A. E. F. Gas School.

After the Armistice was signed, Chinon was made a depot for C. W. S. officers and enlisted men where casual companies were organized and prepared for return to the United States. Later these activities were transferred to Bourre (Loire et Cher).

Departure of Chief C. W. S. and Reorganization of the Service: Brigadier General A. A. Fries left for the United States on December 2, 1918, and since that date Colonel E. N. Johnston has acted as Chief of the Service.

The headquarters organization was then modified so as to release personnel and curtail activities of the service. The new organization included: Executive Officer; Personnel Officer; Materiel Officer; Intelligence Officer; Offense Division; Defense Division; Technical Division; Production and Supply Division.

SUPPLIES

Chief, Gas Service, Charged with Furnishing Supplies: The order which established the Gas Service (G. O. No. 31, H. A. E. F., September 3, 1917) charged the Chief of Gas Service with the supply material. The order specified that all necessary material would be supplied by those departments of the army usually furnishing such supplies.

Under G. O. No. 53, H. A. E. F., November 3, 1917, the Gas Service was charged with the responsibility of supplying all antigas supplies to the division, corps, and army gas officers.

First Respirators from British and French: The first need was to secure enough gas masks to insure the protection of the American troops. This presented a matter of great difficulty since production in the United States had not progressed beyond the preliminary and small scale manufacturing stage, and since the Allies were hard pressed to turn out a sufficient number of masks for their own use.

20,000 masks (used for training purposes) were secured from the United States, but the main supply had to come from England and France. On September 4 an order for 100,000 British box respirators was approved by the Commander-in-Chief, A. E. F., and on October 8, 1917, an order for an additional 300,000 was placed. The British were at this time changing their type of protection, and could not contract to furnish the new type in quantity. Furthermore, they could guarantee to send to our forces only the surplus which remained after their own troops had been supplied. On November 27, 1917, they asked to be released from the contract, as they understood that manufacture was then proceeding in the U. S., and the Italian situation made unusual demands. This request could not be granted, since the manufacturing projects in America were based on the assumption that the British order would be filled. The British authorities finally consented to furnish the balance of the order, subject always to the priority demands of the British Expeditionary Force.

Some difficulty was also experienced in securing M-2 masks from the French, but the situation was never as critical as that outlined above.

American masks began to arrive in quantity during April 1918.

Congestion of freight at the A. E. F. depots delayed shipment of supplies con-

siderably and at times presented critical aspects. In particular, temporary embargoes on shipments to certain depots threatened to prevent the arrival of masks and other supplies at a time when they were urgently needed.

All Gas to be Manufactured in the United States: The question of ocean transportation had to be considered in deciding whether materials for gas warfare should be manufactured in the United States or in France. Coal or coke is required in the manufacture of the more important warfare gases, even where water power is available. In the manufacture of chlorine, for instance, coal is required to concentrate the alkali produced as a by-product. If the alkali is discarded, the cost of the chlorine is considerably increased. The amount of coal required is equal to the weight of chlorine produced. Hence the manufacture of chlorine in France would not release tonnage, because the required coal would have to be imported. Furthermore, all the machinery for the plants would have to come from America, and it would be difficult to secure sufficient labor in France. The decision was, therefore, to complete as much of the manufacture as possible in the United States.

Relation of Gas Service to Line of Communications: The L. of C. was established by G. O. 20, H. A. E. F., August 13, 1917. The Chief of Gas Service appointed a Chief Gas Officer, Line of Communications, Paris. Gas Service Headquarters at Chaumont was charged with the procurement of supplies, the Chief Gas Officer, Line of Communications, with their transportation, storage, and issue. A port officer was maintained at St-Nazaire, and depots were established at Gievres and Poinson.

At that time no supplies were coming from the United States; masks, Stokes mortars, bombs, and a few Livens supplies were arriving from England. Masks and considerable quantities of other gas supplies were procured in France.

Mask Salvage and Shell Filling: The Supply Section was augmented by the arrival of the Overseas Repair Section of the Sanitary Corps. One group was sent to Chateauroux to start a mask salvage plant, in order to comply with G. O. 10 and 28, H, A. E. F., 1918, which charged the Gas Service with the work of salvaging gas masks. A group was sent to Aubervilliers, and another to Vincennes, to learn shell filling methods. Still another group went to London on gas mask manufacture.

Interallied Commission for Chemical Warfare Supplies: The work of the Interallied Secretariat had proved to be such a success that the creation of a similar organization to handle questions of gas supplies, functioning along somewhat the same lines, was decided upon at the suggestion of Mr. Winston Churchill. A meeting was held on March 6, 1918, in the office of General Ozil, head of the French Gas Service. A permanent secretariat was proposed. The United States was represented on this secretariat by the liaison officer, stationed at Paris.

The Commission was to be called the Interallied Commission for Chemical Warfare Supplies and its objects were to be:

1. The examination of Allied chemical warfare manufacture and outputs, and of Allied chemical warfare programmes, with a view to ensuring that the demands concerned are covered.
2. The examination of the best utilization of Allied factors in manufacture, such as raw materials, plants, processed, distribution of raw materials, tonnage, etc., with a view to meeting the programmes indicated.

The first meeting was held on May 11, 1918. In all, six meetings were held; the last one, on November 15, 1918, to clean up existing contracts for the exchange of products.

Soon after the reorganization of the Interallied Munitions Council, the commission became the Chemical Committee of that body, and handled questions of tonnage requirements for chemical warfare material, as well as supplies of glycerine, talc, and asbestos, in addition to questions relating to warfare gases. The committee was charged with

submitting manufacturing programs for each country. Arrangements for the exchange of materials between the Allies were made by this body.

Liaison with United States: Beginning June 1, 1918, liaison was established with the Gas Service in the United States. An officer familiar with the supply situation in France was sent to the United States for a period of two months, to be replaced at the end of that time by another officer of the A. E. F.

Ports: Officers were stationed at the following ports: St-Mazaire, Le Havre, Bordeaux, Brest, La Pallice, and Marseilles.

S. O. S. Depots: Depots in the S. O. S. were located at Montoir, Base Section No. 1; St-Sulpice, Base Section No. 2; Gievres, Intermediate Section; Poinson and Clefcy, Advance Section.

The depots of the base sections served:

a. As a basic reserve.
b. For issue to training areas of the base sections.

The depots of the Intermediate Section served:

a. As an intermediate reserve.
b. For issue to training areas of the section.
c. For issue to the First Army depots through the regulating station at St-Dizier.

The depot at Poinson served:

a. As an advance reserve.
b. For issue to training areas of the section.
c. For issue to the Second Army depots through the regulating station at Is-sur-Tille.

The depot at Clefcy served to supply combat units in the Vosges sector.

Army Depots: In September, 1918, the chief of the Production and Supply Division investigated the method of supplying troops in the army area from the Advance S. O. S. depots. It was found that the depots were used for extreme emergency only, and hence it was decided to install a system of army depots for the complete supply of all troops in the army area.

Three army depots were established and placed in operation in the First Army on October 24, 1918, and on October 30, 1918, three depots for the supply of defense material and one depot for the supply of offense material were established in the Second Army Area.

Credit books were inaugurated and credits issued each month to all the divisions in the army area. Upon presentation of this book at any army depot, a division could draw up to the amount on credit. In case of need for more supplies that it had on credit, the division placed a requisition through the Chief Gas Officer of the Army; and, upon approval, could draw the supplies from any army depot.

Manufacturing Section: This section was organized to care for such manufacturing problems as might arise. Approximately 2,000 clyinders were filled with gas at Pont-de-Claix, and a gas mask salvage plant was operated at Chateauroux. Emergency projects, such as oiling of dugout blankets, fitting of emergency jackets on canisters, etc., were also assigned to this plant. The manufacturing projects in England were administered by this plant. The manufacturing projects in England were administered by this section. 100,000 emergency filters were manufactured and fitted on canisteres, 200,000 Connell canisters and a number of other defense applicance were produced in England.

Salvage Officer for Gas Material: On August 20, 1918, the Chemical Warfare Service was authorized to detail an officer for duty with the Chief salvage officers of the armies to inspect captured enemy material and to transport to C. W. S. depots, enemy gas supplies which might be of use to the American Army.

Disposal of Supplies after November 11, 1918: Immediately after the Armistice was signed, steps were taken to reduce the chemical warfare supplies.

Army depots became receiving points for C. W. S. materials no longer needed by the armies. Gievres, St-Sulpice, and Montoir were also made available to the armies. Surplus articles were then sold or otherwise disposed of.

By March 1, box respirators had been reduced to a total of 595,039; protective gloves to 19,363; sag paste to 422,105 tubes; chloride of lime to 134 tons; etc.

Gas Shell Program: About November 1, 1917, Colonel Fries held a conference with Col. Fox Conner, Chief of Operation Section, General Staff, regarding the percentage of shell to be filled with gas. This meeting resulted in the dispatch to the United States of a cable recommending that approximately 10 percent of all shell be filled with gas, but that the filling plants and gas factories be capable of filling a total of 25 per cent of all shell.

Chloropicrin was the only gas being manufactured in quantity in the United States, so arrangements were made to have the French fill shell for us. They also agreed to furnish phosgene if supplied with chlorine, and to exchange a certain number of gas shell, for shell containing high explosive.

Special Grenade Program: Upon recommendation of the Chief of Gas Service, it was decided that gas-filled grenades be handled by the Gas Service, and that 10 per cent of all hand grenades be filled with gas.

Increase in Gas Shell Programs: On June 24, 1918, the gas shell program was increased to include fifteen percent of gas in all artillery projectiles up to 9.5" inclusive. It was felt, however, that the full benefits to be secured by the use of gas could be realized only by materially increasing the percentage of gas-filled shell. Hence, the Chief of the Service submitted data to the Chief of Staff in which an endeavor was made to have the percentage of gas shell materially increased. The data submitted received favorable action by the General Staff, and a cable was dispatched to the United States on September 7, which recommended that beginning November 1, 1918, twenty per cent of all projectiles produced be filled with gas and the production capacity for gas was to be increased from 25 per cent to 35 per cent by January 1, 1919.

Division of Duties between Ordnance Dept. and C. W. S.: Until September 30, 1918, the division of responsibility between the Ordnance Department and Chemical Warfare Service was not clearly defined. On that date a chart was distributed which fixed tentatively the responsibility between the two services. The materials were divided into four classes:

Class A included all offensive gas supplies not used by special troops. All tracer illuminating, and signaling shell, as well as illuminating grenades, were to be handled by the Ordnance Department exclusively. Of the other special shell and grenades, the C. W. S. was to investigate the needs for such materials, procure authorization from the General Staff; approve the designs submitted by the Ordnance Department; fill and inspect the shell and grenades procured by the Ordnance Department. These were to be transported, stored and issued by the Ordnance Department.

Class B included all gas supplies issued only to gas and flame troops. Everything connected with these materials, except design, was to be handled by the C. W. S.

Class C included aviation, smoke, and incendiary material. The C. W. S. was to suggest the use, procure authorization from the General Staff, approve designs of the Ordnance Dept., fill and inspect these materials; the balance of the work was placed in the hands of the Ordnance Dept.

Class D included all defensive gas material issued to all troops and was to be handled entirely by the C. W. S.

GAS TROOPS

Authorization for Regiment of Gas and Flame Troops: In the project for the organization of an army, prepared by a section of the General Staff, approved by the Commander-

in-Chief, and forwarded to the War Department about July 10, 1917, a gas and flame service was provided for, and one regiment of Engineers was designated for the service. War Department G. O. 108, Par. 1, August 15, 1917, authorized the organization of one regiment of engineers (Gas and Flame Troops) for each army.

Arrival of First Battalion Gas and Flame Troops: The first battalion of 30th Engineers (Gas and Flame), consisting of Regimental Headquarters, 1st Battalion Headquarters Detachment, and Companies A and B, arrived at Brest, France, on January 10, 1918. Arrangements had been made with the British to train these troops, and so they were immediately sent to Helfaut, reporting to the Commanding Officer of the Special Brigade, Royal Engineers, under whose direction their training in gas warfare was carried out.

Gas Regiment Increased to Six Battalions: With the establishment of a Chemical Warfare Service the 30th Engineer Regiment was designated as the 1st Gas Regiment and increased to six battalions of three companies each.

Two Additional Gas Regiments Authorized: When it was contemplated to increase the American forces in France to at least three armies, the Chief of Chemical Warfare Service strongly urged the desirability of authorizing additional gas regiments. The General Staff approved the recommendation; and forwarded a cable requesting that this be approved. On September 25, 1918, a cable was received stating that two additional gas regiments had been authorized.

Lt. Col. R. W. Crawford, accompanied by several other officers of the 1st Gas Regiment, left for America late in October to organize the 2d Gas Regiment.

British Gas Troops for Meuse-Argonne Offensive: On October 23, 1918, Colonel E. N. Johnston, Acting Chief of Chemical Warfare Service, having made preliminary arrangements with the British authorities, suggested to the Commanding General of the First Army that additional gas companies could be obtained for duty with the Army. It was proposed to ask the British for the loan of ten gas companies, which could be released because the rapid British advance and the numerous populated villages in Northern France and Belgium prevented these companies from operating to the extent that was possible along the American front. This plan was approved by the proper authorities, and the release of ten companies secured from the British. These gas troops arrived just before the Armistice was signed, but did not operate on the American front due to the cessation of hostilities.

C. W. S. LIAISON OFFICES

Liaison with the French: Liaison with the French Gas Service was established in October 1917, by the appointment of a liaison officer.

The Interallied Secretariat for chemical warfare was established early in December 1917, and the liaison officer in Paris was designated as the U. S. representative. Meetings were held every two weeks, and discussions were had on topics connected with chemical warfare. It was through the Secretariat that arrangements were made for the exchange of documents and considerable advance information.

A total of approximately 800 reports, accompanied in most cases by English abstracts or translations, were forwarded to C. W. S. headquarters for distribution. These reports came from the various laboratories, medical services specializing in gas, and from the French General Headquarters in the field.

Liaison with the British: Liaison with the British was established in October 1917. The liaison officer visited the various British offices collecting reports and documents, and inspected a number of gas manufacturing plants reporting on methods of manufacture.

The need for a separate liaison office in London, in order to obtain first-hand information on the large amount of productive work being done in England on gas warfare

problems, was early recognized. In fact a cablegram had been sent to the United States requesting that an officer be appointed to organize the work, and General H. F. Thuillier, Controller of the British Chemical Warfare Department, wrote to the Director, C. W. S., U. S. A., emphasizing the desirability of establishing a central office in London with whom the British might deal. A Chemical Warfare Service officer, sent to London to establish the Liaison office, arrived on August 2, 1918. He was accompanied by three officers.

TECHNICAL ACTIVITIES OF THE CHEMICAL WARFARE SERVICE

Interallied Gas Conference: The First Interallied Gas Conference held in Paris, September 17 to 19, 1917, was attended by representatives of France, Great Britain, Italy, Belgium, Russia, and the Unnted States. The American Gas Service was represented by Col. Fries, Lt. Col. Church, and Captain Boothby.

The conference was inaugurated for the periodical exchange of views and results of research among the scientific men connected with the gas service of the Allied countries. Only research problems connected with offense and defense,and medical questions, were discussed.

The sessions combined both theoretical discussion of the points deemed important, and the illustration of various methods by practical demonstrations, exhibition of photographs, drawings, charts, anotomical specimens, and the presentation of men who had suffered from the effects of gas.

The second and third gas conferences were arranged for by the members of the Interallied Secretariat for gas warfare and were held at the Ecole de Pharmacie, Paris, March 1 to 6, 1918, and October 25 to November 1, 1918.

Chemical Laboratory at Puteaux: A Chemical Service Section of the National Army was authorized by W. D. G. O. No. 139, November 1, 1917, with a personnel of 47 officers and 95 enlisted men. The first detachment arrived in Paris on January 27, 1918. The director visited the laboratory at Puteaux, near Paris, and work actually commenced on February 4. The laboratory was formerly devoted to tuberculosis research, and was secured from the French. The buildings were unheated, and required numerous repairs, changes, and additions to make them suitable for the chemical work planned. The chemicals and equipment shipped from the United States had not arrived, but, nevertheless, work was started with such chemicals and apparatus as could be purchased, or secured from the French. The first report on the work of the laboratory appeared under date of February 18, 1918.

By June, most of the remodeling and repair work had been completed, and it was during this month that most of the equipment and supplies from the United States arrived. The Chief of Gas Service was able to write to the Chief of Staff offering the facilities of the laboratory to other services which might be interested.

The laboratory organization consisted of a director working in conjunction with the officers in charge of the various divisions listed below. General facilities were placed under one officer and consisted of the instrument-making shop, the oxy-welding equipment, glass blowing, refrigerating machinery, and supplies.

Organic Division: This division handled a variety of problems which were of a defensive nature. Attempts were made, during spare time, to develop offensive compounds of various types, and camouflage gases. The work of this division included methods of preparing and activating charcoal, and attempts were made to poison charcoal. Sag paste, a preventative against mustard gas burns, was developed in this division.

Physical Measurements Division: This organization was charged with correlating and supplementing existing data on the physical properties and hydrolysis rates of the various war gases.

Control Division: This unit concerned primarily with defensive problems. It was charged with testing new and used canisters, examining granules and charcoals, and developing and testing mustard gas protective fabrics.

Miscellaneous Research Division: This division was formed to handle a variety of special problems, which came in part from the C. W. S. and in part from other services, and which were not readily handled by the organization as it formerly existed.

Gas Experimental Field (Hanlon Field): The Gas Service required an experimental field for the large scale development and testing of gases, shell, and various chemical warfare appliances. During January 1918, it was decided to establish such a field. The site finally selected lay about three miles to the east of Chaumont.

The first problems attacked at the experimental field were chiefly emergency problems suggested by the gas regiment. Other emergency work was also performed for the regiment, such as the alteration of 500 Stokes mortar thermite bombs, and the filling of 2,300 Livens drums with high explosive. The work at Hanlon Field was finally divided among the various sections as follows:

Artillery: Testing gas shell and fuzes; firing gas shell in connection with animal field experiments; study and compilation of data for effective use of gas shell by the artillery; instruction in the offensive course in the A. E. F. School.

Chemistry: Analyses of shell fillings recovered by the shell opening plant; taking and analyzing gas samples collected during field experiments; miscellaneous chemical work.

Engineering: Design and testing of mechanical equipment, including mortars and projectors; ballistics and range tables for Livens projectors; machine shop; miscellaneous research.

Field Gas Experimentation: Experiments having to do with the behavior of gas in the open.

Ordnance Laboratories:

1. Shell Opening. Opening and examination of enemy ammunition.
2. Shell Filling (Plant not completed).
3. Gaine Filling. Miscellaneous work involving explosives, gaines, etc.

Pathology: Examination of human tissues from gassed cases, secured through cooperation with the field and base hospitals, autopsies on gassed animals used in field experimentation; cooperation in physiological work.

Physiology: Toxicity of gases in chamber tests, and in the open; visicant action of gases; testing of protective measures and applicance.

Early in September 1918, the experimental field was named Hanlon Field in honor of Lt. J. T. Hanlon, Company B, 1st Gas Regiment, who was the first Chemical Warfare Service officer to be killed in action.

Conference of Gas Officers: G. H. Q., G. O. 79, 1918, authorized the Chief of Chemical Warfare Service to direct army, corps, and division gas officers to attend such conferences as were required for the coordination of gas defense. Such a conference was held in Paris on August 2 and 3, 1918, and was attended by about sixty officers. The subjects discussed were enemy gas shell, gases and their effects, training including gas schools, supplies, alarm devices, gas signs, protective clothing, horse respirators, trench fans, data to be included in reporting gas attacks, and methods of recording the date of issue of respirators.

The meeting was so successful that it was decided to hold similar conferences every two or three months. The second conference was to have been held on November 1 and 2, 1918, but events connected with the Meuse-Argonne offensive prevented this. The signing of the Armistice on November 11, 1918, obviated the necessity of holding further conferences.

Investigation of German Chemical Industries: On November 30, 1918, a cable was received from the United States suggesting that the extensive chemical industries of

the Rhine Valley, manufacturing war materials, should be investigated. A party of C. W. S. officers reported at Treves on December 16, 1918, to make a preliminary investigation of the location of chemical plants in the territory occupied by the Americans. It was found that this area was practically without chemical industries. Permission was secured to send an American delegation with the British and French parties conducting investigations in the territory occupied by their respective armies. Parties were organized, in cooperation with the Ordnance Department, consisting of Chemical Warfare Service and Ordnance Department officers. The party reported at Cologne on January 31, 1919, to join the British party and at Mayence on February 14, 1919, to investigate the chemical industries in the French occupied territory.

Museum of Chemical Warfare Material: A memorandum from the A. C. of S., G-4, Hq. S. O. S., dated December 18, 1918, directed the Chief of the Chemical Warfare Service to prepare a museum of chemical warfare appliances. The Chief C. W. S., appointed a board of officers to collect this material and prepare it for shipment to the United States. (C. W. S. O. 59 Jan. 3, 1919.) Four complete sets of British, French, Italian, German, and Austro-Hungarian chemical warfare material are being collected and four catalogues of this material are being prepared.

C-in-C Rept. File: Fldr. 400: Report

Final Report of the Inspector General, General Headquarters American Expeditionary Forces

[Extract]

I. FUNCTIONS OF THE DEPARTMENT

The Inspector General's Department is charged with a comprehensive observation over every activity connected with the American Expeditionary Forces for the purpose of keeping the Commander-in-Chief and others in positions of responsibility informed of conditions, to assist in the execution of orders and the administration of military affairs. The Department is an independent agency not responsible for the matters under observation. While the investigations have been conducted in a thorough and fearless manner, it has been the aim of the Department to adhere to essentials, to avoid anything that would tend to cause annoyance. Investigations and inspections have been conducted so as not to interfere with programs of instruction and the ordinary transaction of business. Inspectors have been impressed with the necessity of being fair and reasonable, of never losing sight of their obligation to always be helpful, and utilize every opportunity to impart useful information and instruction.

[The report quotes from certain written orders and regulations governing the Inspector Generals' Department.

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II. OPERATION OF THE DEPARTMENT

THE St-MIHIEL AND MEUSE-ARGONNE OFFENSIVES

During the preparations for the St-MIHIEL Offensive, during the offensive itself and during all subsequent operations the Inspector General with certain of his assistants were attached to the headquarters of the Commander-in-Chief in the field and were

used to keep the Commander-in-Chief, his staff, and commanding generals of armies and their staffs continuously informed in regard to combat efficiency, discipline and morale of troops, conditions of supply, administration, and the use of available means of combat. These inspectors were used also to enforce rules governing the movements of troops and supplies on the roads. They were given authority to give orders in the name of the Commander-in-Chief to correct certain deficiencies at the times noted.

In addition to the inspectors from General Headquarters, corps and division inspectors were used for the purposes named and placed under the direct supervision of the Inspector General.

At least one division in each corps was visited daily by an inspector from General Headquarters, while other inspectors from General Headquarters exercised more general observation over each corps area. Each corps and each division inspector submitted daily reports on conditions within their respective corps and division. These reports together with reports from inspectors with General Headquarters, all of which were rendered daily, were consolidated and submitted to the Commander-in-Chief the following forenoon.

When inspectors from General Headquarters entered a corps or division they reported to either the commanding general or chief of staff of the corps or division the results of their inspections. Extracts from the consolidated reports prepared for the information of the Commander-in-Chief were sent to the chiefs of staff sections concerned. Inspectors were able to remedy many deficiencies at the times they were noted. The prompt consolidation of reports and their submission to the Commander-in-Chief and to others concerned kept the information up to date and resulted in prompt action by higher authority on matters which could not be corrected when observed.

Instructions for inspectors engaged in these duties were published in tentative form in a pamphlet designated, Inspection of Armies in the Field.

Inspectors kept themselves informed as to points from which the several classes of supplies were furnished and on many occasions were able to assist troops to obtain their supplies without undue delay.

Reports were submitted as to the condition of personnel as regards morale and physical condition in order that troops might be relieved and replaced when necessary.

When a general officer was relieved from command, the matter was investigated by an inspector on the ground in order that the case could be acted on while witnesses were available and the circumstances fresh in the minds of those concerned.

During these operations inspectors had exceptional opportunities to observe and note experiences which would prove useful in the future organization, training, equipment, supply, and operation of our armies. They were set forth in detail in a report submitted shortly after the cessation of hostilities.

INSPECTION OF TROOPS

The inspection of the training and preparedness of troops for combat was carried out in the several tactical units by the inspectors assigned thereto and under the supervision of the commanding generals of the elements with which they served. These inspections were supplemented from time to time by inspections of officers from the Office of The Inspector General, General Headquarters.

The scope of these inspections was in general as follows:

Divisions: The division inspectors checked units for adherence to the prescribed schedules of instructions, compliance with the principles laid down in the authorized manuals of instruction and kept the division commanders informed as to the progress made. In addition, division inspectors corrected errors on the ground and advised inexperienced officers as to the best means of handling men and applying the principles of instruction given them.

Corps: The function of the corps inspector was to carry out the duties of the division inspector for corps troops and, in addition, to supervise and coordinate the work of the division inspectors of the several divisions of the corps with which he served. The corps inspector furnished the corps commander with such information as he desired as to the training of the corps and carried out special inspections of training when so directed.

Army: The army inspector performed like duties for the army troops and the several corps and divisions of the army and supervised and coordinated the work of the corps inspectors.

He also made such inspections of training as were directed by the army commander.

SPECIAL INVESTIGATIONS

The number of special investigations has been exceptionally large, so large that at one time the personnel of the Department was used almost exclusively on special investigations was the inexperience and lack of training of officers and soldiers. Matters ordinarily handled by commanders of units as functions of command often had to be sent to the Inspector General's Department to secure proper action. These investigations have served either to disprove or discover and remove the causes of many complaints by officers and soldiers and by officials and private citizens in the United States.

The Department has recovered for French banks, business establishments, and French citizens approximately $75,000 respesented by unpaid checks, bad debts, and other unpaid obligations of American officers and soldiers.

The investigations have gone into practically every activity of the A. E. F. There is no attempt to list them in this report or refer to them other than in general terms.

PUBLIC FUNDS

Cases of embezzlement have been few and amounts involved small. Disbursements have been made according to the requirements of the law. Account have been regularly inspected by officers selected for this duty because of their experience in the accounting and auditing offices of the Treasury Department.

CONDUCT, MORALE, AND DISCIPLINE

Our experiences have confirmed and emphasized the long established and universally recognized principle that discipline is the basis of successful military effort. The degree of discipline in a command can be relied upon as an almost certain index to the character of military performance that may be expected. Poor discipline reduces the fighting power of individuals and organizations; it reduces the efficiency of any service of supply or maintenance; it contributes to increased losses of life and consumption of supplies. The evil effects of poor discipline are so far-reaching that no military activity can escape its influence. It is safe to say that a large majority of instances of unnecessary or avoidable losses of men or waste of material resources can be traced directly to lack of discipline.

It is a fact which must not be overlooked or forgotten that large numbers of American soldiers were sent into battle without having acquired anything like the desired degree of discipline. It is also true that many thousands of others poorly disciplined, or even undisciplined, men were used in the services engaged in maintenance and supply.

Although these conditions were known, we were compelled through sheer force of circumstances to employ our men without waiting for them to become disciplined soldiers.

It cannot be denied that the object of our efforts could have been attained at less expense in men and money had we possessed a trained and disciplined army.

In order that there may be no misunderstanding as to the character of our soldiers as individuals, or as to their individual behavior and conduct, a distinction must be drawn between behavior, or morale, and discipline. The men were willing, intelligent, and brave. They had not, however, through want of opportunity, been trained so as to always know what was expected of them, nor had they acquired the habit of doing at all times what they knew or believed to be the military will of their commanders. The high individual character and good conduct of our men could not take the place of that military habit called discipline. The difference was made up by using men in greater numbers with consequent greater losses.

While sending untrained soldiers into battle is a great evil, there is still a greater evil. This is sending men into battle under untrained officers. Even trained men require the leadership and direction of trained officers. In this war, officers and men were alike, neither sufficiently trained nor disciplined to meet the task that confronted them with confidence in their abilities to attain the maximum results with the minimum expenditures. The absences from organizations in the front lines of advancing troops on account of stragglers in some organizations were so numerous that ultimately there remained only those soldiers who possessed the highest physical and mental qualities.

The cost of success under such conditions is tremendous. Our people have paid the price not only in money but in men whose loss cannot be measured in money.

It would be unfair to the nation not to state these facts frankly and in such a way that our people will know and be impressed with them and may in future avoid many of the supreme sacrifices and heavy expenses of war through some reasonable system of imparting military training and education to large numbers of men in times of peace. We can readily devise a system of military training that will work no hardship on individuals, that will not be expensive in view of the benefits, that will render a huge standing army unnecessary, and will put us in a state of preparedness that will make war more unlikely and enable us to better meet war when it does come, and finally not the least of the benefits to be derived is the great benefit that accrues to young men as a result of military training and discipline.

COMPANY FUNDS

There have been many irregularities in disbursing and accounting for company, regimental, hospital, and similar funds, but cases of embezzlement and misappropriation have been few. There has been little actual loss. The irregularities were due in part to inexperience of custodians, and to the fact that prior to the cessation of hostilities regimental commanders could ill afford to spare the time necessary to supervise properly and instruct. Organization commanders have not ordinarily had access to banking institutions. Checks drawn on banks in Europe or the United States cannot be readily negotiated or converted into cash. Company funds have been lost as well as company fund records for the reason that organization commanders had no option but carry the funds on the persons and records in their company field desks.

These conditions suggest the advisability of a revision of the regulations so as to place all such funds in the custody of the appropriate disbursine officers who will keep the accounts and disburse the funds.

The advisability of abolishing company funds and the Government making other provision to take its place is a subject worthy of consideration.

The system of rendering periodical accounts for property and supplies was suspended for the purpose of relieving personnel from the exacting and time consuming work of preparing and examining the accounts. This measure undoubtedly save an enormous amount of work and permitted the time of many officers and clerks to be applied to matters more intimately concerned with operations of the Armies. It would be very difficult, if not impossible, during hostilities to use the system of accounting to which we have been accustomed. The sudden departure from the ordinary rules, the abandonment of a rigid and minute system in favor of no system, necessary though it was, had certain ill effects. The responsibility for supplies remained in theory, but the absence of a method of accounting for the supplies made it impossible to hold individuals to their responsibilities. Much property was lost, abandoned, unnecessarily destroyed, and otherwise wasted through want of proper sense of responsibility. This threw an increased burden on the Services of Supply which, to an extent, offset the advantages which had been gained by suspending the rules of accountability. The old system of property accountability did not prevent dishonesty; neither did it prevent waste and irregularities; but it did possess a certain disciplinary value which was lost and not replaced. Both men and officers acquired wasteful and extravagant habits. It is not likely that any but the best trained and disciplined soldier would regard any saving he might make as worth while when he sees such great waste going on all about him. A certain disregard for the property rights of the Government and of individuals is believed to have been another result of the suspension of accountability rules.

Upon the cessation of hostilities some organization commanders, on their own initiative, adopted means of holding individuals responsible for property, and some commanders instituted modified forms of accountability. It was finally found necessary to return to a system of accountability for the entire American Expeditionary Forces. The old system was not restored, but instead there was adopted a modified form which is believed to be sound in principle and which will, it is hoped, meet the requirements. The new system is a simple running account which is intended to show receipts and expenditures from day to day as they occur and show at any time the balance. Its efficacy depends upon inspection and supervision by commanding officers rather than upon minute and laborious audits of accounts at central offices. It is intended to dispense entirely with periodical returns. It has not been in effect long enough to determine its full value, but it is certainly much less cumbersome and less expensive than the old system used by the Army for so many years.

It is believed that troops can be taught to care for and conserve their property just as readily as they can be taught other correct military habits. It is well known that many irregularities were possible and were practiced under the old methods. It was a question of reports and returns so prepared that they would pass examinations made at the War Department months later by persons who did not and could not have any knowledge of the conditions under which the troops worked, or much interest beyond the accuracy of the papers. It is generally well known that any person inclined to be dishonest in nearly every instance rendered reports and returns which were never questioned as result of the examinations made by War Department Bureaus.

The cost of losses that may possibly occur under the new system, it is believed, will be only a small fraction of what it now costs the Government to prepare and examine the large number of property accounts that are handled by War Department bureaus. There is still another and greater benefit; our armed forces will habitually use, in times of peace, methods which they will not have to abandon entirely in time of war, thereby avoiding the reaction and demoralization of the sudden removal of all rules for property accountability.

SUPPLY

The Inspector General's Department has, through its representatives with the Services of Supply and with tactical and administrative units, exercised a close observation over the supply of the American Expeditionary Forces. A large part of the efforts of inspectors have been devoted to questions of supply. The results of inspections and recommendations and information gathered by inspectors were communicated to those concerned.

It is not believed necessary to go into the subject further than to say that broad general results warrant the statement that the supply of the American forces in France has been satisfactory. There has been no want of arms or ammunition; soldiers have had sufficient clothing to protect them; there has been sufficient food of good quality, and there has been no want of medical supplies. This statement should not be interpreted to mean that there have not been unsatisfactory conditions is some localities and on some occasions. There has been waste that would not have occurred with better disciplined and more seasoned troops. The long distances necessary to transport supplies added much to the difficulties. The unavoidably large expenditures of property that accompanied battle conditions added to the cost. The test came when practically all available combat troops were put into the final offensive operations. The Services of Supply met that test successfully in the face of the most tremendous odds that ever before confronted an army.

The great establishments in the S. O. S. were organized and maintained with great ability and efficiency. Their organization and adminstrationn were commented on in the highest terms by our Allies. They are in themselves not only a monument to the tremendous task that the question of supply confronted us with, but also to the efficiency of those entrusted with this work. A comparison can be drawn between the conditions existing in the Army with reference to supply in the year 1916 and the organization which was developed and operated here. This was created and accomplished by officers who had had no previous experience in a work of this magnitude.

PERSONAL EQUIPMENT

The personal equipment of the soldier proved satisfactory with the exception of the canteen which was of insufficient capacity on certain occasions when troops were operating in country where there was no water and transportation limited.

UNIFORM

The close fitting uniform coat with standing collar, designed to be worn outside of the flannel shirt, is not a suitable garment for a soldier in the field. It is difficult to adjust the collars of coat and shirt so as to avoid discomfort about the neck. It is particularly so in the heat of summer. This close fitting collar does not permit sufficient freedom of movement of arms and shoulders; it interferes with the pointing of the rifle and the use of the bayonet. As a result the coats were often taken off and thrown away.

This is a serious defect in the American uniform. The soldiers coat should be made with a rolling collar with lapels so that it may be worn over a shirt in the same manner that the civilian coat is worn. The necessity for improved pattern of coat has been before the War Department from time to time for a number of years past. It was brought up at the beginning of the war with Germany. The experiences of soldiers in the field in France has demonstrated that a reform in the character of the coat furnished the soldier is necessary. No question of expense or sentiment should be permitted to interfere with or delay the change in the coat.

MAIL, PAY, CASUALTY REPORTS, PERSONAL RECORDS

There has been complaint that soldiers were not paid regularly nor promptly, that mail matter was delayed and undelivered, that reports of casualties were delayed and errors made.

The Inspector General's Department kept informed in regard to these matters through its representatives with the several organizations and by means of investigations of every complaint received. An exhaustive investigation was made of the Military Postal Service and the system of reporting casualties.

It is true that mail was delayed and some of it undelivered, that soldiers were not always paid regularly nor promptly and that there were some delays in reporting casualties.

Satisfactory mail service, prompt and regular payments, and prompt and accurate casualty reports presuppose accurate personal records or histories of all men at all times up to date. Mail cannot be delivered unless the identity and location of the addressee is known, payments cannot be made under the laws enacted by our Congress unless the state of the payee's account is known to the disbursing officer, and casualties cannot be reported until the identity of the casualty is positively established.

There were hundreds of soldiers in the American Expeditionary Forces with the same name and often in the same unit there were two or more soldiers with precisely the same name. Addresses were often defective. Men were transferred from one organization to another quite frequently, wounded were evacuated from one hospital to another in accordance with needs of the patients, company records were lost in battle or during rapid movements incident to battle, dead could not always be identified because soldiers were not made to habitually wear their identification tags, communication between units in battle and offices of record was retarded and at times completely suspended. The main business of the troops at the times when complaints were most numerous was fighting the enemy and every consideration had to give way to movements of troops and the most important supplies. It was impossible under these conditions for company commanders, hospitals, and other establishments to send a complete personal record with every soldier who passed through their commands. The Central Records Office where these personal histories came together would have had a stupendous task sorting and recording the information had it been complete and accurate. The difficulties were increased by delays, inaccuracies, omissions, duplications, and fragmentary character of much of the information that was furnished.

The causes for these conditions were beyond the power of any person to obviate or correct. Many improvements were made, but no system could have been devised that would have entirely overcome the difficulties imposed by the necessities of this war.

When looked at from the viewpoint of one in possession of all the facts, it can be said that these matters were remarkably well handled.

MOTOR TRANSPORTATION

About March 1, 1919, specially selected officers were designated to make an inspection of motor transportation and investigate the administration and operation of the Motor Transport Corps.

The inspection included the motor transportation of the three armies, base ports, the most important motor repair and supply depots, a number of garages, and other motor establishments.

The inspectors reported that there had been neglect and carelessness in handling motor transportation during hostilities but there had been constant improvement since that time. The inspections served to bring about further material improvement in the

care of motor transportation and in the organization, administration and operation of shops, depots, garages, and other motor transport establishments.

The operation and maintenance of motor transportation was seriously interfered with by want of spare parts in the quantities and of the kinds most needed and by lack of sufficient trained personnel.

The want of personnel was to some extent met by assigning other troops in the American Expeditionary Forces to the Motor Transport Corps, but the situation in regard to spare parts was a condition which existed in the United States and could not have been overcome by any efforts of the American Expeditionary Forces.

The plans for the organization of the Motor Transport Corps were well thought out and when all things are considered can be said to have functioned well.

WELFARE ORGANIZATIONS

A thorough investigation has been made of the Y. M. C. A., Knights of Columbus, American Red Cross, and other welfare organizations with the A. E. F. The results of the investigation are now being compiled and will be embodied in another report.

This much can be said, that irrespective of the administration, too much commendation cannot be accorded these organizations for their high aims and for the great comfort and help they have given the soldiers in France.

III. PROPOSED SUPERVISION OF THE INSPECTOR GENERAL'S DEPARTMENT BY A SECTION OF THE GENERAL STAFF

Under General Orders No. 31, G. H. Q., A. E. F., 1917, the Inspector General of the American Expeditionary Forces reports to the Chief of Staff and not to any section or subdivision of the General Staff. The Provisional Staff Manual, prepared by the Training Section (G-5) of the General Staff contained a provision that the inspectors of armies, corps, and divisions should function under G-1.

This proposed Staff Manual was distributed to the American E. F. but, so far as known by the Inspector General's Office, was never approved, and has not been given the force of orders. Nevertheless, in certain units inspectors were required to perform their duties under the supervision of G-1. This practice did not prevail in all units.

Inspectors have been unanimous in reporting that the Inspector General's Department cannot properly function if responsible to any person or department short of the Chief of Staff. G-1 in an army, corps, or division controls and is responsible for many of the matters which the Inspector General's Department reports upon. If G-1 received and acts on the Inspector General's reports, it is equivalent to G-1 inspecting and reporting upon itself. Inspections to be of value must be made from independent sources not responsible for the conditions or activities under inspection or investigation. An inspector must represent his commander and be in a position to gather information and facts without direction or control by any subordinate who may be responsible or concerned. This principle is fundamental.

It is desired to emphasize in this connection that the inspectors of the American Expeditionary Forces were from all branches of the line and several from the General Staff detailed to the Inspector General's Department. These officers have returned or expect to return to the line, and their ideas on this subject are particularly valuable for the reason that they are not influenced by any wish or inclination to perpetuate themselves in the Department, for as stated they do not expect to remain therein. Their ideas are those of line officers who believe the principles they state to be best for the Army. The strength of the Department lies in the independent character of its inspections and investigations.

IV. PERSONNEL

CHARACTER AND QUALIFICATION OF PERSONNEL OF THE INSPECTOR GENERAL'S DEPARTMENT

Practically every officer whose views are known to the Office of the Inspector General, A. E. F., has stated and emphasized that officers of the Inspector General's Department should possess a wide knowledge of military affairs, should be men of balance and judgment, should be trained to know and appreciate conditions when they see them, and should be able to suggest remedies for deficiencies. An inspector should have confidence in himself and should be able to secure and maintain the confidence and good will of those with whom he serves. These qualities are as a rule found combined only in officers who have had considerable military experience and who have rank and service approximately equal to the commanders of the units they report upon. Very few officers of the National Guard, Reserve Corps, and National Army have had the opportunity to acquire the necessary experience. The statement of this rule should be accompanied by the information that some temporary officers have been satisfactory as division inspectors and that practically all have given satisfactory service as assistants in charge of special matters. The officers assigned to duty with the Department previous to August, 1918, with few exceptions, possessed the necessary qualities and rendered valuable service. On this date the demands for trained officers in command of troops became so pressing that Regular officers on duty as division inspectors were replaced by temporary officers. This change had an immediate and marked effect on the work of the Inspector General's Department. Division Commanders could not rely on their inspectors to the extent that had formerly prevailed. The value of the inspection service was materially reduced---so much so that as soon as practicable, after the Armistice became effective on November 11, division inspectors were again selected from Regular officers. The service improved from that time on. The experiment was valuable in that it proved that inexperienced officers cannot be successful as inspectors.

The attitude of persons under investigation or inspection is a factor which calls for inspectors of experience and rank. Men are not disposed to accept criticism cheerfully and willingly from their juniors, or from those whom they may have cause to believe not fully qualified to criticize.

These remarks are made for the purpose of emphasizing the necessity of selecting inspectors from among the best qualified officers.

PERSONNEL---TABLES OF ORGANIZATION

At the time of the organization of the American Expeditionary Forces at Washington May, 1917, the personnel of the Inspector General's Department comprised the Inspector General and two assistants for General Headquarters and the inspectors prescribed by tables of organization for armies, army corps, and divisions.

It was then the policy to permit the Inspector General's Department to function under the commanders of the several units with the minimum of detailed control from the Office of the Inspector General. Or, in other words, the policy was to decentralize and maintain only a small personnel at General Headquarters. As the A. E. F. grew in size many questions came up which were of such a character that they had to be acted on by inspectors from General Headquarters. The appointment as inspectors of officers with little or no experience as such called for central control to bring about uniformity and to standardize effort. This standardization was accomplished by instructions issued from General Headquarters. The Inspector General, A. E. F. kept himself informed of conditions in the several units through systems of reports submitted by inspectors at stated intervals.

The amount of business referred to the Inspector General so increased that at one time as many as twenty-two inspectors were required at General Headquarters.

When the Services of Supply were organized, inspectors were provided for the headquarters and the several sections. The number was increased from time to time, but there were never sufficient to meet demands fully until the strength of the A. E. F. had been materially reduced. The same conditions prevailed at the headquarters of each army, army corps, and division. The unusual demands made on the inspection service were were due in a measure to the fact that the state of training and discipline of officers and men called for more supervision than better trained forces would require. The number of inspectors provided by tables of organization was based on needs of the Regular Army in time of peace. The functions of inspectors, from the very nature of the conditions, included much instruction, for it has been the unvarying policy to suggest remedies for deficiencies.

Experience has demonstrated that the number of inspectors required in active operations will always depend on conditions which vary with the character of the troops concerned, the nature of the duty on which they are engaged, the country in which they are operating and other changing factors. For example, tables of organization allow one lieutenant colonel as inspector for a division. It is believed safe to assert that no one officer has been able to meet fully the demands made upon him as a division inspector. Division commanders have found it necessary to detail assistants from time to time. The same remark applies to armies, corps, the Services of Supply, and other activities. Tables of organization should fix a minimum only and contain the provision that additional inspectors will be added when required.

[The report tabulates the commissioned personnel prescribed by War Department instructions and tables of organization and the personnel on duty in the Inspector Generals' Department on November 11, 1918, by G. H. Q., S. O. S., Army, Corps, and Division Headquarters.]

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CONSOLIDATION AND COORDINATION OF INSPECTION SERVICE

In addition to officers of the Inspector General's Department there are found in various units sanitary inspectors, who report to chief surgeons, inspectors of motor transport who report to Motor Transport officers, Quartermaster Corps inspectors, and at times officers of the General Staff and others make inspections other than tactical. As a result, a time was reached in the American Expeditionary Forces when troops were over-inspected and the inspections not coordinated. The observations of the many officers making inspections were not always communicated at the time to those concerned, and in some instances those who had been inspected never learned the character of the report the inspecting officer made to his superior. This brought about a condition of over-inspection, lessened the confidence of commanding officers and caused them to become apprehensive of results. The best ends were not always attained by this procedure. There were periods when officers of the General Staff rendered services of great value by inspecting training in cooperation with the Inspector General's Department.

The inspection service of any unit should comprise as many officers specially qualified in particular subjects as may be necessary to cover the ground. They should all be under the control and supervision of the inspector who should report direct to the commander or his chief of staff. This will not increase personnel. On the contrary, it should serve to decrease personnel by consolidation and coordination of effort. This was done to some extent at the headquarters of each of the three armies and in some other units, but not in all because of lack of sufficient personnel.

Every inspector general's office or section in an army or expedition like the American Expeditionary Forces, whether pertaining to General Headquarters, the Services of Supply, an army, corps or division, should comprise:

1 Inspector

1 Assistant in charge of matters pertaining to training of troops

1 Assistant in charge of matters pertaining to administration and supply

1 Assistant in charge of special investigations and discipline

1 Assistant in charge of sanitary and medical matters and matters pertaining to hospitalization

1 Assistant in charge of matters pertaining to animal transport

1 Assistant in charge of matters pertaining to motor transport

The assistants should be colonels, lieutenant colonels, or majors, selected from the Regular Army because of special qualifications in the particular subjects to which they are assigned.

It might appear at first sight that a minimum of seven inspectors at the headquarters of each army, each corps, and each division would be excessive. The number will not be considered excessive when it is understood that it is proposed to bring all inspectors, now acting independently, together under the supervision of one officer.

V. SIGNAL CORPS

The Signal Corps installed and maintained a system of communication by telephone and telegraph within the A. E. F. and maintained communication with the United States by cable. These services were remarkably efficient from the viewpoints of amount of business handled, promptness, accuracy, freedom from adverse criticism, and general good conduct of the operating personnel. It is not believed there has ever been a more satisfactory service of communication either civil or military. The same thoroughness and efficiency was carried into their work at the Front which was invariably commended on favorably by inspectors.

VI. SCHOOLS

A system of schools was established for educating and training officers of all grades, candidates for commissions, and soldiers. One of its objects was to standardize military instruction throughout the American Expeditionary Forces. The great benefits derived have demonstrated the necessity for such schools and more than justified the inconvenience of detaching officers and soldiers from their commands during the period of active operations. It is open to question if without the instruction imparted by these schools it would have been practicable to carry out operations to a successful end.

VII. HOSPITALIZATION, EVACUATION, AND CARE OF THE SICK AND WOUNDED

Hospitals and arrangements for the evacuation and care of the sick and wounded were at all times kept under careful observation. When casualties in battle commenced to assume large proportions and the difficulties of evacuation and treatment correspondingly more difficult, all inspectors with troops were required to give particular attention to the care of wounded and specially selected officers were continuously engaged in inspecting base hospital and sanitary establishments in and near the battle areas. Inspectors were able to render valuable assistance to the Sanitary Service and the Department was accurately informed as to conditions.

Incident to battle conditions there was the usual suffering and exposure, greater in certain cases than might seem necessary to persons not in touch with the conditions

under which our troops were operating. At times the immediate interests of the wounded had to give way to the vastly more important considerations of transportation of men and supplies to the front; plans for care of wounded were constantly interfered with by enemy operations. There were also occasions when one or two of our divisions serving under the French command moved into battle unexpectedly and without due notice to our command and it became necessary to provide hospitalization after the battle had commeced. menced. These and numerous other circumstances made the care of the wounded a difficult problem, but one which on the whole was very well handled by the Medical Department.

VIII. GENERAL STAFF CONTROL

The success that has attended the control and coordination of activities by the General Staff of the American Expeditionary Forces is believed to be by far the most valuable military experience we have had during the War. The stupendous undertakings in the way of supply, transportation, organization, training and concentration of troops were handled in a way that brought success and impressed the Allied Governments and, it is believed the German government also, of the strength and fighting power of the American forces. General Staff control has stood the test of war with a success that leaves no doubt as to the soundness of the principles upon which the General Staff is organized and operated.

The General Staff organization and control as practiced in the American Expeditionary Forces might be modified from experience gained in this war, but it is believed that its policy and operation proved correct.

A. W. BREWESTER,
Major General,
Inspector General, A. E. F.

C-in-C Rept. File: 59: Report

Provost Marshal General's Department

GENERAL HEADQUARTERS, A. E. F.,
Chaumont, Haute-Marne, April 30, 1919.

From: Provost Marshal General

To: Chief of Staff (G-1) A. E. F.

1. Herewith is transmitted the history of the Provost Marshal General's Department from its inception to April 15, 1919. [See "NOTES" below and heading "FINAL HISTORY," later in this text.]

2. In its preparation, the object aimed at was to make the history serve not only as a record of the activities and work of the Provost Marshal General's Department and the Military Police Corps, but also as an authoritive reference book to guide us in any future emergency, wherein similar work must be performed. Meanwhile, this history will prove of value in the organization of a Provost marshal general's department and a military police corps in our regular peacetime establishment.

3. Historical data and facts will continue to be made of record so that the history may be kept up to date and closed promptly upon the discontinuation of the Provost Marshal General's Department.

H. H. BANDHOLTZ,
Provost Marshal General.

(For the Report of the Commander-in-Chief)

NOTES:

1. Original history completed to April 15, 1919, and submitted April 30, 1919.
2. History amended to include period from April 15, 1919, to close of Provost Marshal General's Office, June 1, 1919. Submitted June 24, 1919.
(1) CHAUMONT, France, April 15, 1919.
(2) PARIS, France, June 24, 1919.

COMPARISON:

A. Original Conception
B. Present Organization

A. Original Conception: In the field service regulations, with which, as our prewar guide to all things military, our forces went into the war, no distinct provision is made for a Provost Marshal General or a Provost Marshal General's Department. In Article VII, F. S. R., the duties of military police are covered in very general terms. Commanders of trains within combat divisions, commanders of defense districts on the line of communications, and defense commanders of areas in and about bases of a line of communications are charged with the control of military police and with the exercise of the functions of provost marshals, each to perform the same independently and individually within his own sphere of duty, reporting results to various departments, without any centralized control at the headquarters of the Commander-in-Chief.

In the tables of organization, military police are provided for, two companies of 150 men each, in each combat division, to function under the commander of the trains, ex-officio provost marshal within the division and within the area occupied by it.

B. Present Organization: It remained for this the greatest of all wars and our participation in it to bring into existence a comprehensive and carefully organized Provost Marshal General's Department, with many varied interests and duties, with units and organizations administered through four departmental divisions functioning directly under a Provost Marshal General upon the staff of the Commander-in-Chief. From a small beginning, with the appointment of the first Provost Marshal General, July 20, 1917, stationed in Paris, with one officer and eleven men as his complete headquarters force, the Provost Marshal General's Department has grown into an organization comprising a maximum strength early this year of 88 military police companies on duty in the area of the service of supply, 50 military police companies with tactical units, 8 military police companies doing criminal investigation work, and 122 prisoner of war escort companies, aggregating a total of 1,405 officers and 40,670 enlisted men. In addition to the direction and administration of this force, the Provost Marshal General's

Department has had the administration and care of 907 officers and 47,373 men, prisoners of war, to date.

In the rapid extension of his functions, exercised through four (4) principal divisions, (a) Military police corps division, (b) Prisoners of war division, (c) Criminal investigation division, and (d) Circulation division, the Provost Marshal General's activities and duties, while principally centered in France, reach out into Italy, England, Belgium, Germany and Austria.

I

GENERAL

[Extract]

SKETCH OF DEVELOPMENT: Conduct of operations on a large scale in foreign territory introduced into military administration the necessity for military police control and administration far beyond any requirements ever encountered at home. It was early recognized that agencies must be created and organized beyond those provided for in tables of organization, that is, the two military police companies as an integral part of each division. Wherever the interests of the service took members of the American Expeditionary Forces throughout France, it was necessary to institute means of insuring not only their protection and control, but of affording them assistance and in giving them local information as to facilities for travel, for subsistence, location of units, headquarters, etc.

It was apparent that the functions of military police, as laid down in regulations, did not adequately encompass control, authority, duties and responsibilities of a Provost Marshal General in modern war. Especially was this true with functions to be exercised and centrally directed by him through many provost marshals within the actual theater of military operations at and near the front; within the large territory, with its base sections, covered by the service of supply, within training and leave areas at the rear; a base ports where hundreds of thousands of American soldiers were to arrive; within large cities whence members of the American Expeditionary Forces were to come and go, such as PARIS, LYONS, BORDEAUX, BREST, MARSEILLES, and NICE, indeed to and within every city, town, village and hamlet likely to witness the presence of American soldiers.

Graphically, the problem originally required the extension of the functions and duties of the Provost Marshal General to include:

In the Theater of Operations:

Organizations	Duties:
With an Army or Corps:	
Headquarters Military Police:	(Traffic Control (Prisoners of War (Protection of Public Property (Service of Information (Protection of Inhabitants
Provost Marshal:	(Direction (Administration (Control

With a Combat Division:

Two Military Police Companies:	(Police Duty (Traffic Control (Prisoners of War (Stragglers (Protection of Inhabitants (Service of Information
Commander of Trains (P. M.):	(Direction (Administration (Control

In the Rear Areas;

With the S. O. S.: (In every city and town):

Military Police Companies:	(Police Duty (Protection of Public Property (Traffic Control (Protection, aid to, and Control (of Individuals (Service of Information (Prevention and Detection of Crime
Provost Marshals:	(Direction (Administration (Control

In Training Areas:

Military Police Companies:	(Police Duty (Protection of Public Property (Traffic Control (Protection, aid to and Control (of Individuals (Service of Information (Prevention and Detection of Crime
Provost Marshals:	(Direction (Administration (Control

In Leave Areas:

Military Police Companies:	(Police Duty (Protection, aid to and Control (of Individuals (Service of Information (Circulation of Individuals
Provost Marshals:	(Direction (Administration (Control

Prisoners of War:

Receipt, care and administration of prisoners of war.

General:

Coordination, direction, control, and administration of the above.

First Study of Subject: Necessity for the existence of an organization embracing the foregoing activities was recognized by the Commander-in-Chief and was therefore made the subject of study by the general staff, the result of which first appears in the organization of headquarters of the American Expeditionary Forces, published in General Orders No. 8, July 5, 1917, which provide for a Provost Marshal General, and define his functions in general terms as in charge of one of the technical and administrative services, coordinate with the Inspector General's Department, Judge Advocate's Department, etc. His first duty is stated as commander of the military police, and on August 31 appears the first general order defining specifically the duties of the military police and rules for their government. This is a fundamental order and its provisions largely determined the character of military police services up to and including the period of the Armistice, As experience showed need for changes and additions they were issued in orders, extracts of which are quoted chronologically in Part VIII, and give in the best form for study the development of the Provost Marshal General's Department.

First Organization: The first Provost Marshal General was appointed July 20, 1917, and was a member of the staff at G. H. Q., then stationed in Paris. He had in his department but one officer and eleven men as his complete force. His most serious duty at first was a study of the French and English systems of military police control with view to recommendations to the Chief of Staff for the organization of an equivalent system within our own forces. This study was made by both the first and second incumbents of the office. Their recommendations, however, if made in writing, are not a matter of record, but the results show that neither the French nor English system was adopted, but rather one of our own was evolved, whose ultimate excellence is finally attested in the satisfactory performance of its functions, not only in the final phases of our participation in the war, but in the present occupation of enemy territory and the work incident to the embarkation of our forces for home.

First Police Work: The first military police work for the Provost Marshal General developed in the District of Paris, where Headquarters American Expeditionary Forces were located and where American activities were centered outside the training areas of the new divisions in France which were policed by divisional military police. This localized work for the Provost Marshal General continued until December. When G. H. Q. was transferred to Chaumont, September 1, 1917, the Provost Marshal General was placed in command of all troops in Paris in addition to his provost duties, the whole Paris situation being considered a provost proposition. He dstablished his office at 10 Rue Ste-Anne, and augmented his force by three additional officers. This arrangement lasted nearly four months, but by December 1917 it was evident that the needs of military police control in the various activities, line of communications department, and the constantly widening sphere of operations of the American Expeditionary Forces all combined to require the presence of the Provost Marshal General at General Headquarters (which then included hq. S. O. S.) in intimate touch with situations as they arose. Hence, on December 20 his office was moved to Chaumont, and an Assistant Provost Marshal appointed for Paris, while the command of troops in Paris passed to an officer of the line.

Extension of Duties of the P. M. G.: Meantime the control of the movements of Americans away from tactical units was recognized as a necessity, and was made one of the duties of the Provost Marshal General. G. O. 29 of Aug. 31, 1917, first took cognizance of this, requiring all members of the American Expeditionary Forces to report arrival and authority for presence to the Assistant Provost Marshal in each city where one was located. It also required the Assistant Provost Marshals to investigate

the papers of all American citizens wishing to enter the zone over which the American Expeditionary Forces had control. This necessitated increasing the number and stations of Assistant Provost Marshals; and also the organization in the Provost Marshal General's Office of a circulation division, whose work has steadily developed and become the efficient means of regulating the tremendous movement of individuals, especially since the Armistice. Its work is set forth in Part VI of this history. In this connection, particular attention is invited to G. O. 48, 1919, which embodies the final rules for control which have resulted from experience and are found to be most satisfactory.

Increase of Work in the Territory of the S. O. S.: During the months of preparation for active operations there was little to interest the Provost Marshal General in connection with combatant troops, all of whom were within prescribed areas easily policed by their own military police units. His work in connection with the rapidly growing line of communications was constantly demanding attention, so that it came to appear that his department was in reality a part of the organization of the commander of the line of communications. This was first met by detailing an Assistant P. M. G. on the staff of the Commanding General, L. of C., but when it was determined to establish the service of supply with its separate headquarters at Tours, the Provost Marshal General was transferred to this command, and on March 6, 1918 he moved his office from Chaumont to Tours, leaving an assistant at Chaumont as liaison officer. At this time also a liaison officer was sent to represent the Provost Marshal General in Washington, but later this was not found advisable, and discontinued.

Decentralized Control Unsatisfactory: To meet the needs for military police control in the various bases and areas occupied by the expanding interests of the S. O. S., G. O. 71, Dec. 8, 1917, provided that a Provost Marshal Department be established under each commander of stations of the line of communications, of each base sections, of the intermediate and the advance sections, that assistant ptovost marshals be appointed and assigned to towns as these commanders felt necessary, and that they detail the necessary military police personnel from troops in their commands. This order also charged the Provost Marshal General's Department with the organization of a military police service, but gave the Provost Marshal General no authority other than technical supervision of the P. M. G. Department. This decentralized control of military police activities was found unsatisfactory, and by May the Commander-in-Chief had asked the War Department for authority to organize a separate corps under a responsible head. This authority was not given until October 1918, after the present Provost Marshal General had made special presentation of the case through the Commander-in-Chief to the War Department.

Training School: With a view to the establishment of a separate military police corps which might be efficient, the Commander-in-Chief on May 17, 1918, directed the Commanding General S. O. S. to establish a training depot for officer and soldier personnel. On June 1, the Provost Marshal General reported as suitable and available for this school a location at Chateau-de-Loir. While initial steps were taken in June to open a school here, obstacles arose, and it was not until Sept. 9 that the Caserne Changarnier at Autun was placed at our disposal for this purpose. However, the French did not actually vacate the buildings until October 1, so that it was not until Oct. 21 that instruction was actually begun. This school later proved and indispensable adjunct in building up the corps. So valuable has it proved that it is only now that the possibility of its discontinuance can be considered when the corps is no longer to be increased and the time remaining is too short to attempt to train all its personnel according to one standard. The detailed report on the work of the school will be found in Part III-A of this history.

Separate Military Police Corps: Appreciating the absolute necessity of centralized control of all these police units, an effort was made to organize a separate military

police corps under the provisions of G. O. 111 July 8, 1918. This order is very interesting in its vision of an ultimate corps all of whose members should be trained to intelligent standardized performance of military police duties. But it contemplated too much time for its execution, especially in the face of the crowding military activities which were now to engage the whole efforts of everyone until the signing of the Armistice. Its provisions were never actually put into real effect, and the war had had to be begin under the defective system still in force. The result of this was naturally much dissatisfaction with the performance of military police duty, both at the fighting front and in the S. O. S.

Present Organization: The present Provost Marshal General was appointed on September 20, 1918: His first effort was to secure a sound organization of the department, especially of the military police corps. His long experience in command of the Philippine Constabulary and a study of the experiences of the military police in France, enabled him to recommend the details of organization as provided for in G. O. 180, of Oct. 15, 1918. This was cabled to the War Department for approval, and resulted in the final authorization by the War Department in a letter of Oct. 31, 1918 for the organization of a Provost Marshal General's Department and within that a distinct military police corps. This letter is the enabling act for our present organization, and is given in Part II of this history, under organization. The Provost Marshal General perfected the foundation for the present organization in recommendations which were published in G. O. 200 of Nov. 9. and G. O. 217 of Nov. 27. The provisions of these orders, requiring the organization of specified military police units by certain commanders, were at once put into operation in tactical organizations but were slowly carried out in the base sections. It was well into January before certain contingents were completed, and then only through the efforts of the Provost Marshal General who had to arrange for organizing sixteen companies in tactical divisions and recruiting replacements, and sending them to these commands.

Failure of Locally Organized Units: While the military police units with tactical divisions did excellent work, in organization and service, the failure of a system of depending on local commanders for the organization and training of necessary military police personnel in the S. O. S. and rear areas, was much in evidence. The demands for military police increased rapidly soon after the signing of the Armistice. The Provost Marshal General organized new companies as rapidly as possible for available replacements at the depots, but often had to send these companies to stations and duty without preliminary training. Both officers and men were practically without special instruction, yet in the presence of the urgent calls for military police control that now arose, they had to be intrusted with handling the many situations that occurred on every hand. Necessity for a highly trained corps, available for assignment wherever needed, was even more apparent than during the fighting when it had been found quite impossible to handle the questions of traffic and of stragglers with the divisional units only. There can no longer be any question of the necessity of a well organized and trained separate military police corps available for the use of the supreme commander in any expeditionary force.

Headquarters of the P. M. G.: The conduct of active operations on a large scale at the front showed the absolute necessity for army and corps police units highly trained to meet the requirements of traffic control and to collect and return stragglers from the front, as well as for a proper organization for handling prisoners of war. Rapidly changing conditions in the armies, especially the new problems to be met as a result of the Armistice, all combined to show that the real place for the Provost Marshal General's Department was at G. H. W. where the Provost Marshal General could be in constant touch with the Chief of Staff, to make recommendations, give information, and quickly get authority for measures to meet new situations. He had been spending much of his time en route to and from Chaumont, until this condition was corrected in

G. O. 217 on November 27, which restored him to staff of the Commander-in-Chief and directed that hq. of the military police corps be established at G. H. Q. This move was perfected the first week in December, and the buildings at the Hanlon Field School of gas defense were taken over. Steps were at once taken to inaugurate a real office force, which has finally been accomplished, as shown in Part II, under organization. It is only in the last three months that the Provost Marshal General's Department has really begun to function, and the steady increase in military police efficiency indicates that at last it is working along the right lines.

Manual of Duties of Military Police: The present Provost Marshal General got out a tentative manual at once, the rush of events in October and November making it impossible to do more at that time. This was done in his office, one thousand mimeograph copies being distributed, proving of great value in giving the untrained personnel a guide for the performance of their untried duties. This was supplemented early in December by advance sheets of the permanent manual, covering points vital to the successful working of the police, and particularly designed to assure courteous handling of their delicate duties, more attention to their function of giving service, information, etc., and above all to arousing the beginnings of an esprit de corps in the new organization. The preparation of the permanent manual was then taken up seriously and has engaged the attention of the Provost Marshal General for nearly three months, as it has been his effort to make it such a reflection of the best judgments resulting from the experiences of this ear as will justify its being a guide for future use in case of renewed military activities. This manual received the approval of the Commander-in-Chief on March 27 and was ordered printed. Once put into execution in the American Expeditionary Forces it is believed that whatever remains of weaknesses in the system will be eliminated, and that a high standard of excellence and satisfaction with military police work will be established. It reamins only for military police personnel to live up to its requirements. This may be a slow process without preliminary training. but in another war preliminary training will have been had in the established military police corps.

Criminal Investigation Division: In May 1917, an attempt was made to organize a criminal investigation section within the military police service. Its members were to be selected from the military police personnel in each command and to operate coordinately within the military police unit. A chief of this section was appointed on the staff of the Provost Marshal General, but the system of organization was faulty in that it lacked centralized control and was wholly dependent upon the initiative of individuals for its operation. No means of securing trained personnel, nor of training it, was in force, and the effort was fruitless. The organization of the Provost Marshal General's Department, G. O. 217, November 27, 1918, provided for certain distinct companies of this section under a responsible head. These were organized by January and have been doing most efficient work throughout the American Expeditionary Forces operating under the chief of the present criminal investigation division of the Provost Marshal General's Department. * * *

Prisoners of War: One of the most important functions of the Provost Marshal's Department, the custody of prisoners of war, had to be met in June without any trained personnel, or organized system, to handle this difficult problem. Fortunately our prisoners in this war were particularly well disciplined soldiers easily controlled by their own noncommissioned officers, and withal not too unwilling to accept our hospitality and conditions of work and living. The situation was met by requiring the commanding general, service of supply to organize from available replacements prisoner of war escort companies and turn them over to the Provost Marshal General. These companies were necessarily nondescript, without esprit or training, and dependent for success or the individual initiative and good sense of their chance officers and men. This system has worked with unexpected success, thanks to the peculiar conditions, but

it should never be depended upon again; a better organization is provided for in the future. * * *

Leave Areas: At the inception of the system of sending soldiers into leave areas for rest and recreation, the details of its execution were made a function of the Provost Marshal General's Department. While the department remained in the service of supply this was possible, though its operation, involving housing and feeding arrangements, transportation, etc., of soldiers on leave, were not properly matters for the Provost Marshal General, though military police control within leave areas, as in other localities, of course came under his jurisdiction. This was corrected in G. O. 217, Nov. 27 and when the Provost Marshal General returned to G. H. Q. he left at hq. S. O. S. the personnel of this section and all records of its activities, and this work passed under the direct control of the Commanding General, S. O. S. * * *

Resume: The functions of the Provost Marshal General as defined in general orders G. H. Q. have shown an interesting evolution in the estimation of his duties. Beginning with the first statement in G. O. 8, July 5, 1917 that he was commander of military police, we find him in December by G. O. 71 confined to the technical supervision of the P. M. G. Dept., while separate departments practically independent of any central control were established at the various important headquarters in service of supply. His authority and responsibility were somewhat increased by G. O. 111, July 8, 1918, where he was made responsible for training new units, and officer and soldier replacement personnel, looking to the upbuilding of a special corps. Here also appears the duty of visiting police units with view to making recommendations to secure efficiency. Finally General Orders 180, 200, and 217, have fixed his duties so that he is in reality the responsible head of the corps and is in position not only to give the Commander-in-Chief detailed information of its activities, to recommend how it shall be distributed and where used, but may hope to establish in all its units a standard of performance of duty which will make it the corps of service it is designed to be.

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FINAL HISTORY

PROVOST GENERAL GENERAL'S DEPARTMENT

DISCONTINUATION OF THE P. M. G. DEPT.: In view of the rapid dissolution of the American Expeditionary Forces, the Commander-in-Chief called a conference of chiefs of divisions of the General Staff at G. H. Q., to determine the means of and dates for a gradual decrease in personnel of administrative and staff departments until changing conditions and circumstances would permit them eventually and finally to cease functioning altogether. In this conference the Provost Marshal General, having anticipated the necessity, announced plans for the immediate discontinuation of his department. Details thereof were at once submitted to the Chief of Staff, in the form of a draft for a general order, which was issued May 27, 1919 [G. H. Q., A. E. F., G. O. 84]* * *

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RETENTION OF PROVOST MARSHAL GENERAL: While the department as such ceased to function on June 15, 1919, important matters still remained to be handled and closed up and the Provost Marshal General therefore remained as a member of the staff of the Commander-in-Chief in advisory capacity, and to exercise supervision over all matters pertaining to the Provost Marshal General's Department in its final stages of dissolution. He is at this date (June 23, 1919) still performing these duties under the direct orders of the Commander-in-Chief. Meanwhile, the Provost Marshal General's

Department has been decreased to a personnel consisting of less than a dozen officers, practically all of whom will have been relieved within the next few weeks, thus finally closing the department.

PRISONER OF WAR DIVISION: Pursuant to the orders quoted, the prisoner of war division was transferred, intact, on May 28, 1919, to TOURS, to operate as part of the Headquarters, S. O. S. [Final history of the prisoner of war division will be found later in this compilation].

CRIMINAL INVESTIGATION DIVISION: While the orders quoted contemplated the discontinuation of the criminal investigation division as such, circumstances and conditions clearly indicated the necessity for continuing centralized direction and control of criminal investigation work and the division was therefore tranferred to headquarters, S. O. S., on June 4, 1919. [Final history of the work of the division will be found later in this compilation.]

END OF THE PROVOST MARSHAL GENERAL'S DEPARTMENT: With the transfer of the prisoner of war and criminal investigation divisions to the Headquarters S. O. S., and the dissolution of the circulation division and the military police corps, the Provost Marshal General's Department as such, ceased to exist, after a record of constructive achievement constituting an important phase of the work of the American Expeditionary Forces in France and Europe.

RECORD FOR FUTURE EMERGENCY: It is believed that this record will provide a basis upon which to found a proper provost and military police organization in our peacetime establishment, susceptible of immediate expansion into an effective, efficient, and absolutely essential part of our army in any future emergency.

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PART III

MILITARY POLICE CORPS DIVISION

EARLY HISTORY: The early history of the military police corps division is in fact identical with the early history of the Provost Marshal General's Department, for until the present Provost Marshal General was appointed there had been no separation of the different phases of the department's work.

Prior to the issuance of General Orders No. 111, G. H. Q., July 8, 1918, military police units had been separate organizations operating in tactical units under the orders of unit commanders.

General Orders No. 111 was the first step in the formation of the military police corps, but even then it was a corps in name only, in an attempt to comply with field service regulations, with an independent Provost Marshal in each organization and tactical unit.

In this order the Provost Marshal General was charged with responsibility for the training of organizations and personnel before assignment and was directed to visit, from time to time, military police organizations, and as a result thereof, to make the necessary recommendations to secure efficiency in the military police corps. General Orders No. 111 reduced the strength of the divisional military police to one company of three officers and 125 enlisted. It provided a similar company for each corps and army headquarters and permitted the assignment of companies to the various S. O. S. sections. After assignment to an organization or S. O. S. section, the units were independent and in no way subject to the control of the Provost Marshal General, except as indicated in the foregoing. Assignments of officers were made by the Commander-in-Chief upon the recommendation of the Provost Marshal General.

PRESENT ORGANIZATION: It was impossible for the Provost Marshal General to exercise direction and control over such a loosely put together organization. which failed to accomplish the desired results; and therefore the military police corps, as a division of the Provost Marshal General's Department, was brought into existence under the provisions of Section III, General Orders No. 180, G. H. Q., published October 15, 1918.

Under this order the personnel of a military police company was increased to 5 officers and 200 enlisted men, which organization it retains today.

Tactical units were authorized: For each army, 1 lieut. col. as Provost Marshal and 1 major as Assistant Provost Marshal, for each corps: 1 major as Provost Marshal, 1 captain as Assistant Provost Marshal; for each division: the captain of the divisional military police company was designated as Provost Marshal for the division, relieving the commander of the trains of the duties, as such formerly exercised by him.

PERSONNEL: In matters pertaining to personnel, G. H. Q. published the orders upon the recommendation of the Provost Marshal General. Provost Marshals and Assistant Provost Marshals were, when practicable, required to be officers of the military police corps. The number of officers available for such duty was however entirely inadequate. Many officers of other branches of the service were attached temporarily to the military police corps, some of whom were later transferred and became members of the corps.

The enlisted personnel of the new corps was selected from specially qualified soldiers of other organizations. A military police training depot was organized and established at Autun (Seine-et-Loire) for the instruction of personnel before assignment to organizations and for the training of candidates for commission in the military police corps.

MILITARY POLICE UNITS: General Order No. 200, G. H. Q. published November 9. 1918, authorized the organization of the military police corps on an even larger basis. It provided for the policing of the S. O. S. by the following organizations:

ASSIGNMENTS	BNS.	COS.	ADDITIONAL OFFICERS AS P. M.	A. P. M.	ADDITIONAL N. C. O.'s IN OFFICE OF P. M.
District of Paris	2	4	Lt. Col.	Major	1 regtl. and 3 bn. sgts, major.
Headquarters S. O. S.	1	2	Major	Captain	1 regtl. and 3 bn. sgts. major
Advance Section	5	10	Lt. Col.	Major	1 regtl. and 3 bn. sgts. major
Intermediate Section	6	12	Lt. Col.	Major	1 regtl. and 4 bn. sgts. major
Base Section No. 1	2	4	Lt. Col.	Major	1 regtl. and 1 bn. sgts. major
Base Section No. 2	3	6	Lt. Col.	Major	1 regtl. and 1 bn. sgts. major
Base Section No. 3	2	4	Lt. Col.	Major	1 regtl. and 1 bn. sgts. major.
Base Section No. 4	---	1	Captain	Lieut.	1 1st Sgt.
Base Section No. 5	2	4	Lt. Col.	Major	1 regtl. and 1 bn. sgts. major
Base Section No. 6	1	2	Major	Captain	1 bn. sgt. major.
Base Section No. 7	---	1	Captain	Lieut.	1 1st Sgt.
Base Section No. 8	---	1	Captain	Lieut.	1 1st Sgt.

Tactical units were provided for as follows:

For a division - 1 company
For a corps - 1 company
For an army - 4 companies, organized as a battalion

Military police companies assigned to divisions were given the same numerical designation as the divisions to which assigned. Comapnies assigned to corps were numerically designated by the number of the corps. Battalions assigned to armies were designated by the number of the army, the companies of each battalion being lettered A, B, C and D.

Companies in the S. O. S. were organized into battalions of two companies, battalions being numerically designated consecutively beginning with number 101, the companies being similarly designated beginning with Number 201, thus, the 101st Battalion comprised the 201st and 202d Companies; the 102d Battalion comprised the 203d and 204th Companies, etc.

TRANSFERS, PROMOTIONS, ETC: General Orders No. 200 further increased the powers of the Provost Marshal General and consequently the military police corps. It authorized the Provost Marshal General to detach and transfer individuals and units of the military police corps, not attached to combat units, and to direct, as necessary in the military service, such travel for himself, his subordinates and military police

units as, from time to time, might be necessary. Appointment and promotion of non-commissioned officers, on recommendation of their immediate commanders, were authorized to be made: (a) In units at army headquarters, by the Army Provost Marshal; (b) In all units in an army corps, by the Corps Provost Marshal; (c) In all other units, by the Provost Marshal under whose orders they serve. More important, and contributing largely to the authority and self-respect of the individuals and to the esprit of the corps as a whole, was the fact that each private of the military police corps was given the assimilated rank of acting corporal, to be respected and obeyed accordingly. It was in fact General Orders No. 200 which was greatly responsible for the present organization of the military police corps.

MILITARY POLICE CORPS DIVISION: General Orders No. 217, G. H. Q., November 27, 1918, further enlarged the military police corps and more clearly defined its organization and duties. This order marked the segregation of the Provost Marshal General's Department into several divisions of which the military police corps was one, and was the basis for the organization of the division as it exists today, with an Assistant Deputy Provost Marshal General in charge of the affairs of each division. The military police corps division of the Provost Marshal General's Department was formally created and announced as such in General Orders No. 4, Hq. M. P. C., January 22, 1919 * * * By this order the chief of the military police corps division was charged with the responsibility for the organization, equipment, training, distribution of military police units and personnel.

CRIMINAL INVESTIGATION COMPANIES: Under date of February 5, 1919, General Orders No. 5, P. M. G., the criminal investigation companies were made a part of the military police corps and numerically designated beginning with number 301. These companies are attached to the criminal investigation division for duty, their work and duties being set forth in Part V of this history.

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TOTAL NUMBER OF COMPANIES: To date the military police corps has consisted of 146 companies: 8 attached to the criminal investigation division, 50 companies with tactical units and 88 companies distributed in areas covered by S. O. S. sections and adjacent territory.

DISTRIBUTION AND STRENGTH OF MILITARY POLICE CORPS: Detachments of military police are stationed in 476 cities and towns in a territory covering France, England, italy, Belgium, Luxemburg and the occupied German territory. Officers are on duty as organization commanders, company officers, Provost Marshals and Assistant Provost Marshals in this territory in which the military police corps operates with its force at the present time aggregating approximately 1,086 officers and 26,000 men, including the military police companies of the tactical units. Maximum strength of the military police corps has been 1,161 officers and 30,466 men. From the station list and directory published monthly by the provost Marshal General's Office (copy accompanying this history) it is possible to form an adequate idea of the wide distribution of the personnel of the military police corps.

INSPECTION INSTRUCTORS: The task which confronted the Provost Marshal General in December was to organize a corps from the scattered, differently organized, trained and employed units of the military police, especially throughout the S. O. S. individual commanders had been responsible for all these considerations, and naturally no general standard had been established. In some localities the military police had a bad name; lack of courtesy, indifference to the duty of giving service and information, disrespect to commissioned officers, brutality to soldiers, were matters of not infrequent report. The corps was acquiring a bad reputation. While instructions sent from the Provost Marshal General's Office helped to correct these abuses, the most important step taken was the de-

cision to adopt a system of inspector instructors, appointments being made of especially selected officers, all of the rank of colonel or lieutenant colonel, well known for their efficiency and past professional work. The entire territory in which the military police operate was divided into four districts, and an inspector instructor detailed permanently to each district, charged with the elimination instructor detailed permanently to each district, charged with the elimination therefrom of such personnel as in the end appeared temperamentally unfit for the performance of military police duty. Increased efficiency resulted almost immediately, the good effects of their work is more apparent every day, and the system will ultimately do much toward the accomplishment of a real corps with its own esprit and standards of excellence. Instructions to the inspector instructors, issued January 26, 1919, gives the best idea of their work:

1. In order to increase the efficiency of the M. P. C. the territory of the A. E. F. is divided into four inspection districts and an inspector instructor assigned to each.

2. The inspector instructors of the military police corps are members of the staff of the Provost Marshal General and will communicate with and make reports to these headquarters.

3. Each inspector instructor will use his best judgment as to subjects covered in making reports. Such matters as he can correct by instruction will bc covered only by stating the action taken as a corrective measure.

4. Recommendations, as well as reports, are required and will, ordinarily, be considered confidential. It is desired that commendations, as well as criticisms, should be forwarded when conditions warrant same.

5. Inspector instructors will inform themselves of the strength and locations of all organizations and detachments in their areas and will invite attention to any errors or omissions not shown on change reports sent out by these headquarters.

6. Close liaison with commanding officers and Provost Marshals will enable inspector instructors to obtain a comprehensive knowledge of the conditions within their areas.

7. As soon as selected, the station of each inspector instructor will be reported to these headquarters. When it is the intention of an inspector instructor to be absent from same more than three days, he will forward by wire his itinerary in order that he may be communicated with when necessary. Any changes in the above mentioned itineraries will likewise be reported by wire.

SERVICES OF THE MILITARY POLICE: From the moment the first troops of the American Expeditionary Forces landed in Europe, through the period of preparation and training to our actual combat participation in the war, the services which the military police have been called upon to render have been varied, complex, delicate, interesting and instructive; routine services required by standing orders, quick-thinking services demanded by fleeting emergencies and exigencies of battle; services at the front in the theater of actual operations; in training, rest and leave areas; in cities, towns, villages and hamlets.

ESPRIT DE CORPS: It has been the effort of the Provost Marshal General and his subordinates to inculcate in the military police soldier a spirit of helpfulness to his comrades and his countrymen; kindness, aid and protection to the native inhabitants; to make him feel that discipline means to him and his comrades, not petty exaction, restrictions, and punishments, but self-respect, and respect for the uniform; obedience to rules, regulations and orders, and intelligent interpretation thereof; to make him feel proud of his country and the achievements of the army; in short make him feel that in performing his duty he is doing that which he can best do to contribute to the success of our arms and while doing so that he stands, wherever placed, as the symbol of the great organization of the American Expeditionary Forces which he represents. * * *

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EFFICIENCY: From a small group of individual organizations with widely different and varied, and often vague ideas of the duties and requirements of military police, which frequently caused complaints and criticisms of the military police corps as a whole, the military police corps has grown and developed. The corps organization, with a central supervision and enforcement of well defined policies, discipline, uniform training, courtesy and attention to duty, has been entirely responsible for the present efficiency of the military police of the American Expeditionary Forces.

RESUME: To sum up the results of our war experience as they affect the military police corps, it has been clearly and expensively demonstrated that efficient operation thereof both at the fighting front and in the S. O. S., demands:

(a) Maintenance of a considerable military police force of high class men, thoroughly trained in their specialized duties and taking such pride in the performance thereof as will insure:

(b) Uninterrupted flow of traffic in rear of the battle lines;

(c) Restoration of stragglers to the fighting line;

(d) Handling of prisoners with certainty of control;

(e) Protection and military control throughout all areas of activity;

(f) Readily available source of information and assistance to all who need it.

The individual military policeman must enforce observance of orders and regulations not only by soldiers but by officers. He is often called upon to use judgement and discretion. He must be a superior type of man to meet these requirements satisfactorily.

Little of this was true in the American Expeditionary Forces. Except in the divisional units, all other so called military police consisted largely of hit or miss men, detailed for the purpose, not only without special instruction but without anyone trained to instruct them. Even in the divisional units conception and performance of duty were largely dependent upon the ideas of local commanders. It is no wonder that they often failed in courtesy and intelligent performance of duty.

What is the remedy? Maintenance of a specially organized military police corps, in our peacetime military establishment, with units that may be actively engaged in military police duties, particularly during maneuvers and field training; whose personnel shall be carefully selected and highly trained, having such Esprit de Corps and intelligent appreciation of their functions as will enable the individual military police to perform his often delicate duties with assurance and certainty, yet without offense or embarrassment. Then in case of war we will have the nucleus to supply instructors for needed expansion, and trained units to be the first troops to report at any training area. This last consideration would have been of tremendous value to each cantonment commander in the late emergency, and should be provided for in future.

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FINAL HISTORY OF MILITARY POLICE CORPS

Decrease in Strength: In view of the necessity for a decrease in the military police corps in proportion to and simultaneously with the decrease in the strength of the American Expeditionary Forces, the Provost Marshal General, on April 5, 1919, called upon all unit commanders for reports:

(a) Showing officers and men who did not originally volunteer for duty in the Provost Marshal General's Department or military police and who did not desire to continue in the military police in France.

(b) Those who wished to volunteer for duty.

(c) Those who have volunteered.

Reports received furnished data which resulted in plans enabling the Provost Marshal General to discontinue the Military Police Corps, as such, almost upon a moment's notice.

Volunteer Military Police Units: In order to permit soldiers who came to France with combat divisions to return to the United States with their original organizations, the Commander-in-Chief directed (by memorandum from Assistant Chief of Staff, G-1) that men who were arbitrarily transferred to the Provost Marshal General's Department be returned, as far as practicable, to their original divisions and steps were therefore immediately taken to form volunteers and non-volunteers into separate companies, so that the former might be retained in the service as conditions might require and the latter be returned to the United States.

Material changes in Units: In furtherance of the foregoing policy, material changes in personnel and in numerical designations of units occurred. In addition thereto, the dissolution of both the First and Second Army as such, and the constant and gradual contraction of the territory occupied by the American Expeditionary Forces, resulted in changes in and reduction of the stations of the military police.

Companies retained and sent home: In the consequent reorganization of units effected before the end of April, many battalions, as such, were broken up, twenty three companies of volunteers were formed, to be retained for further service, nine companies, mostly non-volunteers, were released from the Military Police Corps to the Commanding General, S.O.S., for embarkation to the United States, so that, on April 30, 1919, there were ninety companies of military police still in the service.

Reduction in England and Italy: Meanwhile, the military police in England (London and Liverpool) were reduced from one battalion to one company, being brought to France for embarkation to the United States.

Base Section No. 8, Italy, being abandoned, the military police (one battalion) were assembled at Rome and transferred to Coblenz for service with the Third Army, leaving a detachment of two officers and twenty-five men on duty in Italy.

Further Reduction: Continuing the policy of reduction in May 1919, eight battalion headquarters were discontinued and twenty five companies were released to the Commanding General, S. O. S. for return to the United States. In the first week of June 1919, six more companies were released, one company was abolished, and three battalion headquarters were discontinued.

Dissolution of the Military Police Corps: Meanwhile, pursuant to orders discontinuing the Provost Marshal General's Department, certain units had been selected to continue provost and military police work and were announced in General Orders, No. 84, G. H. Q., May 27, 1919, * * *

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Prisoners of War

GENERAL HEADQUARTERS, A. E. F.,
Chaumont, Haute-Marne.

CHAPTER I

1. INTRODUCTION

[Extract]

The following report on Enemy Prisoners of War deals only with general matters of policy which were handled by the General Staff. The first order outlining Staff functions G. O. No. 8, A. E. F., 1917, did not provide for staff supervision of this subject, but Memo. No. 129. A. E. F., November 19, 1917, which revised the duties of the Administrative and Coordination Sections of the General Staff, placed the disposal of captured men and material under the supervision of the Administrative Section.

The execution of the policies determined by G-1 has been the duty of the Provost Marshal General. * * *

The statistical records of enemy prisoners of war captured, died and repatriated have been kept by the Prisoners of War Information Bureau, a part of the Central Records Office of the Adjutant General's Department.

2. PRELIMINARY ARRANGEMENTS

In the first order outlining the staff organization of the A. E. F. (G. O. No. 8, A. E. F., July 5, 1917) the provisions of Field Service Regulations were followed in giving the Provost Marshal General the duties of receipt of prisoners of war and custody thereof and records of prisoners of war. On September 4, 1917 The Adjutant General of the Army asked the Commander-in-Chief if any plans had been made for the establishment of prisoner of war camps, and reply was made of the 27th that it was intended to make a study of the subject in the near future.

Sec. I, G. O. No. 67, A. E. F., 1917, which was published on November 30, covered the duties of the Adjutant General's Department of the A. E. F. Paragraph 2 established a Statistical Division, one of whose duties was to maintain an Inquiry Bureau as to prisoners of war, required by Art. 14, HAGUE Convention. A few days later Sec. I, G. O. No. 71, A. E. F., December 10, 1917, prescribed the duties of the Provost Marshal's General Department, which included custody of prisoners of war. As no prisoners were being captured and the General Staff was occupied with more important problems, no other action on the subject of prisoners of war was taken in 1917.

The War Department cabled on January 3, 1918 that the Secretary of State had asked whether it was intended to send to the United States for internment all prisoners captured by the American forces, rather than to surrender jurisdiction over such prisoners to another belligerent or to a neutral country. It was emphasized that extreme caution in the matter was necessary lest the German Government make reprisals, as it was understood that Germans captured by the British forces had been loaned to the French Army for railroad work behind the lines and that the German Government had threatened to retaliate by sending an equal number of British prisoners to Bulgaria or Turkey. The Secretary of War instructed that this matter be studied with great care and recommendations cabled.

The Department was advised on the 7th that it was believed that the questions at issue presented many phases which could be settled only by diplomatic negotiations through the State Department. There were mentioned, for example, the pay of enemy officers and soldiers, their privileges and treatment, mail and package facilities, and the repatriation

of those disabled according to certain medical classifications. Another question raised was the effect of the GENEVA Convention on the payment and repatriation of captured sanitary personnel and the return of sanitary equipment, as it was understood that in this war, on account of physical difficulties, the belligerents had never returned captured sanitary equipment. The point was also raised as to what constituted sanitary personnel in view of the use of bandsman in the evacuation of wounded. It was suggested that prisoners of war should be utilized here as laborers under our own jurisdiction, although the shipping of some of them to America might be advantageous later in the prevention of submarine attacks, provided this could be accomplished without reprisals. In conclusion it was recommended that representatives of the Judge Advocate General's Department carefully study with the State Department the complete records of all agreements on the subject entered into between the English, French and enemy governments with a view to entering into negotiations with the enemy through neutral representatives, in order that an agreement on all points might be reached and thoroughly understood before any great number of prisoners was taken. The War Department replied on February 20 that the questions raised had already been made the subject of negotiations between the War and State Departments and that the Secretary of War had decided that all prisoners taken by our forces would be kept behind our own lines and guarded by our own troops unless the number should become so great as to render such disposition impracticable.

On January 23 the Provost Marshal General was asked what provisions were being made for handling any prisoners of war who might be captured. In reply, he stated on January 25 that the organization of a prisoner of war section had not been effected and requested the detail of a suitable officer to make preparations for the temporary housing, feeding, guarding and working of enlisted prisoners and the care and guarding of officers. Following this request a field officer was detailed in February to assist the Provost Marshal General in this work.

The Commanding General, S. O. S., was advised on February 23 that in the event of the capture of any soldier prisoners of war it was the intention to send them for work at some point in the S. O. S. and it was suggested that a place for their internment be chosen near the depot at Gievres. Arrangements for officers were to be made later.

3. CUSTODY

a. Arrangements with French

In a letter of May 14, 1918, to the French Military Mission reference was made to the fact that existing French orders required prisoners of war taken by American units serving with the French to be handed over to the latter for safe keeping and final disposition. In view of the fact that there were American prisoners of war in the hands of the Germans, it was requested that these orders be changed to permit the A. E. F. to keep such prisoners, as it would otherwise be impossible to secure reciprocal action by the enemy in the matter of treatment. Replying on June 3, the French Mission stated that in future prisoners taken by American units would be kept by the Americans, and that orders would be given to send to the American Enclosure any prisoners taken by American troops operating in French sectors. There was also forwarded a set of documents fixing the general status of prisoners of war captured by the French with the request that we conform to these principles in order to avoid differences in treatment, until such time as special rules might be issued by the A. E. F. In acknowledging this letter on June 5, it was stated that our understanding of the arrangement was as follows:

1. Prisoners taken by American units serving with the French, after having been examined jointly by G-2 of the French and American Staffs, would be turned over to the French who would take them to the American Enclosure established at Gievres.

2. The names of such prisoners would be reported to the German government by our Government in order to definitely fix our jurisdiction with a view to reciprocal treatment of our prisoners in German hands.

3. Officers would be sent to Gievres temporarily until a separate officers' prison camp could be established.

Copies of this letter were sent to the Commanding Generals of the I, II and III Corps with the statement that a statistical bureau would be established at Gievres at which point we would assume permanent jurisdiction of the prisoners.

On July 29 the French Mission referred to the above correspondence and stated that there might be some confusion when units smaller than a division were operating as a part of a French Division, due to the difficulty of dtermining which forces actually made the capture. A proposal was submitted that the number of prisoners to be turned over to American custody should be in proportion to the number of American battalions and batteries engaged. Reply was made on August 1 that every effort should be made to keep the prisoners separate, but that when this was absolutely impossible, they could be prorated as suggested. This arrangement met with the approval of the French and was published as Sec. I, Bul. No. 62, A. E. F., August 23, 1918.

The Provost Marshal General on July 31 called attention to the fact that only a small number of the prisoners which had been captured by American troops had as yet been turned over by the French. This was taken up with the French Mission and on August 6 the Provost Marshal General was advised that the French would begin to transfer several thousand prisoners to St-Pierre-des-Corps on the following day.

b. Arrangements with British

In May 1918 the British Mission asked the wishes of the Commander-in-Chief regarding prisoners captured by the American troops serving with the British and were told on June 1 that it was desired to keep such prisoners for American use and that the Commanding General, II Corps, had been directed to make the necessary arrangements with General Headquarters of the British Expeditionary Forces. At the same time a letter of instructions was sent to the Commanding General, S. O. S. to arrange for the transfer of prisoners from the British pen to the Central Prisoners of War Enclosure. The details of the handling of these prisoners were submitted to G. H. Q., by the Commanding General, II Corps, on June 11.

c. American Control

Just as the above arrangements for retaining custody of all prisoners captured by American troops were being completed, a cable from the War Department under date of June 5 announced that the Secretary of War had decided to intern all prisoners in the United States and ordered that they be sent there as soon after capture as could be done without prejudice to military operations. In reply to this the War Department was advised on June 8 that in view of the fact that the labor situation in France had necessitated our asking the French and British for the use of their prisoners of war, the wisdom of sending our prisoners home would probably be questioned by the French unless good reasons were advanced. It was requested that the subject be considered from this standpoint, as arrangements had recently been completed for the transfer to the A. E. F. of all prisoners captured by American forces serving with the British and French. A further cable from the War Department on June 25 authorized the Commander-in-Chief to retain prisoners in France provided they were not surrendered to our co-belligerents and we otherwise accorded them the treatment provided for in Article 24 of the Treaty of 1799 with Prussia * * * It was stated that the State Department agreed that a fair interpretation of the Treaty did not demand that prisoners be sent to the United States, in the absence of any claim from Germany to that effect.

The Commanding General, S. O. S. had reported or April 28 that a camp had been established at Gievres with accommodations for 150 prisoners of war, which could be increased to a capacity of 800 on 48 hour's notice. This camp was used until July, when the Central Prisoners of War Enclosure was established at St-Pierre-des-Corps. The French and British

Missions were notified of the change on July 22 and requested to have the destination of prisoners changed accordingly.

d. Officers

In cabling the War Department on June 5, giving the reasons for wanting to keep prisoners in France, it was pointed out that the objections to sending soldiers to the United States were not applicable to officers. The War Department's reply, authorizing the retention of prisoners in France, did not mention officers and the Commanding General, S. O. S. was therefore instructed on June 26 not to send officers to the United States pending instructions from Washington. He was directed to prepare proper facilities for their internment near a port of debarkation as the arrangements at Gievres were unsuitable and a camp was established at Penfeld Prison near Brest, where all officer prisoners were interned until October when a new camp was opened at Chateau Vrillays, near Richelieu.

On August 19 the French Mission suggested that officer prisoners of war should be sent to the United States on account of the fact that they required care and guarding without being useful as labor. This suggestion was transmitted to the War Department on August 28 with the recommendation that it be adopted and the statement that there were then 16 officers at Brest ready to be sent and more would be ready soon. The War Department replied on September 24 that the question of transferring officers to the United States was then before the conference at Berne, and consequently no further action was taken.

4. TREATMENT

a. General Instructions and Orders

In a letter of January 19, 1918, on the subject of prisoners of war, the Adjutant General of the Army stated that neither the Hague nor Geneva Convention is recognized by the United States Government as binding in the present war, although the principles thereof are being followed. It was also stated that the reason the Geneva Convention was not recognized as binding was that not all of the belligerents were signatories. The policy thus laid down with respect to the treatment of prisoners was consistently followed throughout.

Complete data was secured from the British and French on their methods of handling prisoners of war, and with this as a basis, tentative Orders and Instructions were prepared for the A. E. F. and distributed in typewritten form to those concerned. * * *

On June 3 the Provost Marshal General was advised that the treatment of prisoners of war would be governed by these tentative instructions until definite orders and regulations were published.

The preparation of a General Order on the subject was a matter of considerable time and labor. The original draft was rewritten several times, after conferences with G-2, the Adjutant General and the Judge Advocate, and was finally published on July 1 as A. O. No. 106. A. F. F., 1918. Sec. VIII reads "Regulations and Instructions will be promulgated from these headquarters for the carrying of the provisions of this order into effect," and such regulations and instructions were printed in pamphlet form at the time the order was issued. * * *

Immediately after its publication, the question of the revision of certain provisions of G. O. No. 106 was raised by G-2 and the Provost Marshal General. A revision of the order was worked on during July and August, and in September a proposed new General Order was submitted to G-2, G-4 and the Provost Marshal General for their recommendations. The suggestions received from these various sources were harmonized and on September 17 the final draft of the new order was prepared. At the same time a draft of corresponding changes in the Regulations and Instructions for Prisoners of War was made. Neither the new General Order nor the revision of the Prisoners of War Regulations was issued, however, pending the outcome of the diplomatic negotiations then being conducted at Berne.
* * *

b. Treatment when Captured

A confidential circular letter dated August 22, 1918 was sent to all Commanding Generals of corps and divisions by the Adjutant General under instructions of the Commander-in-Chief. They were told that the German press was then alleging that in recent battles some detachments of American soldiers had refused to give quarter to detachments of Germans not guilty of treachery after resistance had ceased and offers to surrender had been made. It was stated that the object was evidently to increase the power of resistance of the German soldiers by instilling in their minds the idea that they would be killed if they attempted to surrender. The Commander-in-Chief desired to impress on all corps and division commanders the policy of the United States Army, which was that an offer to surrender on the part of enemy soldiers not guilty of treachery would be accepted and such soldiers given food, shelter and protection strictly in accordance with the provisions of International Law. It was directed that all commanders, if they had not already done so, issue specific instructions to all units calling their attention to the rules mentioned.

Sec. I, G. O. No. 159, A. E. F., 1918, was published on September 19 quoting the Rules of Land Warfare regarding the treatment of prisoners of war and directing compliance with their provisions. It was specified that prisoners would not be employed within 30 kilometers of the front lines except when carrying wounded to the rear, and that hot meals would be served at Enclosures and hot soup nearer the front. Paragraph 3 of this order reads as follows:

> "Treatment of enemy prisoners or conduct toward them flowing from or actuated by considerations of the treatment that may be expected by our own men who fall into the hands of the enemy is strictly forbidden. The matter of requiring the enemy to observe the dictates of humanity and civilization in his treatment of captured Americans rests entirely with higher authority."

c. Rations

On July 29, G-1 referred the A. C. of S., G-4 to a letter of May 8, 1918, from the latter to the Commanding General, S. O. S. prescribing a certain ration for prisoners of war in American custody and invited attention to the fact that the Treaty of 1799 with Prussia provided that all enlisted men should be furnished the same rations as American soldiers and that instructions from the War Department required that the terms of this treaty should not be violated. Reference was also made to similar provisions in the Hague Convention and the Regulations and Instructions concerning prisoners of war published by G. H. Q., which provided that prisoners be allowed the same rations prescribed for American troops. In view of the foregoing, it was recommended that the instructions contained in the letter of May 8 be revoked.

On September 22 the Inspector General of the First Army made an investigation of the treatment of prisoners of war in the First Army Enclosure, based on a complaint from the French that the food given the prisoners was much greater in amount and of better quality then was received by the French Army or civilians, and that this created a bad impression in the minds of the French. As a result of his investigation, the Inspector made the following recommendations:

(a) That the quantity of rations be regulated by the amount of work done, and that the issue of the full Government ration be made dependent on the prisoners' performing certain tasks.

(b) That the rations be reduced on the ground of retaliation and in consideration of alleged mistreatment of American prisoners captured by the Germans.

The above report was forwarded approved by the Commanding General, First Army, and referred to the Judge Advocate for his opinion. In his reply of October 3, the Judge Advocate approved neither of the above recommendations, believing it better to adhere strictly to the obligations of International Law until the terms of the special agreement with Germany then being drawn up at Berne were known. The recommendations were disapproved but copies of all of the papers were sent to the Chairman of the special diplomatic mission at Berne for his information.

d. Pay

Article XVII of The Hague Convention provides that officers taken prisoners shall receive the same rate of pay as officers of corresponding rank in the country where they are detained, the amount to be ultimately refunded by their own Government. The Adjutant General of the Army, however, directed on December 18, 1917, that in view of the German Government's having failed to make any reply to an agreement proposed by our government through neutral diplomatic channels regarding the pay of commissioned officers, no further payments would be made to captured German officers until the German Government should have expressed its willingness to reciprocate.

An agreement with the German Government was later made on this subject and its provisions were published to the Army in Sec. V, G. O. No. 81, W. D., August 28, 1918. After the receipt of this order officer prisoners were paid the amounts prescribed in the agreement: $83.35 per month for lieutenant and $95.25 per month for higher grades.

On December 19 the Chief Quartermaster cabled to the War Department asking what rate of pay should be given Austrian officer prisoners. Replying to G. H. Q. on December 27, the War Department stated that Austrian officers should be paid at the same rates as German.

Enlisted prisoners were paid for each day's labor performed. The rate of working pay was fixed at 20 centimes per day for privates and 40 centimes per day for non-commissioned officers, the P. M. G. being authorized to increase these rates for skilled work, not to exceed the rate of one franc per day.

e. Censorship

The provisions for the censorship of prisoners' mail were given in Sec. VII of Prisoners of War Regulations and Instructions. These remained unchanged until February 24, 1919, when, with the approval of G-2, the Provost Marshal General was instructed to relax the regulations in the following respects:

(1) No limit on the number of letters which might be written each week.

(2) Permission to use any kind of paper, envelopes and post-cards available.

(3) Permission for prisoners to tell where they were located and the nature of the work on which they were employed.

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5. PRISONERS OF WAR INFORMATION BUREAU

The operation of a Prisoners of War Information Bureau was specified as one of the duties of the Adjutant General's Department in Sec. I, G. O. No. 67, A. E. F., 1917. This Bureau was made a part of the Central Records Office and its functions were for the first time fully described in Sec. II, G. O. No. 106, A. E. F., 1918. Its most important duties were to keep complete individual records of prisoners, to reply to all inquiries concerning them, to furnish lists of captured prisoners to the enemy governments through neutral channels, to censor prisoners' correspondence, to be custodian of their personal effects and money, and to prepare and maintain records of their pay. The disbursing quartermaster attached to the Bureau for the purpose of exercising the last two functions was later transferred to the Central Prisoners of War Enclosure by Sec. IV, G. O. No. 29, A. E. F., February 12, 1919.

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6. SANITARY PERSONNEL

a. Treatment

G. O. No. 106, A. E. F., 1918, made no mention of Sanitary Personnel, as defined in the Geneva Convention, nor did the Prisoners of War Regulations and Instructions pub-

lished at the same time, draw any distinction between such personnel and other prisoners. On September 20, 1918 the Provost Marshal General, in answer to an inquiry from G-1, reported that there were 332 Red Cross prisoners at the Central Prisoners of War Enclosure and that it had been the custom to send four Red Cross prisoners out with each labor company for sanitary work, keeping at the C. P. W. E. a sufficient number for such work at that place. He stated that the duties referred to consisted of general camp sanitation, including the supervision of the latrines, kitchens, drainage, etc. This memorandum was referred to the Judge Advocate for an opinion whether the treatment accorded these prisoners was in conformity with international law and treaty obligations. In his reply of September 30, the Judge Advocate called attention to the fact that the use of the expression Red Cross prisoners of war showed an apparent confusion on the subject of captured enemy sanitary personnel and stated that if by the term Red Cross were meant persons coming within the Red Cross convention, such persons by the express terms of that convention were not prisoners of war and must not be considered as such. He then discussed the entire subject of enemy sanitary personnel and the treatment to which they were entitled under the Geneva Convention of 1906. He pointed out that as long as they were retained they must be accorded treatment different from prisoners of war and that while they could be restrained in their movements they should not, if it was possible to avoid it, be confined in stockades with prisoners. He also pointed out that while retained and rendering service, they were entitled to receive the same pay and allowances as are granted to persons holding the same rank in our own Army.

Taking the above into consideration, the Judge Advocate was of the opinion that the enemy sanitary personnel referred to by the Provost Marshal General were probably not being accorded the treatment to which they were entitled. It was evident, he stated, that they were not being distinguished from the prisoners of war, and if the duties prescribed were merely those which could as well be performed by the prisoners themselves, they were not properly imposed upon the sanitary personnel. He therefore recommended that the Provost Marshal General Department be advised of the status of these persons and that means be sought to effect a gradual repatriation of those whose assistance was no longer indispensible. He also advised that we ascertain what volunteer aid societies had been notified to our Government by the enemy as authorized to render assistance to the regular medical service of his armies under the provisions of Article 10 of the Geneva Convention. Immediate steps were taken by G-1 to carry out the Judge Advocate's recommendations. On October 2d a copy of his memorandum was forwarded to the Provost Marshal General with the following instructions:

(a) To take immediate steps to select and separate from enemy prisoners of war those who fell within the classes entitled to preferential treatment under the Geneva Convention.

(b) To forward a report of all such prisoners to G. H. Q. stating with respect to each prisoner whether his services were indispensible in connection with the care of the enemy sick and wounded.

(c) To accord to all such prisoners the preferential treatment to which they were entitled, until such time as necessary arrangements for their repatriation could be made.

(d) To keep accurate accounts of the compensation to which they may be entitled for services performed.

(e) To instruct all officers in his command having custody of prisoners of war prior to their delivery to the Central Prisoners of War Enclosure to take all reasonable precautions to distinguish from among other prisoners those who should be classed as sanitary personnel, and to accord to them the treatment to which they were entitled.

In closing it was stated that the matters referred to were deemed to be of the utmost importance and that every precaution should be taken by all concerned to insure

strict observance of the obligations of the GENEVA Convention. Copies of this correspondence were also sent to the Commanding General, First Army, for his information and guidance.

At the same time work was started on a bulletin covering the treatment of sanitary personnel. After the completion of the first draft, it was submitted to the Judge Advocate for comment, who returned it on October 7 suggesting certain changes. Before this could be incorporated in a new draft, the Judge Advocate, in another memorandum of October 10 recommended that the issue of orders, instructions and bulletins on the subject of treatment of enemy sanitary personnel be deferred until the specifications of the agreement then being made at BERNE were known. * * *

On October 3 the Chairman of the Special Diplomatic Mission of the United States at BERNE was asked what societies had been designated by the enemy government as entitled to protection under the GENEVA Convention. The reply was that the mission had no information on the subject. A cable was then sent to the War Department on October 22 asking if any such societies had been designated and if so, how their members could be recognized if captured. The reply under date of November 7 stated that neither Germany nor Austria-Hungary had notified the United States Government of any authorized relief societies.

b. Women

An unusual case was the capture at Thiaucourt on September 12 of a middle-aged German woman, Frau Joanna de Hass. She had been in charge of a recreation hut similar to an American Y. M. C. A. canteen, and had taken refuge in a cellar during the bombardment. When captured she wore a brassard with a red cross and stated she was a sister in the National Society for War Work on the western front. She was taken to Decize (Nievre) and there kept under surveillance, reporting daily to the Assistant Provost Marshal, but otherwise allowed her liberty.

She made frequent applications for repatriation, claiming protection under the Geneva Convention as a member of a voluntary aid society. All the data in the case was submitted for the opinion of the Judge Advocate, who on December 19 stated that she was not strictly entitled to the protection of the Convention since the conditions of the Convention were not fulfilled in the following respects: (1) the Society to which she belonged had not been notified to the United States Government by the enemy Government, (2) the brassard she wore was not stamped by competent military authority, (3) she carried no certificate of identity issued and stamped by competent authority. Nevertheless, he was of the opinion that notwithstanding the strict rules of International Law it would not be improper to repatriate this woman. With the approval of the Chief of Staff, the Provost Marshal General was therefore directed on December 24 to return her to Germany via Coblenz.

c. Repatriation

On November 18 the Provost Marshal General reported that there were 1,183 enlisted sanitary personnel, the services of 865 of whom were not necessary and in addition, 36 officers, and expressed the belief that those whose services were not needed could and should be repatriated at the earliest possible date. When asked for his opinion, the Judge Advocate on November 27 recommended that no immediate steps be taken toward the repatriation of this personnel, because during the Armistice, or until the confirmation of the Berne agreement, such repatriation was not compatible with military exigencies.

In December, the doctors, pharmacists and dentists at the Officers' Prisoners of War Enclosure forwarded through the Swiss Legation at Paris a petition for their re-

lease. On December 27 reply was made through the Military Attache of the American Embassy, Paris, that under the terms of the Armistice nothing could be done at the time regarding their repatriation. On January 15 the Military Attache at Paris forwarded another communication from the Swiss Legation, in reply to the above, asking whether the United States Government held the same view as the French Government that the Government of the Republic observed no rules relative to the treatment of prisoners except those of the Geneva and Hague Conventions or those dictated by sentiments of humanity which it has never ceased to obey. If the view were held by the American Government, the Swiss Legation pointed out, it might be possible that the petitioners at the Officers' Prisoners of War Enclosure had the right to solicit their repatriation.

In commenting on the above, the Judge Advocate, on January 29, reviewed the previous correspondence on the subject and explained that his opinion of November 27 had been written at a time when the first Armistice period had not expired, the withdrawal of the enemy had not been completed, and none of the allied forces had occupied German territory. As the situation had since changed, he believed that the time had arrived for the repatriation of sanitary personnel whose services were no longer needed. Acting on this recommendation, the Military Attache at Paris was requested on February 1 to advise the Swiss Legation that the A. E. F. would scrupulously observe, as it had always done, the terms of The Hague and Geneva Convention; that the right of repatriation of sanitary personnel, when their services were no longer needed and military exigencies permitted, was recognized, and that inasmuch as it appeared that military exigencies then permitted such action steps were being taken to repatriate such personnel whose services were no longer required.

At the same time there was received a copy of a note, dated January 24, from Marshal Foch to the President of the Permanent International Armistice Commission, which, among other things, stated that it was understood that German sanitary personnel made prisoners before the retreat would be released in so far as its service were no longer necessary with German sick and wounded.

On February 16 a summary of previous action with reference to enemy sanitary personnel was presented to the Chief of Staff with recommendation that they be repatriated. This was approved on the following day, and on February 18 a memorandum to the Provost Marshal General instructed him to arrange for the repatriation of all enemy sanitary personnel whose services were no longer required for the care of sick and wounded enemy prisoners of war. He was instructed to provide for the following before repatriation:

(a) Complete payment in accordance with the Geneva Convention.

(b) Return of personal effects and money in the custody of the Quartermaster.

(c) Complete outfits of clothing, in good condition, and also individual mess equipment.

(d) Baths and delousing, if necessary.

(e) Proper completion of statistical records, and the preparation of a roster to be furnished the German authorities to whom the personnel would be turned over.

The Provost Marshal General was also told that all concerned should be advised that this personnel, under the terms of the Geneva Convention, were not prisoners of war and should not be considered as such and that they, therefore, were entitled to every courtesy and consideration compatible with military discipline. They were returned to Germany on two special trains on March 23, there being a total of 58 officers and 1,783 soldiers.

d. Pay

As mentioned above, neither G. O. No. 106 nor the Prisoners of War Regulations and Instructions distinguished between sanitary personnel and other enemy captives. In fact, the only mention of such personnel in the latter document was under the subject of al-

location of working pay, where it was stated that Sanitary personnel * * * will receive allocations determined by the P. M. G. in accordance with the labor performed by them. In his memorandum of September 30 outlining the treatment which should be accorded sanitary personnel the Judge Advocate stated that they were entitled to the same pay as corresponding ranks in our own army, while retained and rendering service. In G-1's letter of October 2, based on this memorandum, the Provost Marshal General was instructed to keep accurate accounts of the compensation to which they may be entitled for services performed and they were, therefore, credited with pay on the same basis as prisoners of war.

In planning for the repatriation of sanitary personnel this condition was discovered and immediate steps were taken to correct it. Inasmuch as the provisions of The Hague Convention regarding the pay of officer prisoners of war had been modified by a special treaty with Germany, it was thought possible that the treaty also included some reference to the pay of sanitary personnel. There being no copy of the treaty at G. H. Q., the War Department was asked on February 2 if any provision for the pay of enlisted or commissioned officers and that sanitary personnel was included, but they replied that the agreement referred to related only to commissioned officers and that sanitary personnel was not specifically mentioned.

On February 13 a memorandum was addressed to the Provost Marshal General covering the subject of the pay of prisoners of war and sanitary personnel and pointing out clearly the distinction between the two classes of enemy captives. Instructions were given to adjust the pay accounts of sanitary personnel on the basis of the pay and allowances received by our own forces, for the entire time of their captivity. This was supplemented by another memorandum on February 26, stating that the work allowance was interpreted to mean food, lodging, clothing, etc., which were furnished in kind, and not to include foreign service pay, longevity pay and the like. There was also furnished a list of the corresponding ranks of officers and men in the sanitary service of the American and German Armies, as set forth in Annex 6 of the Berne Agreement.

On February 15 the German authorities asked, through the American Representative, Permanent International Armistice Commission, whether the sanitary personnel captured during hostilities were being paid in accordance with the Geneva Convention. They were informed on February 18 that this personnel would be so paid before repatriation.

7. ALSATIAN-LORRAINERS

a. Early Negotiations with French

The French Military Mission on June 22, 1918 asked if we would consent to turn over to the French Government any natives of Alsace-Lorraine captured by the American forces, in order that they might enjoy the same favored treatment accorded to such prisoners captured by the French and stated that an agreement of this kind was already in existence with the British. On being asked for his opinion on this subject, the Judge Advocate referred to cable A-1604-3 from the War Department, which authorized the A. E. F. to retain prisoners of war in France provided they were not surrendered to our co-belligerents and were otherwise accorded the treatment provided for in Article 24 of the Treaty with Prussia of 1799 and expressed the opinion that it was the War Department's view that we could not guarantee the treatment prescribed in this treaty if we were to surrender our prisoners to the French. Reply was therefore made to the French Mission by the Chief of Staff on June 29, expressing regret that we were not authorized to comply with their request because it would be inconsistent with our treaty obligations.

Two months later (August 34) the French Mission suggested detailed methods of sorting and evacuating Alsatian-Lorrainer prisoners in view of the fact that you have been

pleased to consent to the transfer of Alsatian-Lorrainer prisoners of war captured by American troops. As no such statement had been made, the Chief of Staff on August 30 told the French Mission that the statement was not understood and referred to his previous letter of June 29, but no reply was received.

b. Preferential Treatment

In a personal letter to the Commander-in-Chief on October 12, Marshal Foch requested that Alsatian-Lorrainers be accorded preferential treatment in conformity with the practice of the French. It appeared from this letter that after the receipt of our decision of June 29, refusing to turn these prisoners over to the French, the French Government had taken up the matter of preferential treatment through diplomatic channels and that the American Secretary of State had replied that the matter of the treatment of prisoners of war was purely a military one. In commenting on this letter the Judge Advocate stated that there was a clear distinction between surrendering the custody of prisoners and according some of them preferential treatment. He stated that although there were obstacles to the former there were no legal objections to the latter, as long as all prisoners received the treatment demanded by our treaty obligations. The Commander-in-Chief therefore replied to Marshal Foch on October 22 that the American Army would be prepared to acquiesce in the wishes of the French Government so far as it might legally and properly do so and designated a representative to attend a conference to be called by the President of the Council for the purpose of studying the question and recommending details of its solution.

The conference was held at the office of the Commissioner of Franco-American War Affairs in Paris on November 30 and was attended by eleven French representatives and an officer from G-1, G. H. Q. The French representatives stated that since the signing of the Armistice they had been releasing Alsatian-Lorrainers and sending them to their homes and that they failed to see why the American Army could not do the same. They also stated that the Minister of Foreign Affairs had been informed through the American State Department that Alsatian-Lorrainers interned in the United States were being released. The American representative replied that a distinction should be made between civilian interned as a matter of precaution and soldiers in German uniforms captured in actual combat with American troops, an argument which seemed to appeal to the military members of the French Commission. Although these prisoners could not be released, the French representatives were told that they could be accorded preferential treatment, but that any agreement would have to be subject to the terms of the agreement with Germany then being made at Berne. As a result of the conference the following agreement was drawn up:

1. French officers speaking the Alsace and Lorraine dialects will be placed by the French Army at the disposition of the American Army in order to facilitate the examination and identification of Alsace-Lorraine of French origin in the depots of prisoners of war taken by the Americans.

2. Alsatians and Lorraine thus identified will be placed in one or more special camps organized and directed by the American Army in those regions which are assigned to it; they will be admitted to a regime of favor on the order of that which is enjoyed in the special French depots by Alsatians and Lorrainers captured by the French Army.

3. The high American Command agrees to permit Alsatians and Lorrainers to receive, if they so desire, the benefit of instruction in the French language by teachers approved by it and to permit these prisoners to profit by the assistance of such beneficient French and American organizations as are acceptable to it. In the application of the matters herein mentioned, care will be taken that the supervision

and control pertaining to the American authorities does not seem to be transferred to French officers.

4. The present agreement not constituting a denial of the German-American Treaty of 1799, and of the conventions of The Hague, will be placed in effect with the shortest delay possible. It will be subject to modification, if necessary, in case any new stipulations relative to prisoners of war should be entered into up to the ratification of the Treaty of Peace.

On December 3 the Commander-in-Chief signed this agreement and wrote Marshal Foch that he would be pleased to put it in effect upon receipt of information that the proposed scheme likewise met with the approval of the French Government. Marshal Foch indicated his approval on December 20 and stated that application could be made direct to the Commander-in-Chief of the French Armies for the necessary French officers speaking Alsace-Lorraine dialects.

The Provost Marshal General was sent a copy of the agreement on December 9 and instructed to form all Alsatian-Lorrainers into two or more prisoners of war labor companies, taking up with G-4, G. H. Q. the question of the employment of these companies in such localities as would insure food, comfortable lodging and work of a preferential nature. The following instructions were also given:

(a) Before being assigned to separate companies all prisoners who claimed to be Alsatian-Lorrainers must be examined and identified as such by French officers

(b) They would be permitted to receive instruction in French if they wish.

(c) That great care should be taken that the supervision and control of these prisoners did not seem, in any way, to be transferred to the French officers detailed as instructors.

Advice was requested as to how many officers and men from the French Army would be needed for the examination and instruction of these prisoners, and the Provost Marshal General replied on February 5, 1919, requesting two French officers and five men and stating that all known Alsatian-Lorrainers were concentrated at the General Prisoners of War Enclosure.

c. Release

On December 26, 1918 the Military Attache at Paris telegraphed that the State Department had informed the Charge d'Affairs that the French Government had requested the release of Alsatian-Lorrainers for return to their homes; that the French Charge d'Affairs in Washington, on behalf of his Government, had agreed that the prisoners of war so released would not be incorporated in the military forces of France, and that no attempt would be made to control them for military purposes until after the Treaty of Peace. The Department of State had instructed the Charge d'Affairs to submit this subject to the Commander-in-Chief for his urgent consideration in the hope that a satisfactory agreement might be reached without delay. In reply, the Military Attache was given a resume of the previous action in the matter and told that it was thought that the procedure recommended by the State Department could not be carried out as it would conflict with our treaty with Prussia.

The question was brought up again by the Military Attache at Paris on January 13, when he quoted a message from the State Department in which it was pointed out that the present request of the French Government was different from that of June 22, the latter having been to deliver these prisoners into the custody of the French. The State Department was of the opinion that the present request was not inconsistent with the treaty between the United States and Prussia if the prisoners of war were willing to go and would be given absolute freedom. In commenting on the situation at that time, the Judge Advocate on January 16 expressed the opinion that the Commander-in-Chief had full authority to repatriate prisoners of war as it might seem expedient to him, and that he

was therefore competent to entertain and act upon this request without consulting other authority. As it did not appear, however, that the War Department had been consulted, the Judge Advocate suggested that it would be very proper for the Commander-in-Chief to submit the question to the Department before final decision was made.

The Commander-in-Chief on January 19 wrote to the President, who was then in France, placing the matter before him and stating that inasmuch as there was no military reason why this comparatively small number of prisoners whould not be released, he recommended that this be done and submitted the matter to the President for instructions. The President replied on January 29 requesting the Commander-in-Chief to refer the matter to the Secretary of War, stating that he was entirely willing that these prisoners be released provided the Secretary of War did not disapprove. The matter was thereupon referred to the Secretary of War on February 1 and a reply dated February 7 stated that the Secretary approved the release of natives of Alsace-Lorraine held as German prisoners and authorized their return to their homes.

On February 8, the French Military Mission was informed of the decision to release Alsatian-Lorrainers, and requested to furnish a commission of French officers to examine these prisoners and determine those whose claims were valid and who should be released. In this letter emphasis was laid on the provision that these prisoners should be given absolute freedom, and that no attempt should be made to control them for military purposes until after the signing of the Peace Treaty. At the same time, the Provost Marshal General was notified of this decision and directed to arrange for the release of all prisoners designated by the French Commission as natives of Alsace-Lorraine.

8. OTHER NATIONALITIES

a. Poles

On October 28, 1918 the Polish National Committee, Paris, requested the release of a Polish chaplain, who was in American custody as a prisoner of war, for service with the Polish National Army. On the advice of the Judge Advocate, reply was made that it was impossible to comply with this request for the reason that a cable from the War Department permitted us to keep prisoners in France only if they were not surrendered to our co-belligerents. As we had denied the urgent requests of the French to turn over to them Alsatian-Lorrainer prisoners of war, it was out of the question to surrender this man to the Polish authorities.

On February 8, 1919, the American Liaison Officer with the Polish National Army in Paris stated that the French had decided to release Polish prisoners in their custody, either to enlist in the Polish Army, to be repatriated or to work as free laborers in France. It was requested that the Commander-in-Chief consider the question of taking the same measures with respect to the Polish prisoners held by the A. E. F. Having by this time decided to release Alsatians-Lorrainers, it was considered that there were no objections to releasing those Poles who desired to voluntarily enlist in the Polish Army. The question was submitted to the War Department and its approval received on March 10. The Polish authorities in France were notified of this decision on March 13 and requested to send a Commission to visit the Polish prisoners who had been concentrated at the Central Prisoners of War enclosure, with a view to examining their claims to Polish nationality and enlisting in their army those who volunteered.

b. Roumanians

A personal letter from the Vice President of the National Council of Roumanian Unity to an American Naval Officer was forwarded to G. H. Q. on December 5 asking what steps should be taken to obtain the liberation of prisoners of war from Transylvanian

Roumania and also requesting authority to visit these prisoners. The Judge Advocate expressed the opinion that we could not properly release these prisoners as they were Austrian subjects and their legal status was the same as that of any other prisoners of war of belligerent nationality. In view of the fact that the State Department had not recognized any separate government in Transylvania, it was believed that we should not allow any definite campaign of propaganda among these prisoners nor in any way seem to sanction a campaign among them for the independence of Transylvania or its annexation to Roumania. This decision was communicated to the National Council of Roumanian Unity on December 12 and they were referred to paragraph 71 of Prisoners of War Regulations and Instructions regarding the rules for visiting prisoners. To a similar request from the same source, transmitted to the Commander-in-Chief through the American Commission to Negotiate Peace several days later, a similar reply was made.

c. Lusatians

In March, 1919, one of the representatives of the Czecho-Slovak Republic at the Peace Conference wrote the Commander-in-Chief about the Serbian people of Lusatia and their desire for independence. The Lusatians had entrusted their interests to the Czecho-Slovaks and the latter wished permission for their representatives to visit the prison camps to sort out the Lusatians of Serbian origin and so encourage them in their struggle against the Germans.

Following the precedent established in the case of the Transylvania Roumanians the request was refused and the Czecho-Slovak representatives were advised that until the status of the Lusatians had been determined by the Peace Conference the Commander-in-Chief was unable to make any distinction between prisoners from that and other portions of Germany.

9. BERNE AGREEMENT

The War Department cabled on July 30, 1918, that the United States Government was entering upon a conference with representatives of Germany concerning the whole question of prisoners of war, both military and civilian, the conference to begin at Berne about August 25. Maj. Gen. Francis J. Kernan was selected by the Secretary of War as the head of the delegates representing the War Department, the Chairman of the Mission being Mr. John W. Garrett, Minister at The Hague.

As mentioned in several other parts of this report, a number of important questions relative to prisoners of war were left unsettled pending the outcome of these negotiations. As a result of the conference an elaborate agreement covering the internment, treatment and repatriation of prisoners of war, sanitary personnel and civilian prisoners, was signed at Berne on November 11, 1918. It was provided that the agreement would go into effect seven days after both governments had notified the Swiss Federal Government of their approval. As the armistice was signed on the same day and provided for the release of American and Allied prisoners without reciprocity, the agreement was never ratified.

Although its provisions were not binding, the Berne Agreement was used as a guide in the settlement of several questions about prisoners of war which arose during the Armistice.

10. TAKEN DURING ARMISTICE

a. In Belgium

In the Germans' withdrawal after the signing of the Armistice they left behind several hundred sick and wounded, together with the sanitary personnel who had been

caring for them in temporary hospitals at Virton and Arlon, Belgium. In December the Belgian Government requested the evacuation of these buildings in order that they might be restored to their original uses. The request was granted and the enemy personnel was transferred by hospital train to the American Hospital Center at Mars on January 3.

The Permanent International Armistice Commission ruled that any sick and wounded combatants left behind because they were not transportable at the time of the German withdrawal could be returned to Germany, while others were considered to be prisoners of war. The right of repatriation of sanitary personnel, in so far as their services were no longer needed, was recognized under the Geneva Convention. The Commanding Officer at Mars having reported that none of the sick and wounded had been transportable at the time of the German withdrawal and that the services of none of the sanitary personnel were needed, orders were issued to return them all to Germany. The majority of them were repatriated on January 24, but through a misunderstanding of instructions, 142 of this group had been transferred to the Central Prisoners of War Enclosure prior to that date and were not repatriated until March 24.

b. In Occupied Germany

The Third Army in its occupation of German territory found a number of hospitals containing sick and wounded German soldiers who had not been transportable when the German Army withdrew. They were returned to Germany as soon as their condition permitted.

The Third Army also captured a number of Germans who did not keep up with their retreating forces and who were, of course, treated as prisoners of war in accordance with Art. 2 of the Armistice Agreement.

11. REPATRIATION

a. Sick and Wounded

During the Armistice the Germans made continued appeals to Marshal Foch, through the Permanent International Armistice Commission, for the repatriation of all German prisoners and especially of those permanently disabled; this, in spite of Art. 10 of the Armistice Agreement which stated that the repatriation of German prisoners of war will be regulated upon the conclusion of the preliminaries of peace. A typical note from the Germans on this subject will be found in the report of February 22 from the American Representative, P. I. A. C. In the same report he records an informal conversation with a member of the German Commission in which the latter admitted that the Germans had no right to expect that such requests would be granted but that they were made because of a widespread popular demand in Germany for the release of their prisoners.

Marshal Foch made no reply to these requests until March when he authorized the repatriation of seriously wounded and sick. The Provost Marshal General was instructed on March 21 to return to Germany all enemy prisoners whose physical condition was such that they were unfit for further military service or unable to perform useful work. A preliminary estimate indicated that there would be about 3,000 prisoners coming under this classification, and arrangements were made to return them to LIMBURG-am-LAHN in American hospital trains, beginning April 8.

In the meantime there had been returned to Germany in January, through a misunderstanding of instructions, 68 sick and wounded prisoners of war who happened to be at the hospital center at MARS at the same time as the sick and wounded taken in Belgium * * *

b. Others

The repatriation of enemy prisoners of war, other than the special classes already mentioned, is a matter to be determined by the Peace Conference. At the time that this report is submitted the conference has not yet completed its labors and the future disposition of enemy prisoners still in American custody is unknown.

CHAPTER II

AMERICAN PRISONERS OF WAR

1. DURING HOSTILITIES

a. Care of Those in Captivity

A cable from the War Department on July 23, 1917, mentioned the need of extra food for any prisoners who might be captured by the enemy and suggested that the question be studied at once. A later cable, September 28, raised the same question and directed that recommendations be sent. In reply the War Department was advised on October 19 that the American Red Cross was arranging to ship to BERNE sufficient food for 5,000 prisoners for six months and that the American Legation at BERNE was arranging to send it to prisoners as needed.

On November 24, the Chief Quartermaster submitted to the Chief of Staff a report covering the arrangements made for the care of American prisoners in Germany by the Red Cross and by a special representative of the State Department attached to the American Legation at Berne. In this report it was recommended that all men be given serial numbers, to aid in identification, a measure which was later adopted by the War Department and published to the A. E. F. in G. O. No. 27, A. E. F., February 12, 1918.

The War Department cabled on July 22, 1918 that all members of the Army and persons serving therewith should be cautioned, in case of capture by the enemy, to communicate promptly their names and prison addresses to the American Red Cross at Berne. This was published as Sec. III, G. O. No. 127, A. E. F., August 2, 1918.

The activities of the Red Cross for American prisoners in Germany were described by them in a personal letter to the A. C. of S., G-1, on July 31, 1918. Through the Berlin Red Cross and the International Red Cross at Geneva, an American Red Cross committee at Berne received lists of all American prisoners taken by the German forces. As soon as a prisoner was located he was sent a package of food, tobacco, clean underclothing and toilet articles, and thereafter two packages were sent him each week. A system of return postcards showed that 85% of the packages were received by the addresses.

b. Protection of Sanitary Personnel, etc.

In his memorandum of September 30, 1918 on the subject of enemy sanitary personnel, the Judge Advocate outlined the measures which, under the Geneva Convention, should be taken to insure proper protection of our own sanitary personnel and members of Voluntary Aid Societies, if captured. On October 3 the Chairman of the Special Diplomatic Mission at Berne was asked whether the American Government had given adequate notification to the enemy governments that members of the American Red Cross were entitled to protection under the Geneva Convention, and whether any other societies had been included in such notification. In reply it was stated that the German Government had been notified through diplomatic channels that the following were authorized relief

societies of the United States Government during the war: the American Red Cross, the Y. M. C. A., the National Catholic War Council with the K. of C. operating under it, the Jewish Welfare Board, and the Salvation Army.

The Chief Surgeon on October 30 was sent a copy of the Judge Advocate's memorandum of September 30 and his attention invited to the paragraph in which was described the necessity of furnishing properly stamped brassards and documents to all Sanitary Personnel. He was asked whether these provisions of the Geneva Convention were met with respect to Medical Department personnel and Red Cross personnel engaged in similar work. His reply on November 9 was that the Medical Department personnel was properly protected, although he doubted whether all the requirements were met in the case of Red Cross personnel. This applied only to the personnel of the Red Cross engaged in the kind of work described in the Geneva Convention, it being understood that other members of the organization performing other services for the aid and comfort of the Army were entitled to no protection. The Armistice having been signed before the receipt of this letter, no further action was taken.

2. REPATRIATION

a. Through the lines.

Immediately after the Armistice was signed large numbers of Allied prisoners held in the German lines were released without prior notice and started toward the Allied lines. On November 15 a telephone message from Allied General Headquarters directed that released soldiers and civilians crossing the lines be stopped by barriers and sent to sorting stations. The next day telegrams were sent to the three Armies and to separate units directing them to send released American prisoners coming into the lines to the four regional replacement depots at Saleux (Somme), Chelles (Seine-et-Marne), Revigny (Marne) and Chaudeney (Meurthe-et-Moselle). The same information was given to the French, British and Belgian Missions. The measures taken with regard to Allied prisoners crossing the lines are described elsewhere.

Instructions were sent by mail and telegraph on the 17th to the commanding officers of the four regional replacement depots, to make suitable reports on released prisoners for the Central Records Office and to release none of them until proper records had been made.

At the request of the French Mission on November 18, detachments of two officers and four men were sent to each of the three groups of French armies to assist in the sorting and care of released Americans. The detachment with Group of Armies of the East was later very active in connection with the return of prisoners from Southern Germany.

Telegrams to the four regional replacement depots on November 22 directed them to handle all returning American soldier prisoners who were in good physical condition in the same manner as soldiers evacuated from hospital, and to send those not in good physical condition, either to hospitals or to leave areas for a rest. The following day they were directed to send all released naval prisoners to Brest to report to the Commander of the U. S. Naval Forces in France. Released civilians, most of whom were members of the Merchant Marine, were ordered reported to the Consul General at Paris.

A telephone message from Allied General Headquarters on November 25, requested that suitable personnel and supplies be sent to Lyon and Besancon, where prisoners repatriated via the German-Swiss frontier would be grouped, to assist in caring for Americans. In accordance with this request G-1 ordered a field officer, a junior officer, two non-commissioned officers and eight privates sent to each of these cities and G-4 was requested to send a Quartermaster, two Medical officers and ten soldiers of the Medical Corps to join each detachment. In view of other measures taken for the repatriation of

Americans through Switzerland, these two detachments had very little to do, and were later withdrawn.

The Commanding General of the Third Army, which was then advancing through Luxembourg, telegraphed on November 25, that he had received a report that there were 1,000 wounded Allied soldiers, among them 157 Americans, in hospital at Treves, who were in dire need of proper food. He desired to send a field hospital ahead of the army to handle the situation and requested instructions. This message was repeated to the American Representative, Permanent International Armistice Commission, with the request that he secure permission from the German authorities for the Red Cross to send food, clothing and supplies to Treves, with the necessary personnel to handle their distribution. A reply on November 29 stated that the German High Command had granted the authority requested and the matter was then turned over to G-4 to handle in conjunction with the Red Cross.

b. Through Switzerland

The American Section of the Permanent International Armistice Commission, one of whose duties was to arrange the details of the repatriation of American prisoners of war, left Chaumont for Spa on November 15. Before this Commission had been able to make definite plans with the German authorities, a telegram from the American Red Cross Commissioner for Switzerland on November 24 reported that his representative had visited the camp at Rastadt and found there 2,300 American prisoners, well organized, well clothed and in excellent spirits. The German authorities at Rastadt had expressed a willingness to deliver these prisoners immediately to the Rhine bridge at Selz and would transfer 19 American officers from Karlsruhe to Rastadt to take charge of the journey. It was recommended that a train be sent to Selz to transport these men and that this action be taken immediately without waiting for a general plan of repatriation to be worked out by the P. I. A. C.

The above message was immediately repeated to the P. I. A. C. with the statement that no action would be taken until it was known whether this program was authorized by the proper authorities and met with the approval of the Commission. The P. I. A. C. replied on November 26 that the plan to evacuate American prisoners through Switzerland was approved by them and by the German High Command, who had telegraphed to Berlin accordingly. It was stated, furthermore, that any future measures to get American prisoners out of Germany as quickly as possible had the general approval of the Commission, in view of the relatively small numbers involved, and it was recommended that the Red Cross take a vigorous initiative without reference to the P. I. A. C., unless complications should develop.

The above telegrams were at once repeated to the Military Attache at Berne and he was told that it was desired to take prompt advantage of the approval of the P. I. A. C. by withdrawing through Switzerland to France at the earliest possible date every American then in Germany. He was asked to arrange, either directly or through the Red Cross, to locate all Americans and to transport them to the French border where they would be met by fully equipped hospital trains. He was authorized to sign receipts for prisoners and was told that the cost of transportation and of all supplies necessary for the comfort and welfare of the prisoners would be paid for by the Army. He was impressed with the importance of carrying out this work promptly and thoroughly and of giving all possible care and attention to the returning prisoners, particularly those sick or wounded. While the cooperation and assistance of the Red Cross would be greatly appreciated, it was desired that the entire movement be under the control of the Military Attache, acting under general instructions from G. H. Q.

At the same time the P. I. A. C. was advised of this plan and told that it was hoped there would be no other plan suggested nor any interference by the Germans, and

that no Americans would be sent to the northern ports or to other points distant from Switzerland.

Telegrams of November 27 from the Military Attache and of November 28 from the Red Cross Commissioner at Berne stated that the Swiss officials had agreed to the plan outlined above and that fully equipped trains, including hospital cars, would be provided by the Swiss government to bring the Americans from Rastadt through Switzerland to Bellegarde, all costs of transportation to be paid by the American government.

This plan was executed without difficulty, G-4 providing for the movement from Bellegarde by American hospital trains. The first train-load, consisting of 196 officers and 53 orderlies, together with French and British officers and orderlies, passed through Switzerland on November 29 and were taken to the hospital center at Allery. The remaining train loads were sent via Lyon to the hospital center at Vichy and the entire movement was completed early in December.

The War Department had inquired by cable on November 13 how American prisoners were to be repatriated. Reply was made on the 15 that the conditions of repatriation would be fixed by the Permanent International Armistice Commission and that the War Department would be kept informed. A cable on the 27th described the steps being taken to evacuate American prisoners through Switzerland and further reports of the progress of events were made by cable on November 29, and December 3, 5, 12 and 15.

c. Through the Northern Ports.

The Permanent International Armistice Commission was asked on November 18 what arrangements were being made for the return of American prisoners. The reply was that the Germans could deliver approximately 2,000 Americans at Rotterdam on one week's notice. The P. I. A. C. was then advised on November 23 that it was not desired to return released prisoners to the United States direct from Rotterdam, nor until they had received proper care and attention, which could not be given at the base ports in France, where they would debark. The Commission was therefore requested to arrange with the Germans to send these prisoners by train to Treves, where they could be met by the Third Army.

On November 27, the P. I. A. C. telegraphed a list of the North Sea and Baltic ports to be used for the evacuation of Allied prisoners and gave the number of Americans which would pass through each. At that time the plans for evacuating the camp at Rastadt by way of Switzerland were being completed and it was not known by the P. I. A. C. whether the figures given by the Germans included the American at Rastadt or not. In any event, it was stated, the evacuation of certain isolated groups by way of the ports would be necessary because of the shortage of railway material and the fact that some Americans were in mixed camps with French and British prisoners.

G-1 replying to the above message on the 28th, asked the P. I. A. C. to advise G. H. Q. promptly if any Americans reached the ports, so that ships could be sent for them without delay. The following day the P. I. A. C. reported that some Americans had already been evacuated by sea in British ships and asked whether the remainder should also be evacuated with the British or held for American ships. This telegram was repeated to the Commanding General, S. O. S., who had previously been directed to confer with the Commander of the U. S. Naval Forces in Europe and arrange for the care of any Americans arriving at the ports. He was asked to advise G. H. Q. as soon as arrangements had been completed and was also directed to arrange for the necessary care of all Americans evacuated in British ships.

The Commanding General, S. O. S., stated on December 3 that arrangements had been concluded with the British by which the latter would transport to England all American prisoners in the vicinity of the northern ports, at the same time that they moved their own large prisoner of war personnel. Arrangements for their care upon arrival in

England had been made by the Commanding General, Base Section No. 3. Telegrams were then sent to the Military Attache at Copenhagen and The Hague asking them to give necessary attention to Americans who might pass through Denmark and Holland with the British. The Red Cross was also requested to send representatives to Denmark and Holland, which was done. In the meantime the prisoners in Rastadt and vicinity were being evacuated through Switzerland, as described elsewhere, leaving only a relatively small number to be sent to England with the British.

d. Search for Isolated Cases

In addition to the measures described above for the evacuation of American prisoners by way of Switzerland and the northern German ports, every effort was made to locate any isolated individuals who might be scattered throughout Germany.

On November 29 the Military Attache at Berne was requested to organize, with the Red Cross, a thorough search of all occupied territory south of the American Third Army zone. The following day he was advised that permission to enter Germany could be secured through the German Military Attache at Berne, this information having been transmitted from the German government through the Permanent International Armistice Commission.

On December 5 two officers from G-1 proceeded to Alsace and on the 8th, with a medical officer from G-4, visited the prison camp at Rastadt, which was at that time partially evacuated. On their recommendation, G-4 was requested to establish a medical base at the Rhine bridge at Selz, for the purpose of caring for any stragglers who could not be included in the main movement through Switzerland. Six heavy ambulances, a motor truck and a touring car, with the necessary personnel and supplies for six weeks, were sent to Selz on the 10th and through the P. I. A. C. permission was received from the German authorities for the ambulances to enter Germany. The work of searching Southern Germany for isolated Americans was done with the cooperation of a medical officer of the Swiss Army, who had a list of all hospitals in the area. At the same time, the Military Attache at Berne arranged for the evacuation of any who might not come through Selz, by means of Swiss Sanitary trains which were to bring out French prisoners.

On December 10 the Commanding General, Third Army, was directed to search for scattered Americans in front of his area and as far to the north and south as possible, and this search resulted in the discovery and evacuation of a number.

Under the direction of General Harries, who reached Berlin December 8, a thorough search was made for all isolated cases. On the 10th the Red Cross at Berne sent a representative to Berlin to report to him with a complete prison list and all other information in their possession. Through General Harries' efforts a number of stragglers were located throughout Germany and evacuated.

3. SUBSEQUENT MEASURES

a. Commission in Berlin

The Permanent International Armistice Commission on December 3 reported that an Allied Committee to handle the repatriation of prisoners of war was being constituted at Berlin and suggested that a suitable representative be sent to represent American interests. G-1 recommended to the Chief of Staff that an officer of high rank be sent and on December 4 Brig. Gen. George H. Harries left for Berlin via Spa.

The repatriation of Americans having been almost completed by that time, Gen. Harries' efforts were largely devoted to caring for Russians, Serbians, and Roumanians. An account of these activities will be found in another section of this report. His work in connection with the search for American stragglers, the completion of records,

the location of graves and the return of personal effects is also described under appropriate headings.

b. Settlement of Pay Accounts

On November 8 the War Department was asked whether American officer prisoners of war were being paid by the German Government in accordance with the agreement referred to in G. O. No. 81, W. D., August 28, 1918. The reply was that there was no information of record, but that the Legation at Berne had been requested to inquire. The Armistice had then been signed and no information on the subject was received through neutral diplomatic channels.

As the returning officers and men were in most cases penniless, G-4 was requested on December 5 to arrange for substantial payments on account, subject to final adjustment. On December 12 the Permanent International Armistice Commission was directed to obtain from the German Government a complete statement of money paid to American officers while in captivity. Such a statement was forwarded by the P. I. A. C. on February 26, 1919, and turned over o G-4.

On January 31, the P. I. A. C. reported having received information that the prisoners of war released by Germany had not in all cases been paid, before their release, money due them for labor performed or cash deposited. A plan was then drawn up for the presentation to the German authorities of due bills or receipts in the lands of repatriated prisoners for payment. This was published as Sec. I, Bul. No. 19, A. E. F., March 8, 1919. The War Department was advised of this action and told that any such receipts held by released prisoners who had returned to the United States should be forwarded to the Chief Quartermaster, A. E. F., for collection.

c. Miscellaneous

The War Department on January 8 directed that affidavits be secured from any repatriated American prisoners of war who claimed to have suffered a property loss or to have been subjected to treatment not in accordance with International Law while in captivity. This was repeated to all units in the A. E. F. with instructions to arrange for the immediate interrogation of all repatriated prisoners and the forwarding of affidavits to G. H. Q. The same instructions was published on January 15 as Sec. I, Bul. No. 2, A. E. F., 1919. A considerable number of such affidavits were secured and forwarded to the War Department.

On December 20 the P. I. A. C. was asked to secure from the German Government the following:

(a) A list of all American prisoners of war who had been condemned to death or imprisonment or any other punishment.

(b) A list of all prisoners who had died in captivity.

In response to this request, the P. I. A. C. transmitted on March 1 a statement from the German War Office that no American prisoner of war had ever been judicially punished while he was in German hands. On January 27, Gen. Harries was authorized to employ civilian experts to check up records and complete the prisoner of war reports.

Gen. Harries on January 13 recommended that an officer with necessary assistants be sent to Berlin to make a final search for isolated Americans and to locate and mark suitably the graves of those who had died. In accordance with this recommendation a Field Officer with an Army Field Clerk and four soldiers were sent to Berlin on the 15th.

The P. I. A. C. was directed on January 11 to make every effort to secure the return of personal effects of Americans who had died or been killed and buried behind the German lines. As Gen. Harries experienced some difficulty in securing such effects, he

was authorized on February 14 to make a reciprocal agreement with the German authorities on the subject.

On March 21 the American Representative, P. I. A. C. advised the German authorities that it was desired to remove the bodies of all Americans buried in Germany and requested a list showing the location of all graves and a detail of one or more German officers to cooperate with American officers in arranging for the removal of the bodies.

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CHAPTER III

ALLIED PRISONERS OF WAR

1. REPATRIATION TO FRANCE

Immediately after the Armistice was signed, large numbers of Allied prisoners of war were released by the Germans without notification and allowed to cross the Allied lines. The French and British were easily taken care of and turned over to their own military authorities. Several thousand Russians, however, presented an embarrassing problem, as the American Armies were not prepared to receive and care for them, and it was realized that an unchecked flow of Russians into France involved serious danger of the spread of disease, Bolshevism, and anarchy. Recommendation was made to the Chief of Staff on November 14 that the subject to be taken up with the French with the suggestion that the German authorities be forbidden to release any prisoners of nationalities not represented by military organizations in France. On December 2, Allied General Headquarters issued instructions, which were immediately transmitted to the American Armies, that in future all Russians must be turned back to the German lines and that the Allied Armies would notify the German Armies facing them that no more Russians would be received.

In the meantime the First Army was directed on November 15 to treat with kindness, feed and house the Russians who had come into its hands, but to keep them from talking or associating with our own soldiers. A message from Allied General Headquarters was repeated to the three Armies on November 17, in which instructions were given to assemble all released prisoners at sorting stations and report them to the French authorities, who would give instructions for the disposition of all soldiers not Americans. Several thousand British, French, Belgians, Portugese, Italians, Roumanians, and Russians were received and cared for. The British prisoners were turned over promptly to the British authorities and all other to the French, except the Russians, three thousand of whom were kept and fed by the Second Army until the first of January, when the French took them over.

With the first train load of American prisoners brought out through Switzerland on November 29 were 374 French and British officers and 90 orderlies, who were suitably cared for and then turned over to their respective military organizations. At the request of the British Mission at French General Headquarters, Camp Hospital No. 100 at Belfort was instructed to arrange for the care and feeding of any British prisoners arriving in that region, until they could be evacuated by their own Army.

The War Department cabled on November 23 that the French had, through Colonel House, requested that the United States help in the transportation of allied prisoners of war from the northern ports. The attitude of the War Department was that while anxious to assist the French, the problem of returning the A. E. F. to the United States precluded the use of any large number of American transports for the repatriation of allied prisoners. It was directed that necessary action be taken to transport any Americans included among these prisoners and that any other recommendations be cabled. At that time the arrangements for getting the majority of the Americans out of Germany

through Switzerland were being perfected and negotiations were under way with the British for the transportation of the few Americans who might arrive at the northern ports. The War Department was advised of these measures on November 29 and December 3 and recommendation was made that no troop ships be lent to the Allies for the transportation of their prisoners until ships were available in excess of those necessary to carry American troops home from France.

2. COMMISSION IN BERLIN

The repatriation of American prisoners of war having been rapidly completed, Brig. Gen. George H. Harries, the American member of the Interallied Commission for the Repatriation of Prisoners of War in Berlin was detailed in the latter part of December to supervise the evacuation of Serbians and Roumanians and also placed on a committee to take charge of the feeding of all allied prisoners. On December 27, he requested that the American Red Cross and the Allied Food Commission be asked to give their prompt attention to the relief of these prisoners. His request was transmitted to both organizations, who expressed their willingness to assist in this work.

General Harries telegraphed on January 16 that the repatriation of sick and wounded Serbians and Roumanians would be started in a few days and that they were to be sent home in German hospital trains which would return with sick and wounded Germans. It was desired that the examination of German prisoners and the selection of these to be repatriated be done by disinterested medical officers and General Harries requested that six American officers be sent by way of Berlin for that purpose. The request was approved by the Chief of Staff and forwarded to the Chief Surgeon.

3. RUSSIAN CAMPS IN GERMANY

a. Allied Control

An Interallied agreement on January 13 established a Commission charged with the control of Russian prisoners in Germany. This Commission was composed of the Allied officers then in Germany for the purpose of repatriating their own nations, together with representatives of the aid societies of the United States, France, Great Britain and Italy. It was empowered to treat directly with the German Government on all questions relative to Russian prisoners of war, the Allied Governments reserving the right to order the repatriation of the Russians to such regions as seemed most suitable. This Commission was also made the subject of Article IV of the renewed Armistice Agreement executed at Treves three days later.

b. American Administrative Units.

The British and American representatives on the Commission mentioned above were chosen to undertake the administration of the Russian prison camps and decided that each of the 30 or 40 such camps should be managed by a detachment of four officers and 25 soldiers. It was agreed that the British and Americans should participate equally in this work and, at General Harries' request, twenty such detachments were formed, the first ten being sent into Germany on February 6 and the remainder on the 11th.

The situation had been described to the War Department on February 9, and the Secretary of War directed on the 12th that, in view of the international questions involved, the personal approval of the President, who was then in France, be secured before the detachments were sent into Germany. The War Department was advised on the 14th that the President had approved this action and that the detachments were for camp ad-

ministrative purposes only and not to be used for escorting prisoners through Germany to Russia.

Later in the month, at General Harries' request, a number of additional medical officers, with equipment, were sent to Germany for service in the Russian prison camps.

c. American Red Cross Commission.

Early in January the Red Cross outlined a plan to send a Commission to Germany to assist in the care and feeding of Russian prisoners, under General Harries' direction. On the first of February they stated that the Commission was expected to leave in a short time but that, because of their limited resources, the work would be largely personal service.

At the request of the Red Cross an Army officer was detailed to assist the Commission in its preparations and to accompany it into Germany. The Commission left Paris on a special train for Berlin on February 14, taking with them a limited quantity of supplies.

d. Food Supplies.

As early as December 28 a telegram from General Harries describing the urgent need of food in the Russian prison camps was repeated to the Red Cross and the Allied Food Commission requesting that they give the matter their attention.

A similar telegram from General Harries was sent these two organization on January 7. On February 1, the Red Cross stated that they were financially unable to furnish the necessary food and that the Allied Food Commission, to whom they had explained the situation, had advised that they expected to furnish the supplies either by direct distribution or through contract with the German Government.

Later in the month the Food Commission reported that arrangements had been made with the French Government to furnish the funds for the food supplies, and this information was transmitted to General Harries on the 24th. He was further advised on the 27th that the Army had assumed no responsibility for procuring the necessary food, but was interested only in being kept advised of what was being done.

Replying to a letter from Mr. Herbert C. Hoover of the Allied Food Commission, dated March 5, in which he sought to place the responsibility for the feeding of Russian prisoners on the American Army, the Commander-in-Chief on the 8th stated definitely that the Army could not assume that responsibility, as no authority existed for such action. Mr. Hoover was assured, however, that the Army would give him all possible cooperation by selling any supplies that could be spared and by detailing officers to assist in the work. The Chief of Staff on March 11 directed the Chief Quartermaster to get in touch with Mr. Hoover's Commission and to sell them what supplies could be spared, under the conditions laid down in the Commander-in-Chief's letter mentioned above.

e. Repatriation

On April 10 the Supreme Allied War Council decided to give the German Government complete freedom to repatriate the Russian prisoners of war, stipulating only that none would be repatriated by force and that all who left would be provided with sufficient food for the journey.

C-in-C Rept. File: Fldr. 62: Report

Criminal Investigation Division

GENERAL HEADQUARTERS, A. E. F.,
Chaumont, Haute-Marne.

[Extract]

Early History: The Division of Criminal Investigation was created by order of the Provost Marshal General of the American Expeditionary Forces on May 11, 1918, for the purpose of detecting crime, apprehending criminals and preventing crime within the American Expeditionary Forces and territory occupied by them. It was the intention to inaugurate within the department of the Provost Marshal General a force of detectives whose special duty it would be to conduct inquiries into cases of crime or suspected crime reported to it through official channels, similar to the detective departments of police administrations in civil affairs. Headquarters of the division were established at the office of the Provost Marshal General. The Chief of the Division was the technical adviser of the Provost Marshal General on all questions arising from criminal investigation work. The operatives of the Division were detailed by the various provost marshals in France from soldiers of the military police corps who were available, without special regard to previous experience along investigating lines. An officer was designated by each provost marshal to assume control of the operatives within his section, and he became the technical adviser of such provost marshal. Groups of this Division were placed under the supervision and control of their respective provost marshals, but at this early stage in the history of the Division inadequate consideration was given to the need of skilled personnel. It had been presumed that each provost marshal would select a group of members of the military police and assign them to this highly specialized work with his section, which duty they would perform exclusively. However, the groups and detachments thus established were widely scattered and at that time it was impracticable to train operatives. Experience as criminal investigators was an essential qualification in operatives but it was impossible at that time to make an extended search for experienced personnel. Such was the organization of the Criminal Investigation Division in its formative stage. Its deficiencies were many, but chief among them was the absence of centralized command and of individuality of operatives. The effort to feather-in the operations of crime investigators with the work of other units of the Military Police Corps was neither logical nor successful, and the Division was never fully officially recognized until General Orders No. 217, G. H. Q., were issued on November 27, 1918.

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C-in-C Report File: Fldr. 401: Report

Final Report of the Acting Judge Advocate General for the American Expeditionary Forces

Chaumont, Haute-Marne, May 31, 1919.

From: The Acting Judge Advocate General for the American Expeditionary Forces.

To: The Commander-in-Chief of the American Expeditionary Forces.

[Extract]

Sir:

I have the honor to submit the following report of the Branch Office of the Judge Advocate General's Department in Europe, from the date of its establishment to the close of business on May 31, 1919.

I. ESTABLISHMENT, JURISDICTION, AND PURPOSE

The Branch Office of the Judge Advocate General's Department for the American Expeditionary Forces in Europe was established at General Headquarters for the American Expeditionary Forces, CHAUMONT, France, pursuant to Section II of General Orders 7, War Department, January 17, 1918; and began to function on March 7, 1918.

Briefly stated, the initial jurisdiction and purpose of its establishment was to examine and review the records of trial of all general courts-martial, in which a sentence of death, dismissal, or dishonorable discharge was imposed, and also the records of trial of all military commissions originating in the American Expeditionary Forces, in order that such records as were found to be incomplete should be returned by the Acting Judge Advocate General to the proper commanding officer, and the proper officer advised of any defect or irregularity which rendered the findings or sentence invalid or void, in whole or in part, to the end that any such sentence or part of sentence so found to be invalid or void should not be carried into effect. When the review made by this office determines there is no illegality, or only such illegality as can be cured by action of the reviewing authority, the proper officer is notified and action is taken accordingly. The office was established so as to insure as little delay as possible in the execution of military sentences. All records in which action is complete, together with the review thereof by the Acting Judge Advocate General, and all preceedings thereon, are forwarded to the Judge Advocate General of the Army, Washington, D. C., for permanent file.

Section IV General Order 84, War Department, September 11, 1918, provided that the execution of all sentences, in which death, dismissal, or dishonorable discharge was imposed, should be stayed pending the review of the record in this office, and that any sentence, or any part thereof, found upon review to be illegal, defective, or void, in whole or in part, should be disapproved, modified, or set aside in accordance with the recommendation of the Acting Judge Advocate General for the American Expeditionary forces in Europe.

Under paragraph two of War Department Cablegram 3020-R, March 25, 1919, the foregoing-mentioned orders of the War Department were amended, as shown in General Orders 54, G. H. Q., A. E. F., March 25, 1919, to read as follows:

> Par. 2. The last subparagraph of Sec. 2, G. O. No. 7, War Department, series 1918, as amended by Sec. 4, G. O. No. 84, War Department, series 1918, this day amended to read as follows: The records of all general courts-martial and of all military commissions originating in the American Expeditionary Forces will be forwarded to the said branch office for review, and it shall be the duty of the said Acting Judge Advocate General to examine and reviex such records, to return to the proper commanding officer for correction such as are incomplete, and to report to the proper officer any defect or irregularity which renders the finding or sentence illegal or void in whole or in part, to the end that any sentence or any part thereof so found to be illegal or void shall not be carried into effect. The execution of all sentences involving death, dismissal, or dishonorable discharge shall be stayed pending such review. The said Acting Judge Advocate

General will forward all records in which action is complete, together with his review thereof and all proceedings thereon, to the Judge Advocate General of the Army for permanent file.

II. PERSONNEL AND ORGANIZATION

Brigadier General W. A. Bethel, Judge Advocate for the American Expeditionary Forces, was in charge of the Branch Office of the Judge Advocate General's Department in Europe, as Acting Judge Advocate General for the American Expeditionary Forces, from March 7, 1918, the date upon which the office began to function, until April 30, 1918, at which time Brigadier General E. A. Kreger, who reported for duty as assistant to General Bethel on March 26, 1918, was appointed Judge Advocate General for the American Expeditionary Forces and assumed charge.

General Kreger continued in charge of the office from May 1, 1918 until March 1, 1919, on which date he received orders from the War Department, Washington, D. C., relieving him from duty and directing him to proceed to Washington. The order relieving General Kreger also revoked General Order 7, War Department, 1918, and thus discontinued the Branch Office of the Judge Advocate General's Department for the American Expeditionary Forces in Europe. The office, however, was reestablished by orders from the War Department, containing paragraph 2 of the War Department Cablegram 3020-R, dated March 25, 1919, quoted above. By the same order Colonel Herbert A. White was appointed Acting Judge Advocate General for the American Expeditionary Forces and placed in charge of the office, in which capacity he has been serving up to the present time.

During the period when General Bethel was Acting Judge Advocate General for the American Expeditionary Forces, from March 7, 1918 to April 30, 1918, the duties of the office of the Acting Judge Advocate General for the American Expeditionary Forces were discharged by the personnel of the office of the Judge Advocate of the American Expeditionary Forces. When General Kreger was made Acting Judge Advocate General of the American Expeditionary Forces on May 1, 1918, he was assisted by one officer and a clerical personnel consisting of two battalion sergeants major of the Judge Advocate General's Department.

As the volume of work increased with the steady growth of the American Expeditionary Forces, it was necessary to increase the personnel of the office from time to time, until at the time of the publishing of G. O. 84, War Department, September 11, 1918, the commissioned personnel consisted of six officers and a clerical force of eight men. The influx of work increased rapidly thereafter and it immediately became apparent that the force then on duty was not large enough to do all the work. To meet the situation several Judge Advocates of the various divisions were assisted to temporary duty in the office from time to time, and, in addition thereto, officers of other branches of the service, with legal experience were assigned and attached to the office to assist. In the meantime General Kreger, on several occasions requested the Judge Advocate General of the Army at Washington, D. C. to send additional commissioned personnel from Washington to assist in performing the ever increasing amount of work of the office. In consequence thereof, during the month of February, 1919, eighteen officers reported to General Kreger for duty in this office. The clerical section of the office was continually expanding also. On March 1, 1919, the date upon which General Kreger was relieved as Acting Judge Advocate General for the American Expeditionary Forces, and directed to return to Washington, the personnel of the office consisted of 29 officers, 14 army field clerks and 39 enlisted men. Since March 1 several of the officers and enlisted men then on duty in this office have been relieved, so that at the present time the personnel of the office consists of 20 officers. 12 army field clerks and 24 enlisted men.

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At first when the work was light, there was no attempt to organize the office into sections for the purpose of having certain officers specialize on certain classes of

cases. Up to February 10, 1919, the cases were assigned to the different officers irrespective of the character of the case. However, as the cases became more numerous, it became more and more customary for certain officers to handle certain classes of cases. Finally, upon the arrival of the large additional force of commissioned personnel from Washington, the office was organized by General Kreger along the following lines:

The office was divided into four sections, Section I, II, III and the clerical and stenographic section, with the Acting Judge Advocate General at the head of the office, assisted by a board of review and an executive officer.

The cases to be reviewed by this office were divided into three classes. All cases involving sentences of death, penitentiary, and dismissal were assigned to the 1st section; all cases involving sentences of dishonorable discharge were assigned to the 2d section; all cases involving sentences of officer, not carrying dismissal, and of enlisted men, carrying six months' or less confinement, with fines and forfeitures, disapproved convictions and acquittals were assigned to the 3d section.

All reviews written by the various sections were prepared either for the signature or approval of the Acting Judge Advocate General. Special cases and cases in which there were mooted points were referred to the board of review for opinion.

This organization was found to be very effective and efficient and has been continued to date.

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H. A. WHITE,
Colonel, Judge Advocate,
Acting Judge Advocate General.

C-in-C Report File: Fldr. 401: Report

Final Report of the Judge Advocate, General
Headquarters American Expeditionary Forces

Paris, France, August 19, 1919.

From: The Judge Advocate, A. E. F.

To: The Commander-in-Chief, A. E. F.

[Extract]

1. The following report is submitted of the operations of the Judge Advocate's Department from the time of the arrival of these headquarters in France, June 13, 1917.

ORGANIZATION

Each officer having the power to appoint general courts-martial had one or more judge advocates on his staff. The Articles of War having vested general court-martial jurisdiction in the commanders of armies, corps, divisions, and separate brigades, staff judge advocates arrived with such of those organizations as came from the United States. On account of the large number of troops that came to be maintained in France, which were not a part of any of the commands above named, it became necessary to vest court martial jurisdiction in certain commanders from time to time as the number of troops increased, and to organize judge advocates' offices in such commands. On September 1, 1917, general court-

martial jurisdiction was granted to the Commanding Officer of the Line of Communications, afterwards known as the Services of Supply; and on November 29, 1917, to the commanding officer of the United States Troops in England, which was later designated as Base Section No. 3, Services of Supply. During the year 1918, and prior to the signing of the Armistice, general court-martial jurisdiction was granted to the commanding officers of Base Sections Nos. 1, 2, 5, and 8, the Intermediate Section, and the Advance Section of the Services of Supply, and to the commanding officers of the District of Paris and of the United States Troops on the Murman Coast. After the signing of the Armistice, general court-martial jurisdiction was granted to the commanding officers of the Embarkation Center at Le Mans and the First Replacement Depot at St-Aignan. General court-martial jurisdiction was also granted to the commanding officer of the Army Artillery, First Army, in August, 1918. There were in all seventy-five general court-martial jurisdictions in the in the American Expeditionary Forces, each of which was supplied with one or more judge advocates, according to the tables of organization. During the period of hostilities the amount of disciplinary work was light, and many of the Judge Advocates' offices were operated by less than the prescribed number of judge advocates. Indeed, many of the officers of the Judge Advocate's Department were employed in inspections, in the regulation of traffic, and various other duties incidental to the operations of their commands. After the signing of the Armistice the disciplinary work was much increased and it became necessary to attach line officers who had been lawyers in civil life to the various Judge Advocate's Department were, however, detached from time to time for other duties of a legal nature, such as the Renting, Requisition, and Claims Service, the Finance Bureau and the Bureau of Civil Affairs in the Occupied Territory. In many divisions and other organizations the judge advocate, or one of his assistants, was appointed Renting, Requisition, and Claims Officer and the offices of the Judge Advocate's Department and the Renting, Requisition, and Claims Service were combined and operated by the same personnel. The clerical work of the Judge Advocate's Department was performed by noncommissioned officers of the Judge Advocate's Department, as provided by tables of organization, assisted, in some cases, by field clerks.

DUTIES

The duties of the Judge Advocate's Department in the American Expeditionary Forces can best be stated in the form approved by the General Staff for insertion in the Revised Staff Manual, as follows:

> It concerns itself with the administration of military justice through courts-martial and other military tribunals. It considers and adjusts claims, except those arising from transportation of troops and supplies. It gives advice upon questions of law arising either in the command, or through its relation to civil authorities or to other governments and their nationals. Its administrative activities are under the supervision of G-1, but the Commanding General and the General Staff call for and receive advice by direct correspondence. It submits its recommendations as to the action to be taken upon court-martial cases directly to the proper reviewing authority

Inasmuch as the department is organized primarily for the supervision of the administration of military justice through courts-martial, the matter of trials by general courts-martial will be first considered.

TRIALS BY GENERAL COURT-MARTIAL

[The report continues with a table showing the number of trials by general court-martial in the American Expeditionary Forces to include June 30, 1918.]

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It should be borne in mind that the number of troops in the American Expeditionary Forces was continually undergoing great variation. It rose from a little more than two hundred thousand in January, 1918, to about two million in November, 1918, and then diminished steadily. The number of troops in the A. E. F. on June 30, 1919, was three hundred and seventy thousand. The average number of troops in the American Expeditionary Forces during the year 1918 was considerably more the one million; and this average was maintained for the first half of the year 1919.

In 1917 and 1918 the number of trials by general court-martial in the American Expeditionary Forces was approximately one quarter of one percent of the average number of troops during those years. The number of general court-martial trials during the first six months of 1919 was about three-fourths of one percent per year of the number of troops. The number of trials by general courts-martial in the United States Army during the five years preceding the present war was approximately five percent per year of the number of troops in the Army. The small percentage of trials by general courts-martial in the A. E. F. as compared with the Regular Army before the war is so remarkable as to require comment. A few cases had to be dismissed, of course, for the reason that the witnesses, on account of sickness, wounds, return to the United States, or other causes, were not available. More important, however, was the liberal employment of the special court-martial. Conditions in the A. E. F. were very favorable to the use of the special court for the reason that the other urgent duties of officers made it inadvisable to convene general courts-martial except in cases where the jurisdiction of the general court-martial is exclusive, or in those cases where severe punishment appeared to be necessary. The use of the special court, as will hereinafter appear, was encouraged in General Orders No. 56, 1918, and it was there advised that cases of petit larceny could be properly punished under the existing conditions by the special court-martial. By far the most important cause, however, of the small number of general court-martial trials was the character of the troops. They realize the seriousness of their cause, and their patriotism and sense of duty, together with the hard service to which they were necessarily subjected, brought about such a state of behavior and discipline as to make the commission of crime extremely rare and but few trials necessary. Since the A. E. F. was a truly national army, the excellent behavior of the troops must be accepted as proof of the high standard of American citizenship.

The increase in trials after the signing of the Armistice over what it had been prior thereto was very marked, but by no means so great as was expected. It was but natural that the relaxation that followed the severe strain of 1918 should manifest itself in a lower state of discipline and that this should be aggravated by the soldiers' desire to return to the United States when hostilities ceased. The impossibility of sending the army home at once, or even for quite a while, produced considerable dissatisfaction. Notwithstanding these conditions, however, the number of trials by general courts-martial, considering the size of the army, was very small, and was only 3/20 as great as in times of peace preceding the war.

It became evident in the spring of 1918 that the methods of punishment usually employed in an army were not best adapted to war time conditions. Whether well-founded or not, there was a somewhat prevalent belief that some soldiers would commit offenses with a view to obtaining dishonorable discharge from the service and confinement in a disciplinary barracks, and thereby obtain their release from military service and its incident dangers. It was, therefore, deemed inexpedient to send soldiers convicted of offenses in combat organizations to a place of confinement either in the United States or France, except in those cases where a long penitentiary sentence only would fit the crime. It was deemed better that they should remain with their organizations, sharing the hardships and dangers of their more worthy comrades. General Orders No. 56, of April 13. 1918, was accordingly issued in terms as follows:

I. 1. Conditions of service in the American Expeditionary Forces necessitate policies as to punishment different from those which have heretofore obtained in our

armies. The law has authorized the President to prescribe maximum limits of punishment for times of peace only. (See Executive Order, Par. 349, Manual for Courts-Martial.)

2. Heretofore the punishment of dishonorable discharge with confinement for a term in the United States Disciplinary Barracks has been employed for serious cases where penitentiary confinement was not authorized. This punishment is not ad adapted to the conditions in the A. E. F. Hereafter, prisoners not sentenced to imprisonment in a penitentiary will be retained in Europe in order that their services may be here utilized and that early opportunity may be given them in proper cases to redeem themselves as soldiers. To this end reviewing authorities should freely exercise their power under the 52d Article of War.

3. In awarding punishments, it should be borne in mind that a soldier should not escape dangerous service by the commission of crime. Petty larceny and even other offenses involving some moral turpitude, which have heretofore been punished with dishonorable discharge and confinement, may, under existing conditions, be properly punished in a disciplinary way, leaving the soldier to perform military service either with his company or at such other place as the reviewing or higher authority may direct.

In combat units few cases will arise requiring dishonorable discharge. A sentence of confinement for six months at hard labor, or at hard labor without confinement in a combat unit, which is served by the soldier at the front is severe enough except in extraordinary cases. Where dishonorable discharge is not advisable, and the offense is not capital, the case should, as a rule, be disposed of by an inferior court-martial. Officers should not be withdrawn from their duties to constitute a general court-martial except when the offense can not be otherwise adequately punished.

4. Offenses against the persons or property of the inhabitants of France are much more serious than such offenses would be in our own country. They should be punished with the utmost rigor. When such an offense calls for a penitentiary sentence, it should be for a much longer time than would be awarded under normal conditions.

Absence without leave is an offense incomparably more serious now than in time of peace. Such absences not only give occasion for serious offenses, but whenever an offense is so committed it is brought to the attention of our Allies and tends to destroy the good repute of our Army. Therefore, every measure should be taken to prevent the soldier from absenting himself without leave, and when absent to apprehend him immediately, and the offense of absence without leave should be punished with severity.

Deadly weapons are carried by soldiers for the purpose of use against the enemy. Their employment to settle private dispute is equivalent to doing the work of the enemy, and such conduct should be followed by punishment much more severe than would be awarded under usual circumstances.

5. Since trial by court-martial tends to destroy the self-respect of the soldier. it should not be resorted to when other measures are adequate. For minor offenses not frequently repeated the power of the Commanding Officer under the 104th Article of War should be employed.

6. It is expected that the disciplinary powers of Commanding Officers under the 104th Article of War will be fully utilized, thereby reducing the member of trials by summary courts-martial; that the special court will be employed whenever the case is such that six months' confinement at hard labor under the special conditions now existing will meet the ends of justice; that members of combat organizations will not be sentenced to dishonorable discharge unless the sentence in-

cludes a term of confinement extending well beyond the probable duration of the war, and that commanding officers of all grades having prisoners under their control will co-operate to see that such prisoners share the hardships and dangers of their more worthy comrades. Normally a penitentiary sentence should not be given unless the term of imprisonment is ten years or more.

7. The reviewing authority will, in case arising in a combat unit, direct that a general prisoner who is not to be confined in a penitentiary be confined at the station where his unit serves, or at such other place within the reviewing authority's command as he may deem best.

While the foregoing order was in most part suggestive and advisory rather than mandatory, all officers exercising disciplinary powers were in accord with its provisions and immediately proceeded to carry it into effect. It resulted that nearly all men convicted of military offenses in combat divisions remained with their organizations and continued to perform their duty as soldiers. A great proportion of them were thus able to redeem themselves by honorable service in the course of a few weeks or months and to bring about the remission of their punishment. Many indeed rendered valiant service in action and were immediately released from the further operation of their sentences.

The difficulties of bringing soldiers to trial by general courts-martial were very much greater than would be expected among mobilized troops. The rapid movements and frequent changes of stations of the various commands, changes in personnel, effected by heavy replacements, together with evacuations of the sick and wounded to hospitals in central and western France, made it difficult in many cases to secure the witnesses. It was more necessary than ever that the trial should immediately follow the offense; but this was frequently impossible on account of the rapidly with which the operations were conducted. During the early part of 1918 our troops were employed mainly in trench warfare, and while a division was in the trenches there were cases that could not be tried by reason of the difficulty of assembling the officers necessary to constitute a general court-martial and obtaining the presence of the witnesses. Such cases were tried when the division returned to a rest area.

In the spring of 1918 the policy of sending to each division or corps a sufficient number of officers to constitute a general court-martial and to be employed on that duty alone was seriously considered. It was realized that officers employed upon this duty exclusively would so familiarize themselves with military law and the requirements of court-martial practice as to being about regularity in the proceedings, but that such officers would not appreciate conditions of service so well as officers belonging to the division in which the offense should be committed. Had conditions continued as they were then the employment of officers disabled by wounds as members of courts-martial was intended for the reason that such officers, after service at the front, could best understand the conditions of service there and would be most inclined to do justice in cases coming before them. The moral effect of trial by wounded officers rather then by officers of no combat experience was regarded as important. Competent officers who had convalesced from wounds were so much in demand for other administrative duties, however, that but one such court was organized, which was sent where most needed in the summer and fall of 1918.

From the beginning of the Argonne Offensive, on September 26, to the close of hostilities, on November 11, there were very few trials in the combat divisions. Indeed conditions were such as to make it generally impracticable to bring offenders to trial before division courts, and most of the offenses that were committed during the Argonne Offensive were tried in November and December. Had hostilities continued many months longer, it is certain that other means for the trial of offenses in the combat divisions would have had to be devised than the usual one of appointing division officers on division courts. Such conditions could have been met by the assignment to each division of a sufficient number of officers convalescent from wounds constituting permanent courts. I think it desirable that our law make provision for an additional court to those now authorized, to meet the condi-

tions of open warfare where troops are constantly on the march or in battle. The Acts of Congress of the Confederate States of America, of October 9, 1862, providing for a military court of three officers, and later acts amendatory thereto, are very worthy of consideration. In this connection it may also be observed that the field general court-martial of the British Army, usually composed of three officers, was employed in France during the war for the trial of serious offenses instead of the general court-martial analagous to ours, for which the British law also provides.

Under such conditions of warfare as obtained during the Argonne Offensive, only the most serious offenses should be tried by superior courts-martial, and it is almost imperative that those be tried immediately. The accused, together with all witnesses for the prosecution and the defense, should be sent at once to a court sitting as near the lines as practicable. Unless this is done, cases must frequently be dismissed by reason of the witnesses not being available. It is also most important that immediate example be made of the guilty; otherwise, disciplinary measures fail in their purpose.

From a comparison of the number of trials of officers and soldiers with the number of officers and soldiers in the A. E. F., it appears that the percentage of trials by general courts-martial was more than six times greater among the officers than among the enlisted men. It should not be inferred from this, however, that the standard of conduct was lower among the officers than among the soldiers. Under the Articles of War, officers can be tried by general courts-martial only. The great majority of offenses committed by soldiers are not only triable, but in fact are tried, by summary or special courts-martial. The figures in the above table, therefore, prove nothing as to the comparative conflict of the two classes of military persons.

In one respect the Articles of war have proved defective, I think, under war conditions, in not making sufficient provision for the punishment of officers for minor offenses. It has been noted that officers can be tried by general courts-martial only, and since it is contrary to good policy, and impracticable as well, to employ the general court for minor offenses, it follows that such offenses when committed by officers can only be dealt with under the 104th Article of War, which authorizes commanding officers to impose certain disciplinary punishments, not including, however, forfeiture of pay. The most effective of the disciplinary punishments authorized by the 104th Article of War is restriction to limits, which, in time of peace, consists in restricting the officer to his military post. It is impracticable to impose this punishment under such conditions as we have had in France. Officers' duties have been such that they must come and go, and seldom have officers been stationed where it was practicable to prescribe limits or compel their observance. I feel that there has been a real need of a power to impose a moderate forfeiture of pay upon officers for minor offenses. In the event of a future war. I think there should be a statute authorizing officers of general rank to impose a forfeiture of one half the monthly pay per month of officers under their command, not above the grade of captain, for minor offenses. This power would conform very closely to that now exercised by summary courts with respect to a soldier's pay, and in view of the right of appeal and other safeguards provided by the 104th Article of War, the power could not be greatly abused.

CLEMENCY

Under the 50th Article of War the unexecuted portion of a sentence could be remitted by the Commander-in-Chief so long as the person serving the same was in the A. E. F., whoever might have been the reviewing authority other than the President. So long as hostilities continued the power thus to mitigate or remit punishment was sparingly exercised. Early in 1919 the matter of general remission was taken up systematically, and Lieutenant Colonel Wm. Taylor, Judge Advocate, spent many weeks at the camps where the prisoners were confined conferring with the prison officers and examining the prisoners themselves, as well as the nature of their cases. Upon his recommendation the remaining portions of about

600 sentences were remitted in whole or in part. The sentences imposed by general courts-martial prior to the signing of the Armistice were generally more severe than those inflicted in time of peace or like offenses. Military courts appeared to regard theft or embezzlement of military property, absence without leave, and acts of violence against the civilian population as more serious than such offenses would be under normal circumstances, and to require, for purposes of example, severer punishment than usual. In the mitigation of these sentences the policy was adopted of reducing them as nearly as practicable to peace time standards, and to remit the whole where good discipline would not suffer by so doing.

COURT-MARTIAL JURISDICTION OF GENERAL HEADQUARTERS

The 48th Article of War authorizes the commanding general of the Army in the field to confirm, in time of war, a sentence of dismissal of an officer, and to confirm the sentence of death in the case of persons convicted in time of war of murder, rape, mutiny, desertion, or as spies. All sentences to death in other cases must be confirmed by the President before being put into effect. The 50th Article of War (Act of Congress of August 29, 1916) provided that "no sentence of dismissal of an officer and no sentence of death shall be mitigated or remitted by any authority inferior to the President." A number of death sentences having been adjudged by courts-martial in cases where commutation of the sentence was deemed appropriate. and immediate disposition of the same being desirable, it was requested by cable, July 28, 1918, that legislation be had authorizing the Commander-in-Chief of the American Expeditionary Forces to commute death sentences, including those requiring the President's confirmation. By Act of Congress approved February 28, 1919, the 50th Article of War was so amended as to provide that---

> When empowered by the President so to do, the commanding general of the army in the field, or the commanding general of a territorial department or division may mitigate or remit, and order executed as mitigated or remitted, any sentence which, under these articles, requires the confirmation of the President before the same may be executed.

The authority of the Commander-in-Chief to mitigate a sentence as authorized by the foregoing act was granted in cable, May 8, 1919.

By far the greater number of sentences that came before the Commander in Chief for his action were those of dismissals of officers, adjudged by courts appointed by division or other commanders and approved by them. But 64 officers and 87 soldiers were tried by courts-martial appointed by the Commander-in-Chief. 479 cases of dismissals of officers came before the Commander-in-Chief for the exercise of his confirming authority, and in 318 cases the sentence was confirmed and dismissal directed. In 45 cases the sentence was confirmed, but the execution thereof suspended, though in two of such cases the suspension was later vacated and dismissal ordered. In 17 cases the sentence was mitigated under the provisions of the recent enactment above quoted. In 99 cases the sentence of dismissal was disapproved or confirmation was withheld. Such disapproval was given in some cases for serious mistakes in law made at the trial; in others where the evidence was not deemed conclusive of guilt; and in a few cases, before the above enactment, the sentence was disapproved for the reason that it was deemed too severe in view of the nature of the offenses and their circumstances. 44 sentences of death came before the Commander-in-Chief for confirmation, and in 11 cases the sentence was confirmed and executed. In 10 cases the sentence was dissapproved, and in 11 cases the sentence of death was mitigated to imprisonment for life or a term of years. Prior to the enactment of the statute above quoted 12 death sentences which the Commander-in-Chief had the power to confirm were forwarded to the President with the recommendation that the sentence be commuted. Murder and rape were the only offenses for which the offender suffered the death penalty in the American Expeditionary Forces.

On receipt of instructions by cable July 12, 1919, expressing the President's desire that the execution of death and dismissal sentences be no longer ordered by the Commanding General, A. E. F., such of these sentences as were thereafter confirmed were submitted to the President under the 51st Article of War for his action, as were those also which had been confirmed but were awaiting the decision of the office of the Acting Judge Advocate General as to the legality of the trial. 31 dismissal cases and 4 death cases were forwarded pursuant to the provisions of the 51st Article of War.

JUDGE ADVOCATE'S OFFICE AT GENERAL HEADQUARTERS

The duties of the Judge Advocate's Office at General Headquarters were mainly advisory, as indicated above in the enumeration of its functions---that the department gives advice upon questions of law arising in the command or through its relation to the civil authorities, or to other governments and their nationals, and that such advice is given direct to the Commanding General and the General Staff. The questions of law arising in the A. E. F. were many and varied, as might be expected in a force of two million men. Questions coming before this office were, by reason of the strength of the command and the independence that it was necessarily called upon to exercise, much of the same nature as those which come before the Judge Advocate General's office at the War Department for solution. The instructions to the Commander-in-Chief from the War Department upon his leaving the United States vested him with the power of a commanding general of an army in the field. The powers of a general commanding an army in the field have, for manifest reasons, never been defined, either by statute or regulation. They must be as broad as the necessities of the situation require. And under instruction from the War Department, received from time to time, together with its evident acquiescence in the exercise of extensive powers by the Commander-in-Chief, it soon became the policy to determine all legal questions without reference to the War Department, except in cases where the action or decision by the President or Secretary of War by statute required. The independence of the General Headquarters was further increased by the delegation to the Commander-in-Chief of the very important powers, subject to confirmation, to appoint and promote officers below the grade of Brigadier General, and to discharge for inefficiency, officers holding temorary positions below that grade. These powers presented many questions under the Law of Office and Public Officers. Further reference will not be made in this report to the legal questions arising in the A. E. F. other than those which arose from the peculiar conditions in which our forces were serving.

ALLIED RELATIONS

For the first time in history the forces of the United States found themselves in the territories of other belligerents associated with them in the same cause. Our army has had much service, and indeed, in recent years, in foreign territory conquered from the enemy, and is quite accustomed to the law of military occupation. But the sovereign powers possessed by an army of occupation did not, of course, inure to our Army in France. It was in a friendly territory at the invitation of allied and friendly nations and possessed no governmental powers whatsoever except within its own forces. This condition presented many novel and interesting questions but the general broad and liberal view which the French and British authorities took, as I trust we did also, enabled all such to be solved and agreed upon to the perfect satisfaction of both parties. It would be entirely beyond the scope of this report to attempt to discuss or even enumerate the many questions which arose and which required a common understanding of the French and American Armies. And I shall only attempt to state and discuss briefly a few of the more important and most illustrative. There had been received from France a bare invitation to send our armies to cooperate with hers without any agreement whatsoever as to the legal relations of the forces and as to the status of an American Army on French soil. On inquiry, however, at the

French War Office, upon our arrival in France, it was found that the French view was precisely the same as our own; that under the general principles of international law members of the American Expeditionary Forces were answerable only to American tribunals for such offenses as they might commit in France. As the principle needed a somewhat broader scope, however, than its mere application to our Army in France, it was later agreed between the diplomatic departments of the governments that each should possess exclusive criminal jurisdiction over its land and sea forces whether in the territory of either nation or on the high seas. This agreement was published in Bulletin No. 13, G. H. Q., February 18, 1918.

To avoid such obstacles as there might be in the British law to the full and unrestricted exercise of jurisdiction of our courts-martial among our military forces in England, and to secure the cooperation of the British authorities, an order in council was issued on March 22, 1918, amending the Defense of the Realm Regulations. This amendment declared that:

> The naval and military authorities and courts of an ally may exercise in relation to the members of any naval or military force of that ally who may, for the time, be in the United Kingdom, all such powers as are conferred on them by the law of that ally.

Further provision was made for the arrest by British officials of American soldiers absent from their commands or committing other offenses, for the compulsory attendance of persons in Great Britain as witnesses before American military courts, and for the punishment of any person in Great Britain who might commit certain prescribed offenses to the prejudice of the American military forces.

The right of the civil and military authorities of France to arrest American soldiers absent without authority from their commands, or committing offenses to the prejudice of the civil population and beyond the immediate presence of their superiors, was never denied, but was, in fact, encouraged. On right of exclusive criminal jurisdiction among our own forces was deemed in nowise inconsistent with the exercise of the power of arrest by the civil or military authorities of France. For the protection of the person who might make the arrest, however, specific legal authority for making it was evidently desirable, and agreement was accordingly made by exchange of diplomatic notes, June 7 and July 3, 1918, between France and the United States whereby absentees and other offenders of the force of each nation could be arrested by the authorities of the other, the offender to be delivered to the authorities of his own army. The substance of this agreement was published in Bulletin 86, G. H. Q., A. E. F., October 31, 1918. The French authorities had theretofore requested the American Army to surrender to France such American soldiers (few in number) as had deserted the French Army or had failed to answer the call to the colors. It was not deemed appropriate to surrender these soldiers to the French authorities except such as had deserted from the French Army after the entry of the United States into the War, and a provision to this effect was incorporated in the agreement.

CLAIMS FOR TORTIOUS DAMAGES

It has not been the policy of our government to hold itself responsible for the tortious acts of its agents, and our own people, who suffer damages from the unauthorized acts of our military forces, must seek restitution against the offending individual. This rule does not obtain in France. Subject to certain limitations the French government recognizes its liability for the wrongful acts of its military forces. On arrival of these headquarters in Europe it was immediately apparent that, if the United States were to command the respect of its allies and do justice to their people, it must admit its responsibility for the wrongful acts of its forces and devise means at once to discharge that responsibility. The fact that the British had organized an efficient claims service and was promptly paying the injured parties for damages caused by its soldiers in France made it all the more necessary for the reputation of the United States and its Army that we should do likewise.

The Commander-in-Chief recommended accordingly on June 23, 1917, the early passage of a certain draft of law that would enable him to organize a claims service in the American Expeditionary Forces for the investigation and payment of such damages as might be caused by our own soldiers in France. There was considerable delay in the enactment of the statute, causing well-founded dissatisfaction upon the part of the French people and no little embarrassment to the officers of our Army. Commanding officers were enjoined to enforce the provisions of the 105th Article of war, providing for the payment of damages to the injured party from the pay due from the Government to the officer or soldier responsible for the damage. Notwithstanding a rigorous enforcement of the provisions of that Article of War, however, many deserving claims could not be paid for various reasons. On account of the rapid movement of the troops it was frequently impossible to ascertain the individual or even the organization responsible for the tortious act. The 105th Article of War provides only for injuries to property, and injuries to persons in the way of automobile accidents were not infrequent. And in some cases, for example fires, the pay of the soldier was inadequate to repair the damage. Pending the enactment of the proposed legislation, provision was made for the investigation of all claims which could not be adjusted under the 105th Article of War. The desired legislation was enacted April 18, 1918, and the Commander-in-Chief was authorized to make and publish the regulations necessary to give it effect. These were published in General Order No. 78, G. H. Q., 1918, by which the Renting, Requisition, and Claims Service was perfected.

The supplies for the French Army, including its shelter, are obtained by an exercise of the governmental power of requisition which is very carefully regulated by French law. In the early days of the American Expeditionary Forces such requisitions as were necessary to the American Army were made by the French authorities. In August, 1914, the French government had, however, authorized the Commander-in-Chief of the British Armies in France to exercise the power of requisition according to French law among the French people in the same manner and to the same extent as the French Army could do. Inasmuch as it was necessary to exercise for our Army the power of requisition whenever and wherever shelter and other accommodations for our troops were immediately required, application was made to the French government for officers of our Army to make requisitions which was granted November 27, 1917.

It was evident that many of the claims for damages would grow out of the billeting and other requisitioning of American troops, and following the experience of the British, who had recently theretofore combined their requisition service and claims service, it was deemed best to organize one service for requisitions and claims. Inasmuch as matters concerning the supply of our forces had, early in 1918, been transferred from General Headquarters to the Headquarters of the Services of Supply, the Renting, Requisition, and Claims Service was established at and made a part of the Headquarters of the Services of Supply.

Collisions between commercial vessels of France and England and vessel owned or chartered by the United States gave rise to a considerable number of claims against the United States, which required early investigation and settlement. In some cases the vessels were seized under process from French admiralty courts and in one or two cases officers actually gave bonds purporting to bind the United States in order to secure the release of the vessels. On representations to the French government, however, of the principle that such proceedings were against the United States itself and in violation of the rule that a sovereign cannot be sued without its consent, instructions were given by the French government that such seizures be not thereafter made, and the vessels were released and the bonds cancelled. After considering various methods by which provision might be made for the investigation and settlement of such claims, including the establishment of a United States court in Europe, these headquarters recommended that the United States and France establish a joint commission of injury under the provisions of the Convention between the two countries of August 3, 1911, for the consideration not only of the maritime

claims that might arise as a result of these collisions, but also for the determination of such other miscellaneous claims as might be brought by the inhabitants of France against the United States and which were not covered by the Claims Act of April 18, 1918, as well as claims which came under that Act but which the Renting, Requisitions, and Claims Service could not adjust to the satisfaction of the claimants. The Assistant Comptroller of the United States Treasury in Paris decided, however, November 6, 1918, that the Claims Act of April 18, 1918, was applicable to a claim for damages to a yawl owned by an inhabitant of France and damed in French waters by a U. S. transport launch. Inasmuch as nearly all of the collisions took place in territorial waters, the Renting, Requisition, and Claims Service, relying on said Comptroller's decision, was able to settle practically all claims arising out of maritime collisions.

OCTROI DUES

The French government renounced all import dues on materials imported into France by the United States for the use of our armies, but in the summer and fall of 1917 a number of cities in France made demands upon the American Army either directly or through diplomatic channels for the payment of octroi dues. The octroi is a form of municipal tax or duty which, under a law of 100 years standing, certain cities of France levy upon articles which enter them and are consumed therein. In general, foodstuffs, fuel, forage, and building materials are subject to the octroi. The amount of the dues varies in the different cities, being regulated to some extent by the municipal authorities, though all such regulation must be approved by the central administration. The purpose of the octroi is to meet the expense of the city, which it does in large part, thus relieving property owners from other taxation and effecting a reduction in rentals and other costs to the general public. In view of the doubtful legality of the payment of the octroi dues under our own appropriation laws, it was ordered that no such dues be paid until there should be statutory or other unquestionable authority to make the payments.

The refusal of the United States to recognize its liability for octroi dues could not be satisfactory to the French municipalities by reason of any principle in the laws of the United States. Under the French law the French armies and other agencies of the French government paid these municipal dues equally with individuals. The British government had recognized its liability to pay them and was discharging that Liability. It was but natural that the American authorities should hesitate to admit the liability of the United States in view of the exemption of our own Government from all forms of state and municipal taxation that had been derived from the principles of our constitution. It had to be recognized, however, that while the United States had no interest in some of the purposes for which octroi dues are levied, such an education, support of the poor, etc., our Army, nevertheless, enjoyed many public utilities which were supported by the octroi, such as streets, water, illumination, sanitation, and, indeed, lower rents, and indirectly many other benefits for which our Government and its personnel, though not directly taxed, support by indirect contribution in the form of higher prices at home. In principle it was, therefore, believed that the American Army should meet the demand in part for payment and the question was submitted to the Assistant Comptroller in France immediately upon his arrival, who held that the United States might legally pay the octroi dues from the appropriation for the transportation of our Army and its supplies.

The determination of the exact amount of octroiable articles which our armies brought into the many cities would have required an immense amount of accounting and other administrative work. It was therefore deemed advisable to make, if possible, as the British had in many cases done, agreements with the local municipal authorities for payment at a fixed rate per man per annum. Amounts could then easily be determined from the morning reports of the troops. A representative of the Commander-in-Chief accordingly visited the

octroi cities and entered into such agreements with the municipal authorities. These agreements generally provided for such rates of payment as would cause the total sum to be paid to be about one sixth of the amount that was actually chargeable under the law. During the year 1918 and the early part of 1919 octroi agreements were made with many cities. The gratitude of the French people, due in large part, no doubt, to the effective participation of our forces and our assistance in driving the enemy from France, caused nearly all these towns, including Paris, to remit all octroi obligations of the American Army, and to refund such monies as had been paid.

In the matter of the octroi as well as in other financial relations of the United States with the people of France, the principle was admitted that, in so far as the sovereign rights of the United States were not involved, the American Army should conform to the requirements of the French law. This could hardly have been denied in view of the fact that the American Army in general exercised the same powers and enjoyed the same privileges as the French and other allied armies.

MARRIAGES

Many questions respecting the marriage of soldiers in the A. E. F. arose in 1917 and 1918. While it was desirable that soldiers should not contract marriage during the period of hostilities, nevertheless marriage was always regarded as a personal right and privilege of the individual with which the military authorities had nothing to do. Following this policy, these headquarters declined either to give express consent to marriage or to refuse the same. Likewise, these headquarters declined to make any regulations or to enter into agreement with the French authorities respecting marriage. The matter of the marriage of an American soldier to a French or other woman in France was regarded as being a matter that came under French law and subject entirely to French regulation. American soldiers found much difficulty in complying with the requirements of the French law as to the *Etat Civil* and the publication of banns at the domicile of the soldier. These headquarters were very willing to cooperate with the French authorities in preventing bigamous marriages or imposition upon French girls by soldiers not competent to contract marriage, and it was suggested to the French authorities in February, 1918, that the purposes of the French law might be fulfilled but the procedure simplified by requiring an affidavit of the soldier as to his matrimonial capacity, together with a certificate of his commanding officer that he believes the affidavit to be true, and, in case of a former marriage terminated by divorce, the production of a duly authenticated copy of the decree of divorce. These suggestions were adopted by the French government and its ministerial decree with respect to the marriage of American soldiers was published in Bulletin No. G. H. Q., 1919.

Some cases arose where the soldier's intention to marry in the United States was frustrated by military orders directing his organization to proceed at once to Europe. The seriousness of the military situation made it impracticable to permit the soldiers thus circumstanced to return to the United States, and the matter of meeting the situation in some other way had to be seriously considered. After an examination of the laws of the various states, it was not deemed advisable to recommend marriage by proxy or an attempt to marry by cable; but it was believed that the courts in most, and probably all, of the states would recognize the validity of a written contract signed by both of the parties whereby they agreed to take each other as man and wife. In most of these cases the soldier had, before leaving the United States, brought about an unfortunate situation which he was anxious to correct.

PRISONERS OF WAR

Among the many questions that arose out of the custody and treatment of prisoners of war but few were dependent upon the special conditions under which our Army was serving.

In the summer of 1918 the French authorities requested that our army turn over the French army, as the British were doing, prisoners of Alsace-Lorraine in order that they might receive the preferential treatment enjoyed by that class of prisoners in their hands. In view of Article XXIV of the treaty between the United States and Prussia of 1799, which prescribes the treatment that prisoners of war shall receive in the event of war between the two countries, the view was taken that the United States could not guarantee a full compliance with said Article unless the prisoners were retained in the custody of our own army, and the Article was construed as prohibiting, therefore, a surrender of prisoners to an allied force except with the consent of the enemy. It was evident that, as soon as an enemy person was made prisoner by the American forces on the battlefield, the provisions of the Treaty of 1799 were applicable. On account of the mingling of the American and French forces in combat, however, it was not always possible to determine as to a particular prisoner whether he had been captured by troops of one force or the other. The following rule was adopted by agreement between the French and American armies:

> So far as practicable, prisoners made by the Americans will be set aside for them. Where, due to the intermixing of the units engaged, it is not possible to identify the prisoners made by the Americans, the number of prisoners to be given to them from the total number captured will be proportional to the number of American soldiers who are part of the effective total of the division.

After the signing of the Armistice and the occupation of Alsace-Lorraine by the French Army the French authorities requested that prisoners from Alsace-Lorraine in the hands of the American Army be released and permitted to return to their homes, the French authorities to exercise certain supervision over them. There could be no objection to the release of the prisoners on account of anything contained in the treaty of 1799, providing the release was absolute; but the view was taken that the exercise of any authority over such prisoners by the French army, other than such as was exercised over the population in general of Alsace-Lorraine, would be equivalent to a surrender of such prisoners of war to the French authorities, and the release, on such conditions, was, therefore, refused. Upon agreement, however, that the French government was not to incorporate such prisoner in their military forces or to attempt to control them in any way for military purposes until after a treaty of peace should be made, our government agreed to release the prisoners from Alsace-Lorraine unconditionally, which was done.

LUXEMBOURG

The cessation of hostilities and the occupation of German territory under the terms of the Armistice agreement presented many questions which it would be beyond the scope of this report to discuss. Questions in connection with the occupation and government of German territory were not unlike those that have arisen during our former conquests, and the numerous questions arising out of the Armistice terms depended for their solution upon the proper interpretation of the provisions of the Armistice agreement. One particularly interesting question, however, arose from the necessity of maintaining adequate precautions and communications in the pursuit of the German army to the Rhine. The end of hostilities found the German army in the occupation of the Grand Duchy of Luxembourg, where, had hostilities continued, it would have soon received the Allied attack. In view of the strict regard for the rights of neutrals which the American Army felt it necessary to maintain, the status of Luxembourg and the rights of our Army with respect to her territory had to receive careful consideration.

Luxembourg had not willingly aligned herself with any of the belligerents. Her desire was to remain neutral. By reason of her weakness she was unable to resist effectively the breach of her neutrality by Germany, and, in fact, offered no resistance. The German army had used her territory for the purpose of attacking France in the same manner as it might have used its own or its enemies' territory. In other words, Luxembourg's weakness,

her inability to perform her duty at international law, together with the breach of faith and agreement on the part of Germany, had brought her territory, against her will, into the theater of war. It was manifest that, had hostilities continued, it would have been the clear right of the Allies to attack the German army in Luxembourg and to occupy that territory and use it for purposes of communication to such extent as was necessary to maintain Allied military supremacy. The view was taken that the right of the American Army with reference to the territory of Luxembourg was not altered by the Armistice agreement, which provided for the retreat of the German army to the Rhine, and its pursuit by the Allied armies in such manner as to make for their security. It was accordingly advised by this office that the United States had the right to utilize the railroads, telegraph, and other public utilities of Luxembourg, and to shelter its troops in the public buildings, as the German Army had done, for the purpose of pursuing the enemy and maintaining communications with our forces occupying the Rhine country; in view of Luxembourg's effort to remain neutral and of the friendly attitude of her population towards the Allied Armies, no government of occupation or interference with governmental affairs of Luxembourg should be undertaken unless there should be hostile action on the part of the Luxembourg people making it necessary so to do. The inclusion of Luxembourg within our lines and the use of her territory as above indicated met with no protest on her part. In fact, our troops were received by her population with a hearty welcome.

It need hardly be pointed out that in the administration of military justice as well as in the other activities of the Judge Advocate's Department many difficulties are encountered in a war, such as the one in which we have been engaged. They are no greater, however, than those that other departments meet in matters of military administration. The Articles of War (enacted August 29, 1916) proved their adaptability to war conditions. The recent acts of legislation, one creating the special court-martial and the other authorizing the President to delegate the power to appoint general courts-martial to a commanding officer of any body of troops, were invaluable. The latter indeed was a necessity. In rapidly changing conditions of war, it is impossible to foresee necessities. The greatest need of the Judge Advocate's Department in France was a personnel adequate in numbers and competent for the performance of its duties. The regular judge advocates were offcers who had served many years in the line and other staff departments. Most of these are were, therefore, detailed on such other duties as urgently required their knowledge and experience. There were many very able judge advocates from civil life who quickly adapted themselves to the needs of the military service and who by reason of their broad legal knowledge and experience rendered service of the highest order in the positions to which they were assigned. In this as in other departments of the A. E. F., however, there was always need of competent officers. This was especially true of the Judge Advocate's Department after the signing of the Armistice November 11, 1918, when the work was greatly increased. There were some requests from the heads of other services for legal advisers which could not be met. The Judge Advocate's Offices at General Headquarters and at the Headquarters of the Services of Supply were always undermanned on account of the frequent calls for lawyers elsewhere. The tables of organization of the Judge Advocate's Department are based upon court-martial requirements and do not therefore provide the necessary personnel for the legal work of a large army which is intricate and varied. In any war in which we may engage in the future, there should be appointed immediately a considerable number of surplus law officers in order that they may familiarize themselves with their duties as early as possible and be prepared to meet each situation as it arises.

W. A. BETHEL,
Brigadier General, Judge Advocate.

Activities of Chief Surgeon's Office

February 28, 1919.

INTRODUCTION:

[Extract]

Although the date when General Pershing organized his Headquarters in PARIS in June 1917, marks the official beginning of the Chief Surgeon's Office of the A. F. F., the history of the Medical Department of the A. E. F. began prior to that date. In April 1917, after the British Mission had indicated the need of medical assistance from the U. S., the War Department called upon the American Red Cross to furnish six base hospitals for immediate shipment to France to serve with the B. E. F. These were to be taken from among those authorized by the War Department in Jan. of 1916 to be organized by the Red Cross. Between May 8 and 25, the following six base hospitals sailed from the United States in the order indicated:

No. 4, organized by George W. Crile, in CLEVELAND, Ohio.
No. 5, organized by Harvey Cushing, in BOSTON, Mass., and known as the Harvard unit.
No. 2, organized by George R. Brewer, at the Presbyterian Hospital, NEW YORK CITY.
No. 10, organized by R. H. Harte, at the University of Pennsylvania, PHILADELPHIA.
No. 21, organized by Fred Murphy, at Washington University, St. LOUIS, Mo.
No. 12, organized by F. A. Besley, at Northwestern University, CHICAGO, Ill.

The first members of the A. E. F. to lose their lives by enemy action were among the personnel of Base Hospitals Nos. 5 and 12. This occurred in an air raid on DANNES---CAMIERS, Sept. 4, 1917, one officer and 3 soldiers being killed.

Accompanying General Pershing when he left NEW YORK on May 28, 1917, were four Medical Officers, Colonel (now Major General) M. W. Ireland; Lt. Col. (now Col.) George P. Peed; Major (now Colonel) J. R. Mount, and Major (now Lt.Col.) Henry Beeuwkes, four civilian clerks and two enlisted men of the Medical Corps. Shortly after their arrival in England on June 8, 1917, they were joined by Colonel (afterwards Brigadier General) A. E. Bradley, M. C., under appointment as Chief Surgeon, who had been in England since May, 1916, as a military observer. On arrival in Paris on June 13, 1917, the Medical Staff was further augmented by two other officers, Lt. Col. (now Colonel) James R. Church, M. C., and Lt. Col. (now Colonel) Sanford H. Wadhams, M. C. The above mentioned officers constituted the personnel of the Chief Surgeon's Office when General Pershing organized his Headquarters in Paris in June, 1917.

On July 28, the Chief Surgeon's Office was organized into six divisions, as follows:

1. HOSPITALIZATION: In charge of location, construction, repair and administration of all hospitals. Collection and evacuation of the sick and wounded, including the management of hospital trains.
2. SANITATION AND STATISTICS: In charge of sanitation of camps and quarters, laundries, disinfection and delousing, health of command. Reports of sick and wounded. Statistics and sanitary reports.
3. PERSONNEL: Including Medical Corps, Medical Reserve Corps, Dental Corps,

civilian employees, and schools of instruction.

4. SUPPLIES: Hospital equipment, medical veterinary, and dental supplies. Settlement of accounts; ambulances and all medical motor transportation.

5. RECORDS AND CORRESPONDENCE:

6. GAS SERVICE: (Subsequently organized into a separate service.)

On July 18, Colonel (now Brigadier General) F. A. Winter, arrived from the United States with a small detachment of clerks, and in compliance with instructions of the Surgeon General, was appointed Chief Surgeon, Base Group and Line of Communications. From this date until March 21, 1918, the Chief Surgeon, L. of C., had immediate charge of base hospitals, supplies and medical personnel on the Lines of Communication. With the reorganization which took place with the promulgation of General Order No. 31, 1918, and when the Chief Surgeon's Office was moved from Chaumont to Tours, the Chief Surgeon's Office, L. of C., was merged with the Chief Surgeon's Office

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The reorganization brought about by General Orders No. 31, was advantageous in bringing about a more efficient administration of the medical activities of the A. E. F., insofar as it brought the Chief Surgeon in close touch with the Line of Communication or Services of Supply, and in bringing about a closer relation with the General Staff by representation on various sections of the General Staff. In a letter to the C-in-C under date of April 30, 1918, the Chief Surgeon stated that the transfer to the Chief Surgeon's Office to the Services of Supply has been tested in actual operation, and has in many ways facilitated the transaction of business, especially in matters concerning supplies, the distribution and training of personnel, and the construction of hospital accommodations. Attention was called, however, to the fact that the separation of the Chief Surgeon from G. H. Q. had a tendency to place the Chief Surgeon out of touch with the medical service at the front, although this has in part been remedied by the detail of medical officers on the various sections of the General Staff at G. H. Q., and by more frequent visits of the Chief Surgeon in person to General Headquarters and to the divisions in the front line. In this connection, the Chief Surgeon has repeatedly pointed out the fact that the Medical Department does not function as an S. O. S. service merely; its activities reach clear up to the battle front, and in times of heavy fighting, when thousands of wounded men have to be cleared from the battle field, the most perfect coordination between the services of the front and rear is imperative.

At the time that the Chief Surgeon's Office was installed in the French Barracks No. 66 at Tours, in compliance with General Order No. 31 above mentioned, there was added to the organization the Finance and Accounting Division. The personnel composing this division was selected from a detachment consisting of 7 officers and 135 men which had been organized in the U. S. under the direction of the Surgeon General, to audit the money and property accounts of the Medical Department in France, after Congress had passed the Act of September 26, 1917, authorizing the Comptroller of the Treasury and the Auditor of the War Dept. to perform the duties of their offices and audit the accounts of the military establishment at any place other than the seat of the Government. At a later date (Aug. 28, 1918), the Veterinary Division was added. * * *

THE HEATH AND SANITATION OF THE TROOPS OF THE AMERICAN EXPEDITIONARY FORCES

The health of the officers and men in the A. E. F. has in the main been good and the noneffective rate from disease, that is, the number of men in proportion to the

strength of troops incapacitated from duty from other causes than battle casualties and and injuries from accidents, etc., has been low. As has been the case with our Allies the number of beds occupied in our hospitals by men incapacitated by battle casualties has not at any time equalled the number occupied by the sick and injured. From August 1 until the last of November, 1918, when the battle casualties and the accidental injuries requiring hospital care were at highest, the percentage of hospital beds occupied by these cases varied between 41% and 47% of the total hospital beds occupied. For the period to the sharing of American troops in active military operations accidental injuries and all the various external causes which incapacitated men for active duty represented from 6% to 10% of all hospitalized patients. In other words, disease caused from 60% to 90% of the noneffectiveness in the A. E. F. according to the participation of our troops in offensive operations and the presence of the various epidemics of disease.

Only two diseases developed in a sufficiently generalized way to affect the entire A. E. F. and cause serious difficulties and temporarily excessive sick rates, epidemic diarrhea and influenza and only the latter as the result of the secondary pneumonia developed a serious rise in the death rate.

Against neither disease is there any known specific protection. Both diseases were prevalent in the armies of our Allied and of the enemy at the same time as well as in the civilian population.

It is doubtful if there are any sanitary measures which could have been applied under the existing conditions which would have prevented either of these two extensive epidemics among our troops although the coincident crisis in the military situation throughout this period (July 15 - November 1) demanded such priority in service, transportation and material that many precautions, practicable under ordinary field conditions, were inevitably neglected.

Epidemic diarrhea with a considerable amount of dysentery and probably some unrecognized typhoid and paratyphoid fevers developed in various parts of France late in June, appearing first in the more southern areas occupied by our troops, and wherever insanitary disposal of human wastes, fly breeding and insufficient precautions in the preparation and serving of food prevailed. Immediately after the Chatteau-Thierry offensive as many as 70% of the troops engaged were in the course of two or three weeks more or less incapacitated by diarrhea. Polluted water sources, the utter disregard of even elementary principles of sanitation and the plague of flies which bred and fed upon human excreta everywhere exposed, and upon dead bodies of men and draft animals upon the battlefield, combined to develop the epidemic rapidly and over a wide area. Most of the cases never reached a hospital or obtained medical treatment. Spontaneous recovery in a few days was the rule. The enthusiasm of the victorious forward movement of the troops carried many men out of reach of hospitalization, and the true measure of noneffectiveness from that epidemic can only be guessed. A small number of serious and persistent infections found their way through the evacuation hospitals to the base hospitals, and the great majority of those examined early in the course of their disease were found to be suffering from true dysentery caused by well recognized strains of bacilli. Fortunately the type of the infection was mild and very few deaths resulted from the entire epidemic. The disease prevailed during the war weather while the fly breeding season continued. In a few favored places, where alert medical care was combined with adequate physical equipment to avoid fecal exposure and pollution of food and water, only an occasional case of diarrhea developed and entire organizations escaped infection, but in the main the disease prevailed throughout the A. E. F. from July 1 to the middle of September.

Following this period a few cases of typhoid and paratyphoid fever developed each week, often in commends which had participated or were still in the areas of recent active operations. In December, 1918, and January, 1919, the greatest number of cases

occurred, the incidence declining sharply in February and March. During the entire period after November 11, 1918 the infection in a great majority of the cases reported were found on careful study to be attributable to the use of polluted and unauthorized water supplies or to carriers in the organizations in which the cases developed. In many instances the carriers were found among the cooks and kitchen police on duty. There is good reason to believe that the carriers and early undetected cases of these diseases had acquired their infection during the period of extensive incidence of intestinal disease in the summer months.

The other epidemic and one which was much more serious as a cause of noneffectiveness, and as the cause of the greatest mortality in the A. E. F. was that of influenza, which was and continues to be part of a pandemic of the disease which has within the past year affected all parts of the world. The disease in a mild form prevailed from the middle of April until the middle of July without interfering materially with the activities of the A. E. F. There was much increase in noneffectiveness for a week or so while the disease swept through a command, but the recoveries were prompt, complications rarely occurred and there were very few deaths from the primary infection or from complications.

In September, the disease returned at the time when large shipments of troops were arriving from U. S., when every resource of men and material was being strained to prepare for or take part in the Meuse-Argonne Offensive. The weather was unfavorable, the type of disease was more severe, the means of evacuation and the hospitals were strained to their capacity in caring for the wounded. Troops movements were extensive and urgent, military necessity demanded every sacrifice for offensive operations. These conditions combined to make adequate preventive measures and early and sufficient hospital care well night impossible.

Heavily infected, and exhausted by the strain of the voyage, troops arrived with a loss in some instances of as many as 2% of their entire strength within three weeks after embarking in the U. S. Long delays and insufficient provision for rest, food and medical supervision during train transport to training areas or replacement divisions added to the spread of the disease. Crowding in billets and barracks beyond the limits of safety, unfamiliarity of officers and men with the precautions needed in this climate, ignorance of the part which warmth, dry clothing, sufficient rest and hot food play in raising bodily resistance to infection, delayed diagnosis and removal of infected men, and insufficient precautions in hospitals of all kinds to prevent communication of the disease in the wards, all contributed to a heavy incidence of pneumonia and high mortality from this common complication.

By the middle or third week of October, the epidemic again began to subside and by December 1, the incidence of influenza was well below the usual rate for the month of the year. In the latter part of January there was a third wave of disease in a mild form, and, coming at a time when every precaution could be taken, and when other factors were favorable, it did not cause a serious loss of life.

Venereal diseases have been subject to control by policies medical, educational and disciplinary, so different from those applied in any army heretofore that only detailed report of these diseases can adequately present the subject. It is not too much to say that the official attitude of the Government as expressed in orders from the War Department and from the C-in-C supported by a logical medical service for the prevention and treatment of venereal diseases have resulted in a smaller loss of man power to the army, a lower incidence rate of the disease, and a smaller number of permanently disabled and invalided men from these diseases than has been recorded among the troops in the U. S.

These diseases when treated according to the information available through medical sciences can be controlled, and to a greater degree than ever before have been controlled by applying the principles of preventive medicine, namely, diminution of contact

with human sources of infection, prophylactic treatment promptly after exposure, and segregation with intensive treatment for those in the communicable stages of the diseases.

Supplementary to the application of these fundamental medical principles have been the forces of education, recreation, discipline and appeal to patriotism and morality.

Of the less important communicable diseases mumps holds first place and indeed leads all diseases as a cause of noneffectiveness in the first year of the A.E.F. No measures applicable under existing conditions appeared to have any definite effect in controlling this disease. It is to be presumed that exposure was almost universal and that those, not already insusceptible because of a previous attack developed the disease when exposed.

Measles similarly prevailed among immature and susceptible troops, but where the principles of daily examination and segregation of all men who showed the least catarrhal symptom or rise of temperature, spacing out and separation of men into small units, and separating old or mature troops from contact with replacement or new detachments could be and were carried out intelligently this disease was quickly stamped out. Measles was always prevalent at the base ports among recently arrived troops and appeared to a less and less degree as the troops were passed through replacement depots and training camps on their way to the front.

Diphtheria while occurring to a degree not previously experienced in our army occurred only in epidemic form in few divisions and hospital formations and then only for a brief period until well known methods of control could be made effective. The successful treatment of diphtheria epidemics demands laboratory facilities of a very efficient kind for the detection of carriers and diagnosis of mild cases. In this war, these facilities have for the first time in our army has been furnished to bodies of troops in the field by means of mobile laboratories, which were sent out instantly on call from the Central Laboratory at Dijon, and constituted an extension of that institution. Scarlet fever, except on one occasion in a regiment, delayed in its passage across France in December, 1917, never developed into an epidemic of any proportions, although the A. E. F. was never wholly free from it.

The incidence of the other communicable or preventable diseases was not sufficient to justify mention in a general survey such as this.

Modern, firm, humane methods applied to the prevention and treatment of mental disease spared many men for service, or from a life time of invalidism which could have followed the persistence in methods only too prevalent in our civil police and institutional administration at home.

The stationing of trained physicians skilled in the detection of war neuroses at the sorting stations did much to save the A. E. F. from the high noneffective rate from these diseases which occurred at times in the armies of our Allies.

Of the diseases which caused serious loss of manpower to our Allies at one time or another during the war and more particularly before the participation of the A. E. F. in active operations, several deserve special comment if, for no other reason than that they played an insignificant role among the causes of sickness in our troops.

Because of the nature of the military operations in which our troops took part, and as a result of the seasons of the year during which most of our front line activities were undertaken, our troops almost wholly escaped trench nephritis and trench foot, afflictions due in large measure to exposure to wet and cold for long periods under trench conditions such as prevailed in the mud of Flanders.

The conditions moreover under which trench fever become prevalent especially in the British forces never developed among our troops, chiefly because of military conditions and not on account of any more favorable state of sanitation or cleanliness among our troops.

The certainity that trench fever could have been effectively controlled or prevented if it had appeared among our troops at all generally was assured by the results of the work of the trench fever committee. This committee, acting under authority of the Commander-in-Chief of December 22, 1917, carried out early in 1918, accurately controlled experiments upon the means of transmission and the period of infectivity of the disease which determined without question that the body louse was the intermediate host and the means of transmission of the disease from the sick to the well.

This piece of scientific research added materially to the security of the troops by its contribution to the knowledge of preventive medicine.

The so-called trench mouth, a condition of sluggish infection and ulceration of the gums and mucous membrane of the mouth, developed in large numbers of our men where neglect of oral hygiene was coupled with a poor condition of general health, but relatively simple general and local measures sufficed to prevent this annoying conditions from becoming a noticeable source of noneffectiveness.

From tetanus, we were almost entirely spared, partly because of the character of terrain over which our men fought and partly because of the universal and adequate use of prophylactic doses of tetanus antitoxin.

Gas gangrene as a complication of battle casualties was often serious and always a threatening cause of much loss of life, but in actual numbers this infection developed in but a small fraction of the wounded. A month before the signing of the Armistice preventive inoculations were undertaken which promised to give still further protection against this much feared complication of surgical cases.

Effort syndrome, the irritable heart of soldiers, well known to the army surgeons of our Civil War occurred as a primary cause of disability requiring prolonged care in convalescent camps, or as a complication following gassing or infectious fevers. Owing chiefly to the short period of our participation in the war and to the vigor and freshness of our troops, this typically war disability did not develop into the proportions observed in the English and French armies.

In the matter of lousiness and scabies, from which our troops suffered generally throughout France the avoidance and elimination of these infestations was a matter at all times dependent chiefly upon the resourcefulness and conviction of officers that their men should keep themselves and their clothing clean. All troops became lousy in the trenches. Lack of bathing facilities, and of fuel and appliances to accomplish disinfestation was almost universal. At times 75% of many commands were heavily infested. The attention given by officers and men to correct this condition soon after the Armistice accomplished more in two months than had resulted from the efforts made in the previous year. The A. E. F. never had any such experience with the chronic infestions of the skin, the pyodermias or inflammations of the cutaneous tissues as the armies of our Allies suffered from in the earlier years of the war.

Sanitation, or the control of environment for the sake of prevention of disease was limited narrowly in the A. E. F. by the restriction of transportation, the insufficiency of structural material and of labor to build shelter and by the difficulty of getting enough fuel to heat living places and to dry clothing, and enough water of a pure quality to provide sufficient facilities for body cleanliness and the washing of clothes.

Wherever owing to fortunate local conditions, adequate floor space per capita was made available for living purposes, or where the ingenuity, resourcefulness and determination of the medical and commanding officers to obtain adequate space and facilities was brought into play, the sick rate was always low. In the A. E. F. as elsewhere attention to the comfort, cleanliness, food, sleep, exercise and rest of the men was always accompanied by a low sick rate.

Adjustment to environment by green troops under young officers with the advice of

medical officers wholly unfamiliar with any aspect of medicine except those of the family or hospital practitioner was accompanied by many of the disabilities and losses from sickness which seasoned troops, with each man a trained practical hygienist and sanitarian, with line officers capable and willing to take infinite pains to guard the health of their men and surgeons who have learned the preventive side of medicine, escape. With every month, the improvement in sanitary discipline and experience became more marked and at the time of the Armistice some organizations and areas in the armies and in the S. O. S. had reached a good standard of field sanitation.

HAVEN EMERSON,
Colonel, M. C.

MEDICAL DEPARTMENT TRANSPORTATION

Transportation of the Medical Department comprises trains, ambulances, and canal barges. The trains consist of those obtained from the French and those from the British. There were two French trains made up of cars converted to hospital train purposes from either passenger or baggage car type and 50 trains, some of which were ordinary box cars, fitted with litter racks, others passenger coaches for sitting cases. The first idea of the American army was to adapt ordinary box cars for hospital train purpose by introducing fittings for supporting tiers of litters; these fittings were metal posts capable of being screwed into the floors of the cars so that they would take up little space and could be cleared away readily when not wanted, permitting them to serve the double purpose of evacuating wounded from the front and, when empty of wounded, carrying back supplies to the armies. Both the British and French armies adopted this procedure but found it impracticable.

The American Government, profiting by the experience of those armies, promptly placed orders with the British Government for a sufficient number of the latest and best type of hospital train. Owing to the great distance from the United States and the shortage of cargo space, no coaches were imported from home.

The trains were, for the most part, supplied through the Agency of the British Railway Executive Committee appointed a special committee to make all arrangements relative to design, equipment, transportation, etc., in conjunction with a military advisory committee in France. These trains were designed primarily for the evacuation of the sick and wounded and were not intended strictly as hospital trains in the sense of treatment, operative or otherwise for patients, and were in accordance with what experience had proved the best. Great importance was attended to standardization and simplicity was combined with usefulness.

Nineteen of these trains, obtained from Great Britain, were delivered prior to the signing of the Armistice. The cars, completely equipped, were transferred from England by special ferries to a port in France, in order that the trains might be ready for service as soon as they arrive in France.

Each train consists of

1 Infectious case car, 18 beds,
1 Staff car, 8 beds,
1 Sitting sick officers' car, 3 beds and 20 seats,
8 Ordinary lying ward cars, 288 beds,
1 Infectious case sitting car, 56 seats, 14 upper berths,
1 Kitchen and Mess car, 3 beds (for cooks),
1 Personnel car, 30 beds,
1 Train crew and store car,
Total number of beds available for patients, lying, 360.

Long coaches 54 to 56 feet in length were used instead of the short continental coach type, to insure a comfortable journey for the patients. These trains are so attractive in appearance and arouse such interest in the public that they have been frequently placed on exhibition in England before shipment to the continent so that the public may see what excellent care is being taken of the soldiers by the Medical Department, U. S. army.

The first of these trains was delivered in France, February 11, 1918, and the last at about the time hostilities ceased.

The beds of the ward cars, 36 in number, especially designed, are removable, and in case of necessity can be used as stretchers. They are capable of being folded against the sides of the coach, and lowered to the floor, become converted into a couch for the patients able to sit up, whilst the top bed is still available for lying down cases. By this arrangement the less seriously wounded are made comfortable and can either sit up or lie down. A so-called sitting case cannot sit up for a prolonged period, and it is necessary to provide a bed which a sitting case might use some time during a long journey. This conversion of beds into seats, with litters placed in front of the doors, enabled these trains to evacuate as many as 720 sitting cases.

The two French hospital trains and the 19 trains made in Great Britain were used principally for secondary evacuations. These evacuations totalled on November 11, 1918:

Officers			Enlisted Men			Others		
Sick:	Wounded:	Total	Sick:	Wounded:	Total:	Sick:	Wounded:	Total:
1,241	2,062	3,303	49,084	74,990	124,074	155	2,465	2,620

Total

Sick:	Wounded:	Grd. Total:
50,580	79,517	129,997

The 50 trains borrowed from the French were used principally for the so-called primary evacuations. These totalled on November 11, 1918:

Officers			Enlisted Men			Others		
Sick:	Wounded:	Total:	Sick:	Wounded:	Total:	Sick:	Wounded:	Total:
2,358	3,326	5,684	81,615	108,639	190,254	242	1,528	1,770

Total

Sick:	Wounded:	Grd. Total
84,215	113,493	197,708

Insofar as the personnel, materiel, supply and maintenance of the equipment, the hospital trains were administered under the direction of the Chief Surgeon, A. E. F. As railway units, however, they were operated under the direction of the officers to whom they were assigned, and were repaired by the Transportation Service. Assignments of hospital trains, operated in the Zone of the Army, were made by G-4, G. H. Q., to regulating officers, and in the S. O. S., they were under the jurisdiction of the Chief Surgeon, A. E. F.

An officer of the Medical Department was assigned to each regulating station as part of the Staff of the Regulating Officer, and as a representative of the Chief Surgeon.

The Chief Surgeon, A. E. F., allotted a requisite number of beds daily to each regulating officer, advising him by telegraph as to their number and location. These beds were reserved for the exclusive use of the regulating officer to whom allotted and daily notice of any changes in these credits were furnished him. The G-4 of the army

furnished the regulating officer daily all data bearing upon evacuations in order that the latter could judge the sufficiency of trains and beds at his disposal and take necessary steps to correct a shortage. Upon receipt of advice for the necessity of evacuating patients from a given hospital, the representative of the Chief Surgeon at the regulating station, cognizant of available beds in different hospitals indicated destination of train. The commanding officer of the evaluation hospital was charged with with seeing that the necessary steps were taken in order that the train might be loaded promptly in the time allotted. The regulating officer notified the commanding officer notified the commanding officer of the receiving hospital of the contents of each train, showing the number of officers, soldiers, and enemy prisoners, number of sitting and lying patients, number of contagious diseases, together with any other information which would facilitate the unloading of the train.

The cost of each train purchased was approximately $200,000. The French trains were rented at a cost of 150 francs a day.

HOSPITAL BARGES

In August, 1918, the Chief Surgeon proposed that barges be used for severely wounded and gassed soldiers; the type of cases to be those with compound fractures, chest and abdominal wounds, many of which would have been nontransportable by hospital train.

At the time of the signing of the Armistice, there were about 60 barges being converted to hospital purposes.

During the Chateau-Thierry, many patients were evacuated by this means of transportation from the Chateau-Thierry sector to Paris. Barges were operated in flotillas of 6, motive power being furnished by tug boat.

AMBULANCES

The Medical Department was charged with the responsibility of procuring ambulances for the American Expeditionary Forces. In the early days of the war, the G. M. C. type of ambulance was adopted, because of its capacity. The ambulances were shipped to France, unassembled, the constitutent parts of the bodies being placed in crates and a series of envelopes were made up containing the number of screws, bolts,and nuts necessary for assembling the ambulances. Each operation was numbered and the corresponding number was placed on the envelope containing the hardware used. This ambulance body was not what is regularly known as a knocked-down body and it was appreciated that considerable difficulty would be encountered in its assembly, unless trained men fully familiar with body construction were available in France. The Surgeon General's Office accordingly organized a unit known as the Motor Ambulance Assembly Detachment, comprised of 3 officers of the Sanitary Corps and 60 body builders and motor experts. Probably no organizations ever arrived in France better equipped than this Ambulance Assembly Unit. It began operations on January 2, 1918, at St-Nazaire. Within two weeks, the necessary shelters had been constructed, power lines had been run and the ambulance assembly commenced. A number of chassis and bodies had accumulated on the beach at St-Nazaire and there was an urgent call from various organizations and divisions then in France for ambulances. The shop soon took on the appearance of a modern American factory and ambulances were turned out at the rate of 4 a day. This number was gradually increased until a daily output of 15 was reached.

It was expected that all motor transportation would be delivered at the Port of St-Nazaire. This, however, proved to be impracticable, and before long, ambulances were being received at Le Havre, Brest, Bordeaus, Marseilles and La Pallice. Certain numbers of the original Motor Ambulance Assembly Detachment were sent to the parks at

these ports and soon built up assembly organizations composed of Medical Department personnel and Motor Transport corps personnel and the same efficiency was obtained as at St-Nazaire. In General Orders, G. H. Q., A. E. F., at Headquarters, S. O. S., ambulances were classed as special vehicles. While orders covering assignments have been prepared by the Motor Transport Corps, all requisitions have been submitted to the Chief Surgeon's Office, and that office has submitted requests to the Motor Transport Corps to assign ambulances to the points where they were most needed. Many organizations to whom ambulances were assigned in the United States delivered them to the ports of embarkation and they were shipped to France whenever practicable. However, no notice of prior assignment was taken in France and all motor transportation received was pooled.

Many assembled ambulances arrived at base ports in France but in most cases they were in such bad condition that a request was cabled to the United States, asking that they discontinue the practice, as nearly every motor was damaged to such an extent that repairs were necessitated; nearly all the accessories were missing and in many cases it was not worthwhile to attempt these repairs on account of the shortage of spare parts.

About one month before the Armistice was signed, a new type of knocked-down body was shipped to France. Inasmuch as it was assembled and painted in the factory and then taken down in sections and shipped in crates, considerable time was saved in the final assembly at base ports in France and very much less personnel was required to operate the body shops. Four men could assemble two bodies in a day.

One of the greatest difficulties which has been encountered has been the question of spare parts. It is believed that, in the future, if it is necessary to send ambulances outside of the limits of the United States, some arrangement should be made to supply spare parts with every chassis that is shipped and that these parts should be inclosed in the crate with the chassis. Another perplexity was caused by the arrival of the shipment of the chassis at one base port and bodies at another. This made it necessary to assemble the chassis and drive overland to the Motor Reception Parks where the bodies were being assembled, thus causing a divergence of much personnel and expenditure of considerable gasoline. Bodies and chassis should be shipped on the same boat.

There were shipped to France (and Italy) 3,070 G. M. C. Ambulances and 3,805 Fords.

Patients evacuated from France have been embarked principally from St-Nazaire and Brest, and latterly from Bordeaux.

Hospitalization on a large scale was planned at Savenay in order that cases selected as suitable for transfer to the United States might be collected and evacuated from there through St-Nazaire; and at Beau Desert, near Bordeaux, for evacuation through the latter place. Owing to the fact that Brest was not contemplated as a port of embarkation hospitalization on a large scale was not provided at that place until the latter months of the war. As the large boats could some only to that port, however, direct evacuations were made through Brest from the hospital center, Savenay. The hospital center at Kerhuon, on the outskirts of Brest, was constructed and a capacity of 4,000 beds reached at the time of the signing of the Armistice. Owing to lack of good roads leading to this place, it could not be extensively used.

The secondary evacuations of cases chosen for transfer to the United States were made from base hospitals in the Advance and Intermediate Sections to the hospitals at base ports, where they were both given final hospitalization and preparation for embarkation. This preparation consisted in the completion of medical records insofar as it was possible, the arrangement of passenger lists, the forming of a number of patients into convoys, divided into various types of cases which enabled naval authorities in charge of transports to properly and rapidly place them aboard ships. As the transports usually arrived in large convoys, proportionately large groups of patients

could be evacuated at a given time.

Patients that were selected for return to the United States were those permanently unfitted physically for any military duty and those who would require at least six months further hospital treatment before becoming class A. Boards of officers passed upon these cases at base ports and determined the class into which they fell as well as the fact that they were capable of standing transportation over seas. Supplemental records were prepared for those whose service records were not received at the time of evacuation. Each enlisted man evacuated was issued sufficient clothing to enable him to travel in comfort and, in addition, a toilet kit bag containing a shaving outfit, soap, tooth brush and paste, and a hand towel. The following tabulation shows the number of evacuations August 1, 1917, to about Nov. 11, 1918:

	MEDICAL					GENERAL	
Month	T. B.	Ment.	Neur	Others	Total	Total	Gr. Total
Aug. 1, 1917 to June 30, 1918	502	55	156	1303	2016	89	2105
July, 1918	90	31	59	188	368	109	477
August, 1918	238	312	305	439	1294	781	2075
September, 1918	221	662	166	454	1503	2110	3613
October, 1918	378	473	212	797	1860	2746	4606
Nov. 1 to 11, 1918	83	188	27	934	1232	2618	5082
						TOTAL	15853

F. W. W.

SUPPLY DIVISION

On the declaration of war by the United States, the Medical Department immediately took steps to prepare for our active participation. Committees were appointed to standardize equipment, and a survey of the resources of the whole country was made to determine what steps should be taken to best meet the emergency and supply the enormous quantities of medicines, surgical dressings and instruments which would be required. The Red Cross commenced, during the winter of 1916/17, to collect the equipment for forty base hospitals, and it was due to the aid rendered by this far-sighted policy that the Medical Department was able to meet the problems presented. This aid was especially valuable because no appropriation was available for actual purchase until about the middle of June, and our own reserves had been completely exhausted by the mobilization of the National Guard on the Border in 1916.

In anticipation of the departure of the first increment of the American Expeditionary Forces from the States, plans were naturally made by the Office of the Surgeon General for the shipment to France of medical supplies, and, in the same convoy which brought to France these troops, there was, of course, included among the supplies shipped over a quantity of medical supplies which arrived in June, 1917, at St-Nazaire. Upon arrival in France, effort was at once made by representatives of the Supply Department, who had accompanied General Pershing's original expeditionary force, to obtain in France a suitable location and buildings for the establishment of the first medical supply depot. These efforts resulted in the establishment at Cosne-sur-Loire, in the early part of July, 1917, of a medical supply depot containing storage space approximating 50,000 square feet, in buildings which had theretofore been used by the

French as an aerial bomb depot. From that time on, this depot, which later acquired the designation of Intermediate Medical Supply Depot No. 3, was operated practically as the principal medical supply depot of the American Expeditionary Forces, until January, 1919, when, at the request of the French, it was abandoned and the buildings returned to the French for their use. It was at this depot that practically all medical supply officers trained in France were developed, and its function in training these officers might almost be rated as of equal importance with its functions as a supply depot, for, from the beginning, the inability of the Supply Department to obtain officers trained in handling medical supplies was one of the most difficult problems with which it had to cope.

With the establishment of headquarters of the American Expeditionary Forces in France, a subdivision of the office of the Chief Surgeon was created to handle medical supplies. There was also a supply division in the Office of the Chief Surgeon, Line of Communications. Attention was immediately given by these divisions to the institution of an automatic supply of medical supplies from the States, which was early accomplished. In compiling the basis of the automatic supply, the estimated quantity of medical supplies needed per month for each 25,000 in France, effort was consistently made to conserve tonnage by eliminating from the supply tables of the Manual for the Medical Department all items which were not absolutely essential, and particularly those items which were of a bulky nature. From time to time, the basis of this automatic supply was revised in the light of the experience which we were acquiring by virtue of our troops being under the actual conditions of modern-day warfare; and this source of supply was augmented by requisitions made upon the States, by purchases made here in Europe, and by calls upon the Red Cross for materials needed and not in stock in Medical Supply Depots of the American E. F., but in stock in the warehouses of the Red Cross. It should be stated that all requests made by the Supply Division of the Medical Department upon the Red Cross were always, so far as possible, complied with by that organization.

In August, 1917, there was established in Paris a Medical Purchasing Agent, and, in order to conserve tonnage, effort was made, sofar as practicable, to purchase in Europe so much of the needed Medical supplies as could be obtained from this source. This office was subsequently consolidated with the General Purchasing Board, American E. F., upon its establishment as the Medical Division thereof. It has operated continuously and effectively, receiving at all times the hearty cooperation of the representatives of the French and British Governments in placing contracts for goods upon the respective markets of these two nations. Up until the signing of the Armistice, contracts had been placed by this agency in European markets for goods to the value of $37,500,000.00 The material received through this source helped very materially in meeting the demands made upon the Supply Division of the Medical Department.

From time to time, as the expeditionary force grew in size, additional medical supply depots were opened in France to care for the needs of the particular localities in which they were located and embraced: (a) Base Storage Stations; (b) Medical Supply Depots; and (c) Army, Corps and Division Medical Supply Dumps.

Upon the arrival at base ports, shipment of medical supplies was made by the Medical Property Officer stationed at the docks, in accordance with orders issued by this office which were changed from time to time as stocks on hand at the various depots necessitated. There were established at Base Sections 1, 2 and 6 base storage stations, whose function it was to take into stock for storage certain items in large amounts that were not immediately needed for consumption by our troops. These depots were not issue depots, but storage stations for the warehousing of stores which were held subject to the exclusive orders of the Supply Division. However, at Base Sections Nos. 1 and 2, there were established, in addition to the storage stations, medical supply issue depots, for the purpose of supplying the demands of the hospitals and

organizations within each of their respective sections. Intermediate Medical Supply Depot No. 2 was established at Gievres on October 10, 1917, as a part of the General Intermediate Storage Depot at that location. Advance Medical Supply Depot No. 1 was established at Is-sur-Tille on November 18, 1917, in connection with the depots of the other staff departments at that location. In general, medical supply depots were established throughout France where necessity for their presence existed. In the Zone of the Armies, Army, Corps and Division Medical Supply Dimps were established for the purpose of taking care of the medical supply needs of their respective organizations. Replenishment of the stocks of these dumps being made by shipments from the various depots, and, when practicable, by direct shipment from base ports. Effort was made at all times to conserve the available shipping facilities in the movement of medical supplies.

There was established in Liverpool, England, on August 7, 1918, an issue medical supply depot which, continuously since its establishment, has cared for the supply of troops located in England, and of that part of the American Expeditionary Forces in Russia. Stocks of medical supplies at this depot were replenished by automatic supply shipped direct from the States.

A medical supply depot was established at Cristo, Italy, on July 29, 1918, for the purpose of caring for organizations of the American E. F. stationed in Italy. This depot was stocked and replenished by train load shipments made from medical supply depots of the American E. F. in France.

For the purpose of storing and preparing for reissue field medical supplies, Field Medical Supply Salvage Depot was established at Montierchaume on December 13, 1918.

At Treves, Germany, there was established on December 27, 1918, a medical supply depot (S. O. S.) capable of caring for the needs of the Army of Occupation.

With the return of troops to the States, there was established at the American Embarkation Center, Le Mans, and at headquarters, Base Section No. 5, medical supply depot capable of caring for the needs of the troops stationed, temporarily or otherwise, in these respective localities.

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C. C. W.

FINANCE AND ACCOUNTING

After authority was given by Congress to close money and property accounts in France, a unit was authorized by the Surgeon General to perform in France under the Chief Surgeon all departmental auditing functions, and there was organized a staff of seven officers and 137 men, who were secured by transfer, induction or enlistment. The soldier personnel were all carefully selected men who had had experience in banking or mercantile establishments. It was thought that this personnel would take care of the accounting needs of a Medical Department organization based on an army of 2,000,000 men. This unit was outfitted, drilled and instructed, and journeyed to France as a separate Medical Detachment, maintaining this status until the enlisted personnel was merged with the detachment of the Chief Surgeon's Office on May 1, 1919. Previous to this date, however, the personnel of the unit had been reduced, by transfer to other medical organizations, to six officers and 47 men, which was considered sufficient to take care of the accounting needs of the Medical Department at that time.

At the time of its organization, the division had three main functions, money

accounting, disbursing and property accounting. At a later date the administration of the hospital fund was taken over and after the signing of the Armistice the problem of clearance for officers became an added function of great importance.

The accounts of all Medical Department disbursing officers in the American Expeditionary Forces are examined and audited. Errors and inaccuracies are taken up with the disbursing officers with a view to their correction, before submission to the Assistant Auditor for the War Department for final audit. The vouchers are examined as to their legality and whether or not they are correct Medical Department charges. Officers contracting bills are checked up as to authorization for purchases and a careful lookout is kept for duplications of payments. A record is made of all vouchers, showing such data as material, price, date of payment, by whom paid, etc., and in the case of bills for civilian employment, name of employee, when and where employed, authority for payment and increase in pay, when paid and by whom. Bills to Allied Governments have been prepared and forwarded. Up to February 15, 1919, over $160,000.00 had been billed to Allied Governments for hospitalization, and nearly $5,500.00 for supplies. Financial reports are submitted from time to time to competent authorities.

Experience has already demonstrated the value of this careful auditing of money vouchers and the recording of financial data. Accounts are in such condition when finally submitted to the Assistant Auditor for the War Department that they can be and actually have been accepted with practically no difficulty for the disbursing officer. By the running down of duplications of payment and the cancellation of vouchers, over $12,000.00 has been actually saved to the Government. The records maintained will be of great value in the prevention of fraudulent claims against the Government by reason of alleged nonpayment for services or supplies. A careful record of time elapsing between dates of purchase and payment, with a view to subsequent more prompt payment has resulted in the creating of good will between the American army and the French cendors. Arrangements were made early by which quartermaster disbursing officers at base hospitals and hospital centers might pay the accounts for services to civilians employed in the hospitals, a reimbursement from Medical Department appropriations to be made by treasury transfer. At a later date a quicker method of payment of civilian employees was authorized, namely: From the hospital funds, with later reimbursement through the Medical Department disbursing officer. When it is considered that there were 3,782 civilian employees of the Medical Department on November 30, 1918, most of whom are needy people, dependent upon their meager pay for a living, the importance of these provisions for prompt payment is readily apparent.

During the latter part of August, the auditing of hospital fund statements which comprise the record of financial operations of hospital mess officers was taken over. The importance of this work will be seen when it is known that reports are being received from nearly 700 medical organizations and that over 30,000,000 francs monthly is represented in the financial operations involved. The Central Hospital Fund has grown from 18,800 francs, when this work was taken over, to over 1,300,000 francs on March 4, 1919.

Overpayments and underpayments of local bills are corrected, warnings are issued to prevent deficits, and in some cases authority has been secured to request the liquidation of deficits from private funds. Efforts are put forward to see that French civilian bills are paid promptly.

One of the interesting activities of this section is the collection of officer's hospital accounts. Many officers leave the hospital, forgetting to pay the small charge of $1.00 a day. Thousands of dollars have been saved the Government by a careful following up of these accounts, and their ultimate collection directly, or through the A. G. O. and the stoppage circular of the Chief Quartermaster. Several matters connected with food supply and mess management have been taken up with the Chief Quartermaster and settlements made. These include the securing to the Medical

Department mess of the proceeds from sale of garbage, an apparently insignificant consideration, which in reality involves in the aggregate, hundreds of thousands of francs, also securing the proceeds from the sale of food stocks left when the hospital disbands, and the transfer of food stocks between organizations.

Traveling auditors are kept constantly in the field assisting officers responsible for hospital funds, and in the systematic and proper handling of their accounts. These men, having a broad knowledge of both finance and property accounting are thus able to give instructions to Medical Department clerks in the preparation of disbursement vouchers, property vouchers and returns, and in the closing of money and property accounts.

The disbursing officer of the division pays all commercial bills incurred by the Medical Department in France, all laundry accounts, and the pay rolls of civilian employees, together with doubtful vouchers referred by other Medical Department disbursing officers when these are found to be legal. In the audit before payment, duplications are checked up. A liaison was established with the Hospitalization Division and the Chief Quartermaster, by which an up-to-date list of quartermaster laundries is kept, and many hospitals near these laundries instructed to make use of them, thereby saving many thousands of dollars in laundry bills.

The property accounting section of the division and its the accounts of all property officers of the Medical Department, checking and comparing invoices, receipts and returns of all Medical Department property. This work has been seriously handicapped by the uncertain status of property accountability in the A. E. F. occasioned by confusing orders capable of a varied interpretation. Indeed, up to the signing of the Armistice these questions were in a very uncertain state. An attempt has been made however, to require a strict accountability, due regard being taken to those considerations affecting accountability incident to active warfare.

At its organization, there was established in the division what is known as a Reference Library. Here all General Orders, Bulletins and Circulars, both of the War Department and the A. E. F. are indexed and ready references compiled. Questions are referred here much as opinions are asked of lawyers in civil life. Many officers outside of the Accounting Division and in other services have benefited by the services of the Reference Library.

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HOSPITALIZATION

The first requirement in hospitalization was the securing of buildings suitable for hospital purposes, properly located and with capacity to provice sufficient beds for the troops of the A. E. F. The two possible sources from which these might be obtained were to take over (1) existing buildings from the French, such as, schools, hotels, casernes, chateaus and French hospitals, and (2) by construction.

A conference was held on July 8, 1917, between representatives of the Chief Surgeon's Surgeon's Office, A. E. F., and the French *Service de Sante* with a view of projecting a study for the organization of 50,000 beds which it was the tentative intention of the American General Staff to locate in French territory during the remainder of 1917.

It was agreed that these representatives should make studies:

(a) In the region of the naval bases of St-Nazaire, La Rochelle and Bordeaux.

(b) In the vicinity of the camps at Gondrecourt and Le Valdahon.

(c) Along the lines of communication.

In carrying out this project, studies were made of prospective hospital sites in the neighborhood of the following cities: Angers, St-Nazaire, Savenay, Nantes, La Rochelle, Bordeaux, Perigueux, Limoges, Chateauroux, Tours, Cosne, Nevers,

Cercy-la-Tour, Beaune, Dijon, Le Valdahon, Besancon, Langres, Chaumont, Neufchateau, Vittel, Martigny, Contrexeville, Rigny-la-Salles, Ourches, Epinal and Sens.

As a result of recommendations from the Chief Surgeon, based upon the above noted studies, the Commander-in-Chief on August 13, 1917, authorized the Chief Quartermaster and the Chief Engineer, in cooperation with the Chief Surgeon, to take steps immediately to provide hospitalization on the Lines of Communication for 300,000 men, having in view the increase required for two million men as follows:

L. of C. AS DEFINED IN ORDERS FROM THESE HEADQUARTERS	IMMEDIATE PROVISIONS FOR 300,000 MEN. BEDS.	PROJECT FOR TWO MILLION MEN. BEDS.
Base Sections		
West of tours	38,000	To be determined later.
Intermediate Section.		
Bet. Tours and the French		
Zone of the Armies	21,000	To be determined later
Advance Section.	14,000	To be determined later.

By September 20, 1917, French hospitals with a total capacity of 6,250 beds have been turned over to the American Medical Department by the French *Service de Sante* and the following sites selected for the construction of barrack hospitals:

Nantes	2,000	beds
La Rochelle	4,000	"
Perigueux	5,000	"
Bordeaux	5,000	"
Tours	4,000	"
Dijon	5,000	"
Neufchateau (Bazoilles)	5,000	"
Beaune	1,000	"
La Baule	--	"
Limoges	1,000	"
Passy	--	"
Poitiers	1,000	"
Angouleme	1,000	"
Vichy	3,000	"
Moulins	2,000	"

Confidential Memorandum No. 76, Hq. A. E. F., dated August 30, 1917, had previously directed that, where suitable buildings could not be found for the purpose, 300-bed camp hospitals would be constructed in each divisional training area.

On November 1, 1917, the C-in-C approved an altered distribution of the 73,000 beds in the first program so as to give about 40,000 in the Intermediate Section and about 20,000 in the Base Sections, upon the recommendation of a joint board of American and French officers, previously appointed to make a further study of American hospitalization.

Prior to June 1, 1918, all matters of hospilization involving new projects and new construction required the approval of the C-in-C. The more rapid arrival of troops in France than had been expected, the many difficulties that were encountered in securing and leasing suitable hospital sites, which rendered projects involving new construction not available for six months, and the recognition of the fact that the provision

of adequate hospital accommodations should keep pace with the arrival of troops made it necessary to adopt a more comprehensive, definite and settled policy on hospitalization, one which would provide for an automatic supply of beds computed on the total A. E. F. strength of troops in Europe. On that date, acting upon recommendation from the C. S., A. E. F., the C-in-C authorized the Medical Department to maintain an actual current bed status aggregating 15% of the total A. E. F. troops in Europe. This numerical bed allowance was to include the accommodations provided in all fixed hospitals, irrespective of type, as well as convalescent camps, computation to be made on the basis of ordinary bed capacity and was not to include temporary increases in capacity by the use of tentage in fixed formations or the temporary hospitalization provided in mobile sanitray formations.

In order that the Medical Department could make timely provision in anticipation of future needs it was authorized to utilize an additional credit of 90,000 beds over the 15% flat rate, to be made up in monthly allotments of 15,000 beds each. This authorization permitted the expansion of existing hospitals, hospital centers, and the construction of camp hospitals without reference to G. H. Q., but required all matters of hospitalization involving new projects to be referred for consideration. This authorization provided a satisfactory working basis upon which the Chief Surgeon could plan hospitalization upon a priority schedule, based upon the expected arrival of troops in Europe and made it possible to avoid any conflict of opinion as to the ratio between combat and other troops.

LOCATION

The location of American hospitals offered very considerable difficulty. It was desirable to have them near the troops, they were to serve and near the Lines of Communication. It was some time after America's entry into the war before it was decided in what sector the Americans would operate and where the Line of Communication would be, as a result of which the Medical Department was hampered in making definite plans as to the location of hospitals.

In locating the hospitals, consideration had to be given to the transportation situation and to the problem as to whether or not the treatment of the greatest possible number of cases would be required towards the bases or towards the front. Attention had to be given to the matter of sidings for the purpose of unloading supplies and patients at the hospitals. It was necessary to locate the hospitals in such places as would not interfere with the training of troops, the location of camps and the establishing of depots.

The training Areas for the Americans had been centered around Neufchateau and the Lines of Communication extended back through Dijon, Nevers, Bourges, Tours, Angers, Nantes, St-Nazaire; and from Bourges, through Chateauroux, Limoges and Perigueux to Bordeaux; and the logical location for the greater number of A. E. F. hospitals was in these areas and along these Lines of Communication. The base ports of Bordeaux, St-Nazaire and Brest required considerable hospitalization as debarkation ports for the permanently disabled and for the prospective care of sick from troops returning to the U. S. from the A. E. F.

BUILDINGS

1. Existing French hospitals.
2. Suitable buildings by lease.
3. Construction.

EXISTING FRENCH BUILDINGS: By 1917 the French and English had almost exhausted the

supply of available buildings in France for hospitalization and the large influx of French and Belgian refugees from the devasted areas had made heavy demands upon any remaining reserve. The buildings which could be turned over to the Americans by the French at this time were not well suited to American hospital organization and methods. In many cases, the offerings were inaccessible, in a condition of bad repair, without modern sanitary plumping, and too small and scattered to be operated to advantage under the American system of hospitalization. School buildings, hotels, casernes and French hospitals, while not well suited to hospital purposes, were secured later in large numbers, however, and were with difficulty operated as military hospitals with more or less success. French hospitals generally were small institutions of from 25 to 300 beds, widely scattered, personnelled largely by voluntary workers who lived at home. If taken over by the A. E. F., it would have been necessary to quarter the personnel in the hospitals, thereby lessening the bed capacity. The administration of small hospitals required the distribution of the sanitary personnel in small groups, which results in a very considerable increase of the total personnel required. The allowance of sanitary personnel in the American army had been fixed at a figure so low in proportion to combatant troops that their work could be effectively accomplished only in large groups. The hospital unit had been increased to a thousand beds capacity, capable of being expanded in emergency by providing crisis expansion in tents. From the beginning it was apparent that French hospitals could not be utilized to advantage by the Americans except to meet the needs of small camps or to form a nucleus around which barrack hospitals could be constructed.

HOTELS: Hotels as hospitals had not only the objections of being hard to administer, extravagant in the requirement of personnel, but were otherwise not generally suited for hospital purposes because of the numerous halls, small rooms and many stairs. Those available were very largely summer hotels without heating facilities, with insufficient water and very limited plumbing, were expensive to operate in that the rental was high, many alterations had to be made, damages were sustained to the furniture in being removed, and, when returned to the owners, complete restoration was required to be made under the French law.

Inasmuch as construction was unavoidably delayed, it was necessary to lease hotels in large numbers and operate them as hospitals in order that the sick and wounded of the fast arriving troops could be cared for, notwithstanding the many objections to their use.

CONSTRUCTION: Two standard types of hospitals were adopted for construction, Types A and B, plans for which were furnished the Engineer Department by the Chief Surgeon. These differed only in that the wards of the type B hospital were smaller. The type B usually had a capacity of about 300 beds and were utilized as camp hospitals; the type A had a normal capacity of 1,000 beds and were used for base hospital purposes. Vacant ground was left adjoining the wards for the erection of crisis expansion sufficient to double their capacity. The crisis expansion consisted of tents with floors, with water and light installations, and, when equipped, served a most useful purpose in caring for the sick and wounded in emergency.

HOSPITAL CENTERS

The necessity for economy in Medical Department personnel, the recognition of the difficulties to be encountered in the transport of medical supplies, and, particularly, the transportation of the sick and wounded from the battle line, the necessity for sidings for American hospital trains and unloading stations, the necessity for economy in building materials, led the Medical Department soon after the arrival of American troops in France to the consideration of plans for the concentration of hospitals in groups. After considerable study by the Chief Surgeon, of French, and English

hospitalization, of the American Lines of Communication, of French ports available for the use of the American army, of transportation and personnel difficulties, of available and suitable sites for hospitals, recommendations were approved by the C-in-C for the erection of hospitals in groups which were officially designated as hospital centers.

The scheme of the organization of these centers was to have from two to twenty independent base hospitals and a convalescent camp, operate under one administrative head. It was contemplated that the larger centers, with crisis expansion and convalescent camp, provide for from thirty thousand to thirty-six thousand patients. Each center was provided with its own auxiliary activities such as Quartermaster and Medical Department Depots, laundry, bakery, motor transport park, electric light plant, detachments of Quartermaster, Engineer and Medical Department troops, with Military Police and Headquarters detachments.

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The immensity of some of these centers will be recognized when it is noted that from November 11 to December 5, 1918 Mesves Hospital Center reported daily a capacity of 25,000 emergency beds. This center, on November 16, 1918, had a total of 20,186 patients. On November 21, 1918, the number of permanent personnel on duty in that center was 8,642. On November 16, 1918, the total strength of the command in that center, including personnel on duty and patients in hospitals, was 28,828, the strength of a division of infantry.

In these centers, the hospitals were grouped to the best advantage and the system permitted the development of special hospitals to a high degree of perfection. Special hospitals were a feature of all the centers, there being, as for instance at the Savenay Center, a tuberculosis, an orthopedic and a psychopathic hospital in addition to those used for general surgery and medicine.

Highly skilled specialists were detailed as consultants on the staff of the commanding officers to supervise the proper care of the sick and wounded. These specialists were of the most skilled that America has produced, many of the leading and most prominent surgeons, neurologists, orthopedists, interists, bacteriologists and roentgenealogists of our country having come to the aid of the Medical Department at the outset of the war.

Hospital Centers were of two types:

1. Those established in French buildings.
2. Constructed barrack hospitals.

Those established in French buildings consisted of groups of hotels or casernes where hospital units of personnel operated from two to seven base hospitals, with capacitties varing from one thousand to sixteen thousand emergency beds. The two most prominent of these were the Toul and Vichy Centers, the hospitals of the former occupying casernes largely, and those of the latter being established in hotels at that famous watering resort.

The constructed centers as authorized were to consist of from two to twenty complete type A hospitals, with a crisis expansion sufficient to increase the capacity of each from 50% to 100%, and a convalescent camp with a capacity of 20% of the normal beds of the center. The type A hospitals had a normal capacity of 1,000 beds. One base hospital personnel in emergency with crisis expansion could care for from 1,500 to 2,000 patients.

When the Armistice was signed there were five centers in operation in French buildings with a total capacity of 38,340 normal and 51,523 emergency beds, and fourteen centers operating in constructed barrack hospitals with a total capacity of 69,059 normal and 127,270 beds.

BED CAPACITY, NOVEMBER 11, 1918

The total capacity of the 153 base hospitals, 66 camp hospitals and 12 convalescent camps operating on November 11, 1918, was 192,844 normal and 276,347 emergency beds, of which 184,421 were occupied.

INFIRMARIES

Infirmaries of from 10 to 50 beds capacity were authorized for organizations in camps, such as regiments, and for detachments, in towns where the number of troops present did not justify the establishing of camp hospitals. The function of these informaries was to care for the slightly sick that did not require hospital treatment. They were operated by Medical Department personnel attached to the organization served.

ADMINISTRATION

Hospital centers and independent base hospitals, for the purposes of administration, were operated under the direct supervision of the Commanding General, S. O. S.; but for purposes of supply and discipline they were under the jurisdiction of the commanding officer of the section in which they were located. The administration, supply and discipline of camp hospitals came under the jurisdiction of the section commanders. Camp infirmaries were administered and supplied under the supervision of the commanding officer of the local troops served.

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T. H. J.

REPORT ON ORGANIZATION AND ACTIVITIES OF THE DIVISION OF LABORATORIES AND INFECTIOUS DISEASES, OFFICE OF THE CHIEF SURGEON

I. INTRODUCTION

When the United States entered the war, practically no information was at hand relative to the organization and activities of the laboratory services of the nations engaged. It was not possible therefore, at that time, to formulate any definite plan of organization based on their experience.

The organization, development and activities of this division may be divided, for purposes of discussion, into two periods: From June to November, 1917, and from November, 1917, to November, 1918.

II. PERIOD FROM JUNE TO NOVEMBER, 1917

A. SECTION OF LABORATORIES

1. General plan of Organization and Development: Soon after the first American troops sailed for France, five commissioned officers and six enlisted when under command of Maj. H. J. Nichols, M. C., and designated as Army Laboratory No. 1, sailed July 26, 1917, arriving at Liverpool, August 4, and in France, August 5. It was presumed that

general laboratory supplies would be available in France and this unit brought with it only a few special items. It was ordered to Neufchateau for station. An emergency equipment was secured from the Pasteur Institute consisting of one French army model field laboratory packed in chests. The laboratory was of necessity housed in a building altogether unsuitable for the purpose; the necessary alterations were made under almost insurmountable difficulties and neither gas or electricity was available with sufficient constancy to permit their use. The following tentative plan of organization was agreed upon:

Each base hospital coming to France to bring with it trained commissioned and enlisted laboratory personnel and its initial laboratory equipment.

To meet the requirements of combatant troops the following laboratories to be provided (C. S. to S. G., Aug. 12, 1917):

1 Field Mobile Laboratory for each division; 2 officers and 4 enlisted men.
1 Corps Laboratory for each corps; 4 officers and 8 enlisted men.
1 Army Laboratory; 8 officers and 16 enlisted men.

None of these units arrived prior to Nov. 1, 1917, though several Base Hospitals (Nos. 15, 18, 17, 8, 9, and others) arrived and their laboratories began operating.

2. Personnel: The personnel for the period consisted of that of Army Laboratory No. 1, and two commissioned officers and a varying number of enlisted technicians for each base hospital laboratory.

3. Equipment and Supplies: The equipment secured from the Pasteur Institute consisted of very limited material for clinical pathology and general bacteriology. With the greatest difficulty a very incomplete equipment for serologic and pathologic work was got together. A small requisition for supplies had been placed with the Supply Division before the unit left the United States, but much of this material never reached Neufchateau. A requisition was placed for the limited number of items of laboratory equipment on the supply tables of the M. M. D. and provision was made for supply of the standard cantonment laboratory equipment to corps laboratories and the army standard field laboratory equipment plus a poison-detection chest, etc., to field (mobile) laboratory units as they were ordered overseas. The Red Cross base hospitals in France had fairly complete laboratory equipment and supplies but much of it was useless, since neither sufficient gas or usable electric current was obtainable.

4. The Technical Laboratory Services: A considerable amount of routine clinical pathology was done and an autopsy service of practical value conducted. The bacteriologic work done during this period consisted mainly of a study of the organisms concerned in the prevalent infections of the respiratory tract. The Wassermann service was begun in September, 1917. The difficulties to be overcome were many. Little equipment was available, all reagents had to be prepared and standardized, only with the greatest difficulty could guinea-pigs be secured, only a low speed hand centrifuge was available and it was necessary to use a tin basin heated with an alcohol lamp as an inactivating bath. At that time it was planned that the Wassermann work for the entire A. E. F. would be done at Army Laboratory No. 1. This, however, was not possible because of delays in transmission of specimens and reports.

III. PERIOD FROM NOVEMBER, 1917, TO NOVEMBER 1918

In the latter part of October, 1917, a division, charged with the supervision of the laboratory service for the American E. F., was created as part of the Office of the Chief Surgeon, American E. F., and Col. Joseph F. Siler, Medical Corps, was designated as director. He reported to the Chief Surgeon, November 11, 1917, and was directed to submit plans including a Section of Laboratories and a Section of Infec-

tious Diseases. December 28, a final plan for the organization of the division was submitted and approved. January 1, division headquarters were established at Dijon, in which city the Central Medical Department Laboratory of the American E. F. was being established. In the development of this division it eventually became necessary to include two additional sections, the Section of Food and Nutrition and the Section of Water Supplies.

In the organization and development of all sections of this division it was borne in mind that the main activities of its sections, Laboratories, Infectious Diseases, Food and Nutrition, and Water Supplies, were primarily concerned with the prevention and control of epidemic diseases, the maintenance of the physical well-being of the troops, investigations furthering the prompt return to duty of sick and wounded, and the inspection at autopsy of a portion of the professional services rendered. Hence, it quite naturally became an integral part of the decision of Sanitation and Inspection of this office.

When the office of this division was established at Dijon the Office of the Chief Surgeon was located at Chaumont and no great difficulties of coordination were anticipated. Later, the Chief Surgeon's Office was transferred to Tours and, not infrequently, there was considerable delay in the transfer of personnel as all orders for such transfers emanated either from General Headquarters, or from Headquarters, S. O. S. Such delays were occasioned by unavoidable congestion of telegraph and telephone lines, necessary censorship regulations and irregular mail facilities. The remedy was the delegation, to the Director of the Division, of authority to issue orders to meet emergencies and to fill existing vacancies from the reserve staff on duty at the Central Medical Department Laboratory. The necessary authority was granted and the efficiency of the service thereby greatly increased, particularly in the early investigation of epidemic diseases and in meeting combat emergencies.

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A. SECTION OF LABORATORIES

1. General Plan of Organization and Development: The Section of Laboratories was charged with the following general duties: (2) Representative of the Chief Surgeon in all matters relating to the laboratory service: (b) Organization and general supervision of all laboratories and the assignment of special personnel; (c) adviser to the Supply Division, Chief Surgeon's Office, in the purchase and distribution of laboratory equipment and supplies; (d) publication of circulars relating to standardization of technical methods, collection of specimens and other matters of technical interest to the laboratory service; (e) collection and distribution of literature relating to practical and definite advances in laboratory methods; (f) collection and compilation of statistics on routine and special technical work done in laboratories; (g) instruction of Medical Department personnel in general and special laboratory technic; (h) distribution and replenishment of transportable laboratory equipment; (i) cooperation and coordination with the Chemical Warfare Service, American E. F.; (j) supervision of the collection of museum specimens and photographic records of Medical Department activities.

The following officers were assigned to duty in this section to supervise its activities: Lt. Col. Geo. B. Foster, Mr., M. C., Lt. Col. Wm J. Elser, M. C., Lt. Col. M. C., Lt. Col. Louis B, Wilson, M. C., and Major W. J. MacNeal, M. C.

From time to time circulars of instruction and memoranda covering matters of information have been prepared in this section. The policy was adopted of having all circulars of general interest to the Medical Department at large issued from the Office

of the Chief Surgeon. The director of the division was authorized to prepare and distribute directly special letters and circulars of instruction relating to the organization and activities of the division. The original plan of organization contemplated the following types of laboratories which, with the number operating in each month in 1918, are shown in the following table:

TYPES AND NUMBERS OF LABORATORIES IN OPERATING IN 1918 IN THE AMERICAN EXPEDITIONARY FORCE

	Jan.*	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.
Cent. Med. Dept. Laboratory	1	1	1	1	1	1	1	1	1	1	1
Base Labs. Sections of S. O. S.	3	3	5	5	7	7	7	7	10	10	10
Base Labs. in Hospital Centers	1	1	1	2	2	5	7	11	14	16	17
Hosp. Labs. in Hosps. in Centers	4	4	4	9	9	13	20	35	55	56	61
Base Hosp. Labs. Independent	4	6	8	7	7	3	7	9	9	10	10
Camp Hospital Laboratories			24	24	25	25	33	33	42	45	51
Evacuation Hospital Labs.			1	2	2	4	8	8	13	18	18
Mobile Hospital Laboratories				1	1	2	3	3	8	12	12
A. R. C. Hospital Laboratories **					3	3	10	10	14	18	18
Army Laboratories								1	1	1	1
Divisional Laboratories	3	3	4	5	6	8	14	21	33	35	36
	16	18	48	56	63	71	110	139	200	222	238

* * * * * *

(a) Central Medical Department Laboratory: This laboratory was established at Dijon, Jan. 1, 1918, by officers from Army Laboratory No. 1, Neufchateau. The building for the purpose was donated by the University of Dijon at a nominal rent of one franc per year. The entire plant occupied eighteen buildings, large and small.

The average personnel on duty between June and November, 1918, was 24 officers, 93 enlisted men, and 23 civilian employees. The important activities of the laboratory, in contrast to other types, line in the following features: (1) The instruction of laboratory officers for service elsewhere in the American E. F.; (2) the standardization of bacteriologic methods; (3) the preparation of supplies for other laboratories; (4) the conduct of research looking toward the improvement of medical and surgical treatment of cases in the field; (5) the organization of trained teams of officers and equipment which could be sent on short notice to investigate and advise on the causes

* Includes laboratories functioning prior to January 1, 1918.

** In July, 1918, it became necessary to furnish laboratory personnel and equipment for American Red Cross Hospitals functioning as hospital units with the American E. F.

and remedy for epidemics. Routine laboratory examinations were also conducted here but the great importance of the Central Laboratory rests in the development of the above noted phases.

The activities of this laboratory may be summarized as follows: (1) During battle activities this division manufactured many thousands of liters of gum-salt solution for intravenous use in the resicitation of the seriously wounded. The laboratory also prepared standard solutions and reagents for transportable laboratories and such other laboratories as were not equipped to prepare their own.

(2) In the Laboratory of Surgical Research experimental studies on animals were fruitful in their bearing on the prevention of wastage from battle casualties. The cause, prevention and treatment of surgical shock were approached experimentally here and the results applied practically at the front during the Chateau-Thierry and subsequent offensives.

(3) Perhaps the most important work of the laboratory from the practical point of view was that concerned with the laboratory and epidemiologic investigation and control of communicable diseases. Specially trained commissioned and enlisted personnel with mobile equipment were held in reserve at this laboratory for the prompt investigation of epidemics or threatened eqidemics anywhere in the American E. F. By bacteriologic dedection of early cases of communicable diseases, mild cases missed clinically, and carriers, this laboratory did much to prevent the spread of influenza, pneumonia, diptheria, meningitis, and enteric infections, and thus decreased the wastage concomitant with outbreaks of these diseases when not detected early and effectually controlled.

(4) The supply division of this laboratory was charged with the assembling, equipping and issuing transportable laboratory equipment to mobile units; replenishing expendable items and replacing those that had become unserviceable; issuing to mobile units and camp hospitals various culture media and reagents required for bacteriologic work in the field; and issuing to all Medical Department units in the geographic region served by the Central Medical Department Laboratory the various biologic products used in the diagnosis, prevention and treatment of infectious diseases. During the period of active participation of our troops at the front, the greater portion of these supplies was delivered by courier service, necessitating the constant operation of numerous camionettes, trucks, and motor cycles.

(5) From its inception this laboratory conducted courses of instruction in professional subjects. One hundred and fifty-eight student officers were given two-week courses of instruction in the bacteriology of war wounds; while in the Laboratory of Surgical Research a six-day course, repeated weekly, was given to prospective members of shock teams which covered the experimental evidence that had been gathered as to the cause, prevention and treatment of surgical shock, and its practical application to the resuscitation of the seriously wounded. Selected student officers in lesser numbers were also given special courses in eqidemiologic laboratory methods, in serologic work, and other laboratory procedures.

(b) Base Laboratories (Sections of the S. O. S.): In the original plan of organization provision was made for one base laboratory for each section or other subdivision of the S. O. S. It was contemplated that these laboratories would be located, when possible, at the headquarters of each section and under the direct control of the surgeon of the section. They were to be housed in permanent buildings and completely equipped for general laboratory work. It was intended that these units should afford general and special laboratory facilities for troops in their sections not cared for by local laboratories. Their activities were to consist of clinical examinations, general and special bacteriology, general and special serologic work, the distribution of culture media, laboratory examinations of water supplies, the investigation of outbreaks of epidemic diseases and such other activities as the section surgeon might deem advisable.

(c) Base Laboratories for Hospital Centers, and (d) Hospital Laboratories for Hospital Units Serving in Centers: It was planned to organize in each hospital center, one base laboratory for the center and one small clinical laboratory for each base hospital unit. The base laboratory was to be a part of the headquarters organization and its commanding officer, the representative of the commanding officer of the center, in all matters relating to the laboratory service. Its personnel was to consist of selected officers and enlisted technicians drawn from the hospital units comprising the center and its equipment was to be drawn from the same source.

(e) Base Hospital Laboratories, for Base Hospitals Operating Independently: The establishment of these units presented no difficulty as, in the organization of the base hospitals, provision was made for laboratory personnel and equipment. The installation of these laboratories was a matter of local administration. The activities of these units have been in general all routine clinical and anatomic pathologic work, and all bacteriologic and serologic work for the hospital.

(f) Camp Hospital Laboratories: In the early stages of development of the American E. F., it was contemplated that camp hospitals would retain only patients suffering with slight ailments, all others to be evacuated promptly to base hospitals. It was presumed that most of these hospitals would require only a clinical laboratory service. As a matter of fact, the functions of the camp hospitals varied widely; some functioned as base hospitals, others were little more than evacuating infirmaries, and still others varied between these two extremes. An attempt was made to furnish these hospitals with laboratory service in accordance with their requirements. In November, 1918, there were fifty-eight camp hospitals operating with the American E. F. and of these there is record of laboratory service in fifty-one.

(g) Evacuation, and (h) Mobile Hospital Laboratories: The original conception of the organization and activities of the Laboratory service for these units was based very largely on the experience of the Allies after three years of trench, or stationary warfare. It was anticipated, however, that this type of warfare would change to one of movement and the laboratory equipment for these units was placed in chests capable of being packed or unpacked quickly and easily transportable. The equipment provided permitted the performance of all types of clinical and general bacteriologic work.

(i) Army Laboratories: In the original plan of organization a laboratory unit for each army was considered but it was thought best to await further developments before making definite plans. Until July, 1918, all laboratory investigations of outbreaks of epidemic diseases in Advanced Section and Zone of the Advance were covered by personnel and motor laboratories from the Central Medical Department Laboratory or Army Laboratory No. 1.

During the Chateau-Thierry offensive, a motor laboratory car was attached to the I Corps for the investigation of epidemic diseases and it was understood by the Chief Surgeon, First Army, that this car was available for use anywhere in the First Army. The work done by this unit in the Chateau-Thierry sector proved to be of value, demonstrating that much of the diarrhea and dysentery occurring in that sector was bacillary dysentery, typhoid, and para-typhoid.

In August, 1918, it became evident that there should be attached to each Army a laboratory unit equipped to do general bacteriology, serology, and examinations of water supplies. A transportable laboratory equipment for the First Army was assembled and shipped to Toul just prior to the St-Mihiel offensive. Special personnel was not immediately available and the equipment was installed at the Toul Hospital Center where the laboratory operated for the center and also met the emergency requirements of the First Army.

During the early phases of the Argonne offensive, a motor laboratory was attached to the I Corps of the First Army.

When the Second Army was formed, a motor laboratory car was attached to the Office

of the Chief Surgeon, functioning under the Sanitary Inspector of the Army in the investigation of epidemic diseases.

(j) Divisional Laboratories: These units consisted of two officers and four enlisted technicians, one such unit being attached to each division. The unit constituted a part of the sanitary staff of the Division Surgeon to be used by the divisional sanitary inspector in the investigation and control of epidemic diseases and in inspection and supervision of sterilization of water supplies. The laboratory equipment furnished these units permitted only the performance of routine clinical examinations. No equipment for general bacteriology was issued, the intention being that this would be done in evacuation and mobile hospitals. Several efforts were made to secure transportation for it and the inclusion of the personnel and transportation as a divisional unit was recommended by this office in the proposed revision of the Tables of Organization under consideration during the summer of 1918. This proposed revision had not been approved on the date of the declaration of the Armistice. Had even a motorcycle been available for these units, there is but little doubt that water discipline would have been better throughout the divisions with a consequent decrease in the prevalence of typhoid-paratyphoid fevers and dysentery.

2. Personnel: The personnel of this division consisted of: Medical officers with special training in laboratory procedures, sanitation and epidemiology and with other special qualifications; officers of the Sanitary Corps who were sanitary engineers, who had special knowledge of food and nutritional problems, who were competent to make field surveys and laboratory examinations of water supplies, who had general or special qualifications in laboratory procedure, who were artists, photographers, executives, or with other special qualifications; and enlisted men, many of whom had special technical training. While in May, 1918, less than 140 commissioned officers were engaged in activities under the supervision of this division, by November, 1918, this number had increased to 683. Their distribution by corps, grade and general duties is shown in the following table:

PERSONNEL ON DUTY IN DIVISION OF LABORATORIES AND INFECTIOUS DISEASES In Nov. 1918

	Cols.	Lt. Cols.	Majs.	Capts.	1st Ltd.	2d Lts.	Totals
Section of Laboratories and Infectious Diseases							
Medical Corps	1	10	20	124	317		472
Sanitary Corps			2	6	64	76	148
Section of Food and Nutrition Sanitary Corps			4	11	15	2	32
Section of Water Supplies Sanitary Corps		1		5	15	10	31
TOTALS	1	1	26	146	411	88	683

3. Equipment and Supplies: One of the greatest difficulties that confronted the laboratory service in the early months of the war was a shortage of equipment and supplies.

With the exception of the initial equipment of three of the larger laboratories and a few base hospitals, laboratory supplies from the United States were not available for issue in appreciable quantities until a month before the Armistice. Furthermore, laboratory supplies in large quantities have never been available by purchase in France.

It became apparent early that it would be months before the automatic supply of laboratory apparatus from the United States would become available and that it was necessary to reduce all equipment and supplies to the absolute minimum consistent with efficiency. Lt. Col. Geo. B. Foster, Jr., the Commanding Officer of the Central Medical Department Laboratory, designed a transportable laboratory in which the necessary laboratory equipment and supplies were reduced to approximately 150 items. The equipment and supplies were placed in eight chests so designed that they were capable of expansion in numerous ways so as to meet the essential needs of any type of laboratory. In March 1918, this officer was sent to England to place orders for, and supervise the manufacture of these laboratories. The initial order was for 100 complete laboratories. Deliveries began a month later and each division mobile hospital and evacuation hospital arriving in France was given its equipment before entering the Zone of the Advance. This transportable equipment was also utilized with every satisfactory results in many camp hospitals, base hospitals and even in base hospital centers and base laboratories, pending the arrival of stationary equipment. The satisfactory service that this equipment has given under most varying circumstances leads to the conviction that similar equipment should be procured and stocked in field medical supply depots in time of peace for future expeditionary forces.

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B. SECTION OF INFECTIOUS DISEASES

The section was successively under the charge of Lt. Col. R. P. Strong, Lt. Col. Hans Zinsser, and Major Ward J. MacNeal.

The conception of the proposed activities of this section were early indicated as follows:

> The function of the subdivision of Infectious Diseases is to provide an instrument for the epidemiological and bacteriological investigation of transmissible diseases among troops of the American Expeditionary Forces. It constituted, therefore, a direct liaison between the Division of Sanitation and Inspection and the laboratories and is grouped with the latter only because its activities require the occasional mobilization of laboratory facilities, and because its personnel should be capable of directing on the spot, any laboratory work which the thorough study of any given situation may require. While operating from the laboratories as a basis, therefore, this section constitutes actually a part of the machinery of sanitation.

In Circular No. 40, issued from this office July 20, 1918, the duties of this section were more specifically outlined.

The officer responsible for sanitation in a division was, as hitherto, the Sanitary Inspector, who functioned as an assistant to the Division Surgeon. All ordinary matters of general sanitation were attended to by him with the assistance of two officers, one the division laboratory officer who had charge of a simple laboratory, equipped for clinical pathology but insufficiently supplied for extensive cultural work. The other assistant was the divisional water officer, whose training had been largely in water examination but who had had some training in general bacteriology as well. Later in the work much of this personnel received a short course of instruction before being assigned to a division.

It was intended that the divisional laboratory officer should act not only as a technical laboratory worker for the division but should assist the Sanitary Inspector in making epidemiologic surveys and sanitary inspections. It may be said, in passing, that in many cases this hope was disappointed because of the lack of transportation.

In order that such service might be rendered promptly and efficiently, Bulletin

No. 32, G. H. Q., was issued, which authorized Chief Surgeons of organizations to communicate directly by telephone or telegraph with the Director of Laboratories and Infectious Diseases when assistance was needed. Mobile laboratory cars, constructed and equipped (with some modifications) according to the English plan, manned usually by one commissioned officer, a driver and a technician, responded to these requests either from the Central Medical Department Laboratory or from Army Laboratory No. 1, according to the area from which the request was received.

Subsequently, as American troops were now concentrating in the Advance Section and in the Zone of the Advance, and more and more divisions were beginning actively to participate in combat, the desirability of a further system of daughter organizations to be split off from the Central Office of the Section of Infectious Diseases, and based upon army corps or field army units, arose. As the result of experiment it was decided that the field army unit was the more desirable in which to construct an organization.

Accordingly, a sanitary inspector, Lt. Col. Hans Zonsser, was assigned to the Second Army and there was planned and put into operation a system more or less similar to that already in vogue in the sections of the S. O. S., but with modifications to meet the problems of combat and mobile troops. In consequence the sanitary organization of a field army, likewise, became largely independent, except for personnel and laboratory supplies, of the central office.

C. FOOD AND NUTRITION SECTION

The steps leading to this organization may be briefly summarized as follows: In August, 1917, there was organized in the Office of the Surgeon General a Division of Food and Nutrition and its officers were authorized by letter of the Secretary of War dated October 16, 1917, to inspect food supplies in camps, to endeavor to improve the mess conditions, and to study the ration suitability and food requirements of the troops. Officers of this division were sent to camps in the United States and while in camp gave instruction to cooks, mess officers, and unit commanders and also made extensive studies of ration requirements and suitability. In March, 1918, it was decided to send a group of these officers to the A. E. F. to organize similar work in France. To this end, on March 7, six officers left the states for this purpose. This party proceeded first to England and remained there from March 16 to April 2. Through the courtesy of the British A. M. C., opportunity was afforded to make a thorough study of the British rationing system and a preliminary survey was made of the American rest camps in England. As a result, one officer was left in England to continue the work there and on April 3, the other five officers proceeded to France, reporting to the Chief Surgeon at Tours on April 12. It was decided to send the officers, one each to a different section of the S. 0. S. for a preliminary study of conditions, and one to Dijon for duty in the Advance Section under the direction of the Director of Laboratories, under whom the Section in Food and Nutrition was later established. The other officers were assigned to the Chief Surgeons of the Intermediate Section and Base Sections 1, 2 and 5. Each officer visited and inspected organizations in his sector and reported his observances. Later the group came together at Dijon. The following extract from the report of Major P. A. Shaffer, the Director of the Section, summarizes the results of this preliminary survey:

> The results of this preliminary inquiry and of the reports and conferences led to the conclusion that although the garrison ration being issued generally to troops was adequate in total food material and the quality of the articles as a rule good, in many places the feeding of the men was poor, due in large part to the unfamiliarity of mess sergeants and cooks with the ration in kind

and to their general inefficiency under the conditions existing in France, to a lack of interest in or attention to mess conditions by company commanders and higher officers, and in the Advance Section where daily automatic issue was in force, to the issue of too many components on a single day, in correspondingly small amounts, i. e., to an unwise issue system. There was nearly everywhere great waste of food with consequent underfeeding. The rapid growth and multiplication of camps, the scaricty of material for construction of kitchens and mess shacks, delays in transportation and the scarcity of refrigerator cars for fresh meat produced conditions to which officers and men, coming from relatively well equipped camps in the United States found it difficult to adapt themselves. Also the composition of the rations issued appeared in some particulars not suited to the field service.

As a result of this conference it was decided by the Director of Laboratories to establish, with the consent of the Chief Surgeon, a section of Food and Nutrition in that office to which were assigned the following duties: (a) Representing the Chief Surgeon in matters affecting the nutrition of the troops; (b) investigating army food requirements and consumption; (c) acting in an advisory capacity in the formulation of rations and dietaries for the American E. F.; (d) inspecting food supplies and mess conditions with troops, hospitals and prison camps; and (e) giving instruction in food inspection and mess handling, mess management and other measures for the maintenance of nutrition and conservation of food.

The functions of the section have fallen naturally into two classes: First, of a technical and scientific character having to do with a general study of the food situation, the inspection and analysis of food, the investigation of the suitability of the ration and the formulation of desirable changes on the basis of food requirements and the nutritive value of food stuffs, and advisory relationship with the Chief Quartermaster and General Staff on these matters; and second, field work in mess inspection and instruction for the improvement in the handling and preparation of food.

To carry out the second phase and to secure data for the first phase, necessitated an organization of field parties. These were organized through the cooperation of G-5, G. H. Q., and consisted of an officer and instructor, mess sergeants and butcher supplied by the Quartermaster Department. These parties served with combat divisions, in sections of the S. O. S. and wherever there were detachments or other units of troops. They studied the needs at first hand and continued active instruction to mess officers and cooks and sergeants in the field. Their reports formed the basis for the formulation of ration recommendations and this section wrote G. O. 176, which was adopted with few changes by the Quartermaster General and G. H. Q.

A food laboratory was established at the Central Medical Laboratory and this has conducted analyses for the Quartermaster Department on varied materials submitted for this purpose.

Another phase of the work to which this section has contributed was a series of investigations in connections with the bread making for the army in which one of our officers cooperated with the bakery service. This officer later made inspections of factories of the American E. F. and through his efforts succeeded in producing satisfactory sanitary conditions in the French factories manufacturing food for the American E. F. The section also cooperated with the Quartermaster in saving beef through proper instruction to medical officers and others as to its proper handling. It has through its field officers also kept the Quartermaster informed as to ration shortages and by communicating directly with regulating officers and the Supply Department of the Quartermaster Department, been able to secure prompt remedy of these conditions in many places. In addition to field instructions, it has cooperated with G-5 in planning the formulation of schools for cooks and mess sergeants and the automatic menu maker is part of its contribution

to this sort of work. One phase of its work has been the investigation of needs of labor troops and advice to the Quartermaster on this subject.

In this work, the section has utilized a personnel of some forty officers, largely supplied from the Food Division of the Surgeon General's Office. In addition, it has had the assistance of some sixty mess instructors and butchers from the enlisted personnel of the Quartermaster Department.

D. THE WATER SUPPLY SECTION

The Water Supply Section, under the direction of Lt. Col. Edward Bartow, San. Corps, was organized early in 1918 in accordance with an agreement between the Chief Surgeon, American E. F., the Water Supply Officer, Office of the Chief Engineer, American E. F. and the Water Supply Officer, Office of the Chief Engineer, Lines of Communication.

Officers and enlisted men of the Sanitary Corps were detailed as representatives of the Medical Department for service with the Engineer Department Water Supply Service. A personnel, familiar with water purification and control was chosen from men already present in the American E. F., including officers and men attached to the 26th Engineers, Water Supply Troops, the Sanitary Corps personnel attached to the 301st and 302d Water Supply Trains, and the Division Sanitary Inspectors of Water. Additional men were obtained from the United States. At the time of the signing of the Armistice, the section had expanded to an organization having eleven laboratories or sections of laboratories in the S. O. S. and five transportable or mobile laboratories in the Zone of the Advance. The personnel consisted of nearly 100 officers and more than 100 men devoting their time almost exclusively to the control of the quality of water supplies.

Approximately 150 water purification or sterilization plants, were under the general supervision of the Sanitary Corps officers. Laboratory work was handicapped by delay in receiving appartus and chemicals.

Sanitary Inspectors of Water acting as assistants to the Division Sanitary Inspectors have been made responsible for the quality control of water furnished troops. This has included sanitary surveys and the supervision of chlorination of water in Lyster bags and water carts whether the divisions were in the Training Areas or in the Zone of the Advance.

E. SUMMARY

The work of this division may then be summed up by saying that each of its four sections, Laboratories, Infectious Diseases, Food and Nutrition, and Water Supplies, has attacked its special problems promptly, vigorously and intelligently. Though each at all times has been greatly undermanned and handicapped for lack of personnel, equipment, supplies, and transportation, in no instance has it been defeated in its attempts to grapple with the serious sanitary and health emergencies of the American E. F. An inestimable amount of sickness has been prevented. Though, in the presence of unavoidable conditions, serious epidemics of communicable diseases have developed, in most instances the flames have been extinguished before they became a conflagration. Only influenza has leaped all barriers and that has overwhelmed the civilized world. The wounded have been infected but the infective agents have been found and the means of neutralizing their effects pointed out. Men have died before their condition was rightly understood, but even they have not died in vain since the laboratory has gleaned the naked truth concerning them and placed it where it has saved others. And yet, when the war ended the division was but catching its stride, a few months more and this most efficient organization for the combat of preventable disease and the maintenance of high

standards of medical and surgical diagnosis and treatment under war conditions would have been perfected to a degree not hitherto known.

REPORT OF ACTIVITIES, PERSONNEL DIVISION

In describing the activities of the personnel division, it is necessary to consider the Office of the Chief Surgeon, American E. F., of the Chief Surgeon, L. O. C., the Liaison Officer in England, and the Special Services.

The medical personnel of all American units in France, England and Italy was under the supervision of the Chief Surgeon, American E. F.

On March 21, the Chief Surgeon's Office moved from Chaumont to Tours and from that time until the date of the Armistice functioned in Tours as a part of Headquarters, S. O. S. Orders were issued through the S. O. S. Headquarters covering the medical personnel on duty under the jurisdiction of the S. O. S., and through G. H. Q. for personnel not under the jurisdiction of the S. O. S.; that is, personnel belonging to army, corps, divisions, and the Army Ambulance Service.

Replacements were handled entirely through the S. O. S., the Medical Casual Depot being at Blois until July 1918, when it was transferred to the 1st Depot Division at St-Aignan. This transfer was made with a view to establishing a short course of training in field work at the 1st Depot Division; but it was never possible to carry out this plan because of the constant shortage of Medical Department enlisted personnel which necessitated using all available men at all times, the longest stay in the depot being as a rule not more than two weeks. This change from Blois to St-Aignan was a disadvantage in that it caused some delay in getting officers and men shipped to points where they were needed at once. This delay was mainly due to lack of transportation.

The main feature of the work of the personnel division has been the effort to keep the machinery going with a constantly increasing shortage of medical personnel. This shortage, while marked, was not critical until June 1918, when the activities of the American army at the front increased so tremendously. The Paris Group had hardly been organized when it became apparent that the fears of the Medical Department as to the shortage of personnel had been justified; and in an official investigation of the evacuation of wounded from the Paris Group, the Inspector General recommended: That further provision be made for emergency reserve surgical teams, and that steps be taken to secure an increase of the sanitary personnel, both commissioned and enlisted.

The Chief Surgeon, in a memorandum of July 30, 1918, to G-4, on this matter, brought out clearly the situation as regards the shortage of personnel: The present surgical teams are obtained by stripping the base hospitals to a considerable extent of their surgical staffs at the very time when their services are needed at the hospitals because of the active evacuation of wounded from the front.

Between June and November, 1918, replacements came in increasing numbers, but combatant troops came in much greater proportion and heavy casualties occurred in the great battles of those months. Consequently the strain on the Medical Department, instead of being relieved, became intensified. The situation was, however, saved by the fine quality and self-devotion of the medical personnel, which in many hospitals worked to the limit of human endurance. Operating surgeons and nurses were on duty at times as long as seventy-two hours at a stretch without opportunity to sleep more than a few minutes now and then between operations. Some base hospitals, originally planned to care for 500 patients, were forced to take as many as 2,100, with very small additions to their original personnel. Practically every base hospital cared for 1,500, and some of them as high as 3,000 patients. One hospital center with a total nursing staff of 110 nurses, cared for 4,500 patients.

Priority: In the priority schedule adopted in August 1917, the Medical Department was allowed a total strength of 7.65% of the total strength. This was slightly over half of the strength estimated by the Chief Surgeon as necessary, and experience has proved that it was much too small. This percentage was, however, not reached until October 1918.

The percentage on which estimates submitted by the Medical Department were based, were in the spring of 1918, stated at the following:

Officers,	Med. Corps	0.8%		
"	Dental Corps	0.1%		
"	Vet. Corps	0.05%		
"	San. Corps	0.05%		
Officers, Total				1.00%
Nurses,				0.8%
Soldiers,	Med. Dept.	9.2%		
"	Vet. Corps	0.6%		
Soldiers, Total				9.8%
			Total	11.6%

a grand total of 11.6% of the American Expeditionary Forces exclusive of the Medical Department. This is believed at to be a fair estimate of the number which would insure that the Medical Department would be able to meet its obligations properly, and if the given could have been reached there is no doubt that it could have faced almost any emergency with confidence.

On May 22, 1918, an analysis of the state of the Medical Department proprity made by the Medical Department representative under G-1 at General Headquarters showed a total personnel shortage of 13,671, while the total Medical Department strength was only 48,768; thus showing the Medical Department 30 per cent below the low percentage allowed by the priority schedule. In units the shortage on approved priority included the following:

Base Hospitals	25
Hospital Trains	4
Evacuation Hospitals	8
Venereal Hospitals	2
Evacuation Ambulance Company	1
Sanitary Train	1

In August the shortages on approved priority were much larger and a cable sent on August 10, called for a total Medical Department personnel of 21,700 to be given priority insofar as possible over divisional units. In the personnel were the following units:

Base Hospitals	53
Evacuation Hospitals	39
Evacuation Ambulance Companies	37
Other Med. Dept. Organizations	27

On September 30, the total shortage on approved priority was 26,497, including:

Base Hospitals	26
Evacuation Hospitals	31
Convalescent Camp	1
Evacuation Ambulance Companies	32
Hospital Trains	3
Mobile Laboratories	12
Medical Supply Depot	1

The personnel expected in October amounted to 34,868, while only about 1,800 arrived. On November 11, the shortage on approved priority was as follows:

Officers	3,604
Nurses	6,925
Soldiers	28,023

The following tabulation covering Medical Department personnel from June 1 to December 28, 1918, shows the monthly totals, which in some cases are only approximate on the date given as mail reports on arrivals of personnel were often delayed:

	JUNE 1	AUGUST 3	OCTOBER 5	NOVEMBER 30
Officers	5,198	9,601	14,483	17,487
Nurses	2,539	4,735	7,522	8,951
Soldiers	30,674	67,140	104,557	137,403

The largest total of personnel eecorded is that of the week ending January 11, 1919, when 17,330 officers, 10,008 nurses and 145,386 men were on our records. These totals should really show as of the first week of December, as no Medical Department arrivals were reported for that date, but due to delay in obtaining reports of arrivals they were not finally transferred to the records of this office until the week ending January 11, 1919.

Promotions: Very few promotions were made during the first 10 months of the existence of the American Expeditionary Forces, because a definite and methodical scheme of promotion which would as nearly as possible, do justice to all, had to be found before the Commander-in-Chief would be willing to make promotions except in very exceptional cases. Such a scheme was finally worked out and presented to the Commanding General, S. O. S., May 17, 1918, by whom it was approved, May 19, with the following endorsement:

> Heretofore I have generally disapproved recommendations for promotions in the Medical Corps because they have come as isolated cases and presented no facts by which a reasonable judgment could be formed as the relative merits of the particular case in comparison with the entire body of medical officers. As this paper presents a plan which appears to me to be comprehensive, legal and reasonable, I approve it and recommend that it be adopted as the basis for promotions of officers in this corps serving with the A. E. F. in Europe.

This plan was for the application of the principle of selection for the two lower grades by means of a roster on which each man took his place according to a roster number obtained by the addition of certain factors which were:

1. Age, which represents in a general way professional experience.
2. Military Service, which represents military experience.
3. Character of Service and Special Qualifications, which are given a numerical value in accordance with a special report made in each case by the immediate superior officer.

This scheme was finally approved by the Commander-in-Chief on June 27, 1918.

Although approved in principle the practical results of the application of this scheme were, during the summer of 1918, far from giving practical relief. The necessity of having to refer all promotions to Washington, with the inevitable delays which they experienced in the War Department, would have made any system ineffective, even if prompt action could have been secured at General Headquarters. A great step forward was taken when the Commander-in-Chief was authorized (G.O. 78, War Department, 1918) to make promotions in the A. E. F., subject to confirmation by the War Department. Owing to an unfortunate misunderstanding, the benefits of this order were, not, extended to the Medical and Dental Corps until November 7, and the stoppage of all temporary promotions after the Armistice put a stop to promotions almost immediately.

Although it does not properly belong to this writing, which covers the period up to and including the signing of the Armistice, it is nevertheless of interest to know that before this book went to press there was forwarded on January 16, a list of recommendations for promotions embracing 85 lieutenant colonels to grade of colonel, 282 majors to grade of lieutenant colonel, 932 captains to grade of majors and 2,457 lieutenants to grade of captain, all of whom were promoted during the month of February, with the exception of regular officers and of the temporary officers, who had, meanwhile, left France for the United States. This list did not by any means exhaust the the vacancies which existed under the law in the Medical Corps, as there remained 241 in the grade of colonel, 293 in the grade of lieutenant colonel, 1,151 in the grade of major, and 1,323 in the grade of captain, still unfilled.

Personnel Division, Office of Chief Surgeon, L. O. C.: The first division of the Office of the Chief Surgeon, L. O. C., into personnel, supply and sanitation divisions was made during September, 1917. The personnel division handled all medical personnel of the L. O. C. directly until January, 1918, when the control of personnel was decentralized and the sections handled all personnel in the sections except that of base hospitals. A Medical Replacement Camp at Blois was planned and was practically organized when it was taken up as the Casual Officers' Depot; but still handled Medical Department casuals.

The supply of officers and men for medical replacements was very small up to September 30, 1917, when about 650 men landed. Due to the lack of a replacement camp, it was necessary to assign these soldiers in groups to various base hospitals which had already arrived and had barrack space to accommodate them. Another casual detachment of 250 men arrived in November, 1917. This was the last detachment of any size which arrived for several months and it was only after urgent appeals had been sent to The Adjutant General that casuals began to arrive in the latter part of February and March 1918.

The greatest difficulty during January and February of 1918 was in tracing Medical Department men who arrived in France and it was estimated that practically a thousand men badly needed by the Medical Department asucceeded in transferring to the line while passing through the 41st Division, which, at that time was acting as a depot division. Another factor which led to a great need of Medical Department soldiers, was lack of labor troops which could be used in the construction of base hospitals. This necessitated the use of the Medical Department soldiers attached to base hospitals in hastening the construction of the buildings and there were complaints from all sides of the lack of sufficient labor to handle the construction as well as the routine work about buildings already constructed.

The situation, on the arrival of Base Hospital No. 34, December 27, 1918, was such that this hospital for a time practically ceased to exist as a unit, the personnel being scattered in camps located in many different parts of France. At one time this hospital had personnel in eleven different stations.

The growth of the expeditionary forces constantly led to an increase in the number of camps and camp hospitals. The policy of General Headquarters was that no permanent personnel should be supplied camp hospitals. This led to the use of the medical personnel attached to units in training at the camps and when these units left, the medical personnel naturally had to accompany them and it was therefor necessary that a certain percentage of permanent personnel be assigned to each camp hospital. The policy mentioned above was later changed and estimates made for permanent personnel for all camp hospitals. This subject was presented very forcibly by Major General Francis J. Kernan in his letter to the Commander-in-Chief, under the date of February 8, 1918. In this letter he makes the following statements:

> I may say that no organization arrives in France without a large distribution of measles, mumps, meningitis, and scarlet fever. It requires personnel

to decently care for these unfortunates and I am sure that they are at this moment getting the care they might have were the personnel available.

This undoubtedly was the only solution to the difficulties arising through the use of personnel passing through camps, in handling sick in camp hospitals, as their interest in the camp hospitals was not great and the interference in their training for field work was a marked handicap to them upon their departure for the front. Also when an organization left camp it naturally desired to take its medical personnel with it. But this could not be done without an abandonment of the sick remaining in camp hospitals.

The Liaison Office in London: The Liaison Office in London was established in June, 1917, for the purpose of handling questions concerning the officers, nurses and men who were loaned to the British. A constant average of approximately 800 officers, 600 nurses and 1,100 men of the Medical Department of the American army was on duty with the British.

The six Base Hospitals, Nos. 2, 4, 5, 10, 12 and 21 arrived in May, 1917, and the casual officers arrived in June, July, August and September of 1917. The officers connected with the base hospitals serving at General Hospitals of the B. E. F. were in much closer contact with the American army than those casual officers assigned to British units. There was great difficulty at first in reaching casual officers, and due to their ignorance of Regulations, General Orders, etc., they very seldom reported change of status and in many cases officers served with the British for months before the Chief Surgeon's Office had record of them.

It was very difficult to obtain recommendations concerning their promotion and a great many of them have come to feel that the Medical Department did not care sufficiently for their interests. It undoubtedly would have led to smoother work if there had been a representative of the Medical Department attached to the British Headquarters in France for the purpose of keeping in touch with these casual medical Officers and informing them of the various orders which might effect their status.

The Special Services: The special services were established in September, 1917, with headquarters at Neufchateau. The eight branches: surgery, medicine, x-ray, neuro-psychiatry, skin and G. U., eye, and ear, nose and throat each had a director. This designation was later changed to Senior Consultant. The consultants, while handling the professional supervision of the work of medical officers specializing in their branches, were in fact also acting as agents for the personnel division and assignments recommended by them were approved in practically all cases, the only exceptions being such officers as might be held in certain positions for disciplinary reasons.

The orders issued on the recommendations of the senior consultants were at first issued through the personnel division of the Chief Surgeon's Office, but later because of the large increase in work involved, were issued through the Director of Professional Services. This led to complications at times because of the possibility of G. H.Q. and S. O. S. Headquarters issuing conflicting orders on the same officer.

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The Sick and Wounded Division of the Chief Surgeon's Office was established August 22, 1917. At that time, it consisted of one medical officer and two enlisted men whose function was to audit the few sick and wounded reports that were received from the scattered units then in France, before forwarding them to the Surgeon General of the Army. On November 11, the Sick and Wounded Division occupied offices in a large three-story building in Tours, an old French residence which was altered and renovated for the purpose. The personnel consisted of one medical officer, five officers of the Sanitary Corps, 86 enlisted men and 80 French women.

As early as September 1917, when the American troops began to arrive in France in large numbers and the period of activity increased and changes in organization and replacements were being inaugurated, it was realized that the peace-time method of reporting the sick and wounded, as called for in the Manual for the Medical Department, was inadequate and unsuitable to the conditions confronting the American Expeditionary Forces. Orders for special reports and information of all sorts were received from the Commander-in-Chief, General Staff and other agencies of the A. E. F., which could not be filled. The Chief Surgeon being convinced of the impossibility to furnish the required information under the old system and the impracticability of its being carried on in times of active combat at the front, appointed a Board of Medical Officers to revise the method to meet the needs of the A. E. F.

About this time The Adjutant General's Department was undertaking the organization of the Statistical Section (later became the Central Records Office). Their program required numerous and elaborate reports from hospitals. The necessity for coordination in this matter was obvious in order to reduce the clerical work of hospitals to a minimum and at the same time furnish the necessary information to both The Adjutant General and Medical Department.

The members of the board appointed by the Chief Surgeon were Colonel Fife, Colonel Tuttle, and Lt. Colonel Harmon. All of these officers had had experience in large British hospitals in which great numbers of patients were received, treated and evacuated. After careful study and frequent consultation on the subject with authorized representatives of The Adjutant General's Department, a system was proposed which in brief comprised:

(a) Field Medical Card and Envelope, which was attached to the patient at the first dressing station to which he was admitted, and accompanied him until his case was finally disposed of.

(b) A Daily Report of Casualties and Changes for Patients in Hospitals and infirmaries functioning as hospitals.

(c) A telegraphic report of communicable diseases.

(d) Special venereal report.

(e) A monthly report consisting of a complete sick and sounded card for every case completed in the A. E. F., and for every case evacuated to the United States. The latter report to constitute the permanent record of the soldier in the War Department.

The plan outlined by the board was approved by the Chief Surgeon and Adjutant General. The details of the system were worked out by Lt. Colonel D. W. Harmon, M. C. and Captain Frank A. Ross, Sanitary Corps. The final product was issued in the form of a pamphlet of instructions for the preparation of sick and wounded reports by authority of the Commander-in-Chief, effective May 1, 1918. Due to delays in procuring field medical cards, envelopes and blank forms, the system was not inaugurated until June 15, 1918.

In order to obtain complete records of our troops serving with the Allied Armies, arrangements had to be made with the French and British authorities in France and England for reporting American patients in their hospitals. This was effectually accomplished and suboffices were established at the *Service de Sante* in Paris in charge of Captain George W. McKenzie, Sanitary Corps; at the 3d Echelon, B. E. F. in Rouen in charge of Lt. C. E. Horton, later replaced by Lt. A. B. Crean, and at London under the direction of the Surgeon, Base Section No. 3. Each of these officers in charge were experienced Registrars. All reports of patients in Allied hospitals were sent to one or the other of these branch officers where they were transcribed on A. E. F. forms and forwarded to the Chief Surgeon, A. E. F.

The adoption of the new system meant the handling of thousands of reports in the office of the Chief Surgeon. The monthly sick and wounded reports from some five

hundred or more units has to be checked and corrected in detail before they could be forwarded to the War Department as a final and permanent record. The daily report of casualties and changes from the same number of hospitals showing every change of status of patients in hospitals had to be made available for statistical purposes, and for answering hundreds and thousands of inquiries regarding the whereabouts and condition of sick and wounded soldiers. To handle this great volume of work the Hollerith Tabulating Equipment was installed under the direction of Major R. H. Delafield, Sanitary Corps. Under this system, the information on the daily reports is transferred by numerical code to medical and traumatic cards, according to whether the case is one of disease or injury. The information on the Medical Card is as follows: Name, rank, number, organization, diagnosis, disposition of the case and date, hospital to which admitted, transferred or from which discharged. The traumatic card in addition to the above information shows the nature and location of the traumatism and causative agent.

When the cards have been coded by reports they are perforated by punch clerks on machines designed for the purposes. All original punching is verified by different operators and other machines. After the cards have been punched and verified they are passed through the sorting machines where they are sorted for the medical statistical data required by the various reports.

A set of books are kept which correspond to a ledger, in which daily entries are made of the number of admissions and dispositions of each disease and injury reported. This ledger constitutes a ready reference record and a basis for special reports that may be called for.

After all statistical tabulations have been made, the cards are finally sorted by name, so that the card for each soldier is mechanically filed in alphabetical order. This file constitutes the master file for all cases reported by A. E. F. and French hospitals and by British hospitals in France and England. On November 11, the file consisted of more than two million cards, arranged in dictionary order. It constitutes an information bureau and news agency for sick and wounded soldiers.

HISTORY OF THE DENTAL SERVICE, A. E. F.

A history of the Dental Service, A. F. F., begins with the departure of the original 26 dental officers from the United States, during the latter part of July, 1917. Of this number five were of the Regular Dental Corps of the army and 21 were of the Dental Reserve Corps. The five Regular officers in conjunction with one specialist of the Reserve Corps constituted the first Army Dental Unit ordered overseas, which came prepared to accomplish all operations of dental and oral surgery. In contemplating the initial representation of dental officers in the A. E. F., the 13 Dental Reserve Board Officers who came over with the six General Hospitals loaned to the British service must be included. These hospitals arrived in France during the latter part of May and June, 1917, and although functioning under British control, their dental officers were considered part of and therefore listed with the commissioned dental personnel of the A. E. F.

From this small beginning the strength of the dental personnel grew steadily through the number of dental officers arriving from time to time with the different organizations sent over from the United States. During the month of November, 1918, the high water mark was reached showing a maximum of 1,873 dental officers, with approximately 2,000 enlisted men, which included dental assistants and dental mechanics.

The commissioned personnel was distributed through the several grades as follows: three colonels, nine lt. colonels, 42 majors, 322 captains and 1497 lieutenants. Of this large number of dental officers, seventy-nine belonged to the Dental Corps,

U. S. A., (Regular), twelve to the Dental Corps, United States Navy, about 225 to National Guard organizations, and the remainder to the original Dental Reserve Corps. The service rendered by officers of the Navy Dental Corps was of the highest professional type and characterized by laudable devotion to duty at all times, and by an admirable *esprit* and dash during combat activities. The first name on our roll of honor belongs to the navy. It is with sincere condolence to the Navy Dental Corps we thus announce the first death of a dental officer on the field of battle. Lt. Weedon E. Osborne, D. C., U. S. Navy, was killed in action May 10, 1918, by enemy shell fire, while actively engaged in caring for wounded of the 2d Division, A. E. F. The services of National Guard officers were of the type of military and professional quality expected of them by reason of their long experience in the service. The splendid services rendered by the great number of Reserve officers has been marked by close application to duty, willingness to meet any requirements of the service however arduous, and by a degree of loyalty and devotion that is highly commendable. Many of these officers have been men of outstanding professional and educational qualifications in civil life. Their special services rendered in higher professional and educational positions have redounded greatly to their credit and to the distinction of the Dental Service of the A. E. F. All the higher offices of administration were filled by selection from the older and more experienced officers of the army.

While the greater number of dental officers were serving in France, a large number arriving in England were detained there for duty at the several hospitals, aviation camps and instruction centers of the American army snet there for training to subsequently operate under British direction. Several dental officers with their enlisted assistants were also detailed for organizations serving in Italy and with organizations sent to northern Russia in the region of Archangel.

Of the original 26 dental officers arriving, disposition was made as follows: 20 were assigned to duty with organizations of the 1st Division then arriving in France. Those composing the First Army Dental Unit were distributed and assigned to duty in administrative positions. One to the Office of the Chief Surgeon, A. E. F., one to the 1st Division as Division Dental Surgeon, one to school duty for the initial instruction of the new inexperienced Dental Reserve Officers, one to the Headquarters of the Artillery Brigade at La Valdahon, one to the Medical Supply Depot, and one (the specialist), to G. H. Q., as Attending Dental Surgeon.

SCHOOLS

It wws early recognized that a course of instruction would be required for the great number of inexperienced dental reserve officers coming into the service. Although these officers had been carefully selected as to their professional qualifications, and were undoubtedly good dentists, it was necessary to give them preliminary instructions for the purpose of making military dental surgeons out of them, and acquaint them in methods of carrying on a military dental practice; customs of the service, the system of obtaining supplies, military correspondence, making and forwarding reports, etc.

This was first accomplished by organizing division schools in charge of the Division Dental Surgeon, under direction of the Division Surgeon, with instructions to convene the dental officers two afternoons a week for this purpose. The benefits derived thereby were readily apparent and a great improvement in the coordination of the dental service of the 1st Division and the character of service rendered was manifest after the first month. This plan was carried out with the several divisions arriving in France during the following four months. It afterward gave way to the course of instruction carried on by the Dental Section, Army Sanitary School.

The Dental Section, Army Sanitary School, was organized in November and its first session began Dec. 3, 1917, at the Hqs., Army School Area, Langres. The term of instruction covered two weeks intensive study and application. The course was conducted under direction of an experienced dental officer termed Director, who was assisted by a number of specially qualified instructors. This course embraced all the subjects laid down for division schools and in addition took up the subjects of approved methods of practice in war dentistry and a practical knowledge of face and jaw surgery. In view of the probabilities that all medical personnel would undoubtedly be called on to function in any capacity in which it could best perform during stress of active military operations, it was deemed prudent to incorporate sufficient instruction in the duties of medical officers, as would qualify dental officers for service as auxiliary medical officers. It was realized that inasmuch as the preliminary education of both dental and medical officers were along similar lines, it would be comparatively easy to prepare these men for the special duties that might be required of them. Therefore, instructions in minor surgery, bandaging, splinting, first aid for wounded and gassed cases, transportation of wounded, duties in advance dressing and triage stations, special drill instructions, the administration of antitetanic serum and anaesthesia were incorporated in the course.

The wisdom of the creation of this school has been proven many times since in the improvement shown in military denistry and by the splendid work dental officers have performed as auxiliary medical officers during combat activities. Letters and citations of special meritorious service have been given dental officers by many division commanders and division surgeons for excellence of the service thus rendered, and for good loyal fearless devotion to duty.

Realizing that after the American army entered into active combat there would be great necessity for a large number of specially qualified officers in face and jaw surgery, a post graduate course in oral, plastic, and prosthetic surgery was organized at American Red Cross Military Hospital No. 1. (Old American Ambulance, Neuilly). A competent faculty of well qualified instructors were assembled at this hospital; a schedule of lectures and clinical instructions prepared, and the school ready to function April 1, 1918, but owing to the enemy's offensive which started March 21, and the necessity for all hospitals within the Paris District to function as casualty clearing stations or evacuation hospitals, this course of instruction was indefinitely postponed and finally abandoned on account of the continuous battle activities immediately north of Paris.

A special school for instruction of enlisted men, as dental assistants, was organized at Hq. 1st Depot Division, St-Aignan, and two schools for special instruction of dental mechanics were organized. One at Hq. 1st Depot Division, St.-Aignan, for course in primary dental laboratory work, and a second at American Red Cross Military Hospital No. 1, for advanced instruction in swedged and cast metal splints and other fracture jaw appliances required in maxillo-facial surgery. In addition to the above cited schools, general instruction was carried on by correspondence from the Chief Surgeon's Office in subjects of general military administration, technical dentistry, and official procedure.

ORGANIZATION

A great majority of base hospitals arriving in France had two dental officers with enlisted assistants and full equipment, base outfits, including laboratories. Wherever this plan was deviated from, dental officers were assigned to make up this quota. The senior dental officer wws designated Chief of the Dental Service and instructed in all duties pertaining to that position. It soon became evident that twenty dental officers to a division, of the size of division adopted for the American army, (approximately

28,000 men), were not sufficient for the dental needs of the command. This number, therefore, was increased to thirty dental officers which, with the Division Dental Surgeon, made 31 commissioned dental personnel for a division. While this number exceeded the proportion of one to 1,000 men, the excess number became necessary on account of the incohesion of some of the division commands.

With the intention of making the dental service of a division a complete entity, wherein any character of dental defect could be remedied, each division was provided with a portable dental laboratory and a specially qualified dental mechanic assigned to duty therewith as assistant to the specially selected dental officer. Thus the necessary prosthetic service was assured. The dental laboratory was usually located with one of the Division Field Hospitals.

In proportion to the development of the A. E. F., and the organization of the army corps units and field armies, the dental service was accordingly developed; therefore, administrative officers for field armies, termed chief dental surgeons, and administrative officers for army corps, termed corps dental surgeons, were created and appointed. To meet the demands for better dental service in the sections of the Line of Communications (later known as the Services of Supply), experienced dental officers were selected for each and designated supervising dental surgeons of the respective sections. Their duties were to coordinate the service within their area; inspect, supervise, instruct, and render reports on same to the Chief Surgeon's Office. Local dental supervisors were appointed from among specially qualified officers at each hospital center and for each army area.

These officers functioned as coordinating officers and were instructed to organize a central dental laboratory and dental clinics in the several centers or areas; to take charge of requisitions and receipts for supplies; the storing of same, reissue as required, centralization of the service, and generally supervising, inspecting and assuming control of instruction of the dental officers in their respective areas.

The several detached organizations located throughout the different sections of the S. O. S., namely; engineer regiments, labor battalions; coast and railway artillery batteries; tank corps organizations; gas service; remount stations, graves registration service; motor reception parks; antiaircraft organizations; salvage depots; prisoner of war camps; storage depots, stevedore companies, forestry camps, signal corps and school areas, were each supplied with the necessaty dental service. The dental officers functioning therewith came under the instruction and administrative control of the supervising dental surgeon of their respective sections in the S. O. S.

The need for dental ambulances, mobile dental offices, has been manifest throughout the entire dental service of the A. E. F. All efforts prior to the cessation of hostilities, Nov. 11, 1918, to obtain tonnage priority for their transportation to France has met with failure. The use of these dental ambulances with outlying commands or detachments within divisional training areas or in rear of combat sectors would have proven of great value inasmuch as the mobile units could proceed from place to place with little loss of time, either in actual transportation or in the unpacking and repacking of equipment ordinarily required of a dental officer on itinerary service.

Only two dental ambulances have been utilized in the A. E. F., both of which were presented to the service; one through individual donation and the other through the American Red Cross. Dental Ambulance No. 1, which was the first acquired, has been functioning with Mobile Motor Transport organizations in the Zone of the Armies, and Dental Ambulance No. 2, has been operating with various squadrons of the Aviation Service in the Advance Section.

A group of 40 speciailists in general surgery and dental surgery for special duty in the Maxillo-Facial Surgical Service was sent over by the Surgeon General's Office early in May, 1918. The dental personnel of this group soon afterward came under

administrative control of the Chief Surgeon's Office. Maxillo-Facial Teams, composed of one surgeon and one dental surgeon, were sent to the important hospitals or hospital centers, and several specially qualified officers were sent to the Vichy Hospital Center, where Base Hospital No. 115, was designated the Head Hospital. This group of specialists came over under direction of a well known specialist in this mine of surgery, who upon arrival was designated the Chief Consultant of maxillo-facial surgery. The excellent results obtained in this class of special surgery will no doubt be shown in special reports, surgical, rendered through the Surgical Section.

ARMY DENTAL BOARDS

Army dental boards for the examination of candidates for appointment and commission in the Dental Reserve Corps, have been appointed from time to time as required. The candidates for these examinations were from two classes of professional men; American dental surgeons then engaged in the practice of their profession in Europe who desired to enter the American service; and graduate practitioners of dentistry from among the enlisted men of the A. E. F., who had been drafted into the service. We secured, in this manner, the services of about 40 dental officers. The last examination held at which 88 candidates were successful, was finished shortly after the signing of the Armistice, but this large number of dentists were not permitted to enter the service on account of cable instructions from Washington prohibiting further appointments in view of the cessation of hostilities.

EQUIPMENT AND SUPPLIES

Under original instructions from the Surgeon General's Office, each dental surgeon leaving for overseas duty was to be fully equipped with a portable dental outfit for field service. If these plans had not miscarried, through the exigencies of transportation, by reason of the great number of fighting men and battle supplies hurriedly sent to the A. E. F., little difficulties would have accrued, but owing to the fact that many dental officers arrived in France without the equipment supposed to have been shipped with them, and never again found their original equipment, the problem of supplying them with dental outfits has proven one of considerable magnitude. Arrangements were made at an early date by the Medical Supply Division, prior to the arrival of the 2d Division in France, for an adequate supply stock of dental equipment and supplies for field service. This supply was augmented later by the establishment of an automatic monthly dental supply, based upon the embarkation of every 25,000 men for overseas duty. Owing to accidents in overseas shipments, to congestion of supplies at base ports, to lack of facilities for early rail shipment to locations in France, and to other causes, it became necessary to make emergency purchases of dental supplies in France. This was carried out through the medical member of the General Purchasing Board and proceeded to such extent that an embargo was placed by the French authorities upon the purchases of dental supplies by the American army. This embargo prevailed a few weeks when the restrictions was removed to the extent of permitting 1,000 franc purchases only

It was therefore found necessary to develop the resources of supply in England, and a large amount of dental laboratory equipment and supplies were purchased in London and ordered shipped to the supply depots in France. A restriction was placed upon further purchases of dental material in England as soon as the British War Office learned of the extensive purchases made. This restriction was never removed. This particular purchase of much needed dental laboratory equipment never reached the A. E. F., depots, as the ship carrying it was sunk by enemy submarines in crossing the channel.

This serious loss of dental materiel was followed by the loss of several tons of equipment on one of the U. S. transports sunk off the Irish Coast. It then became necessary

to strain to the utmost our supply resources, and to modify our field equipment accordingly.

About this time, experience in combat divisions taught us that much of the so-called portable dental outfits for field service would have to be cut down in bulk and weight to meet the transportation problems of mobile divisions. This resulted in a reclassification of dental equipment into camp equipment; (full portable outfits), for such detached organizations in the S. O. S., as could furnish transportation for same; modified portable outfits for combat divisions, consisting of only the essential equipment and supply in three chests for carrying on field dentistry, and campaign equipment for divisions in battle areas, consisting of one dental engine chest and contents, plus the contents of an emergency dental kit, containing cloth instrument rolls, for a few of the essential instruments and medicines with a small amount of supplies, which were to be contained in hospital corps pouches, carried slung over the shoulder. (This was later augmented by addition of a folding aluminum trench chair of 4 1/2 lbs., weight, carried in container slung over the assistant's shoulder.)

Instructions were issued that every dental surgeon in combat divisions would carry with him, at all times, one of these emergency kits, equipped with a few practical instruments and standard remedies and thus be available at any time to render first aid dentistry for the relief of pain, and for minor oral surgical or dental operations.

These modifications of dental equipment helped solve many of the transportation problems of the dental service in combat divisions, and while it increased the physical burden of dental officers, yet it was made possible for anyone requiring emergency dental service to obtain same at any time from dental officer of his command.

During the period of combat activities from May to November 11, 1918, only the simpler dental operations and services of an emergency character were attempted in combat divisions. This naturally resulted in very meagre reports of dental operations being forwarded to the Chief Surgeon's Office. These reports show comparatively a large number of extractions, palliative treatments, minor oral surgical operations, and a few fillings of a temporary character. Incidentally this furnishes ample testimony of the attentive occupation of all concerned in the pursuance of the important work at hand, that of completely engaging the enemy. In contradistinction to said reports, the reports recently received, covering the months subsequent to the cessation of hostilities and for the period since the several armies have gone into rest areas, billeting areas, embarkation areas and winter quarters generally, indicate that a bona-fide practice of high class dentistry has been seriously and consistently carried on, wherein tooth conservation, repairative and reconstructive dentistry, and the long arduous treatments for tooth reclamation are every day achievements and that masticatory restoration through various methods of prosthesis is being afforded those officers and men who have lost teeth through the enforced dental negligence of battle activities. These reports are in marked contrast to those submitted during the preceding months and illustrate pleasing resumption of magnificent professional activity, that is commendable in the highest degree.

Transportation of dental equipment and supplies in combat divisions has ever been a problem, and a source of irritation to division commanders, transportation officers, and division surgeons. This was largely due to the fact that no accounting has ever been made in Tables of Organization for the accomodation of dental personnel, commissioned and enlisted, and the dental equipment. The results of this failure to mention the dental service, and equipment, has resulted in the loss of much equipment and the consequent loss of dental service in several of the divisions; one of which, the 1st Division, lost all it's dental equipment in the first big move of the division into combat area in May 1918. All their equipment was abandoned and susequently salvaged on account of lack of transportation facilities for same. It required all the resources of Intermediate Medical Supply Depot No. 3 to resupply dental equipment of an

emergency character for this division after its arrival in the new area. In this connection, it is hoped that adequate provision will be made in Tables of Organization for both dental personnel, and dental equipment, and adequate transportation for each.

Sufficient dental personnel, selected from specially qualified officers of the Regular Dental Corps were assigned to duty at medical supply depots for the purpose of assisting the medical supply officer in handling this special class of materiel. Adequate plans for the development of this scheme and the assignment of a dental officer at each of the supply depots, and at the receiving depots at base ports was proposed, but never put into operation.

The officers of the maxillo-facial units arrived in France without the special instruments and equipment for their service. It therefore became necessary to improvise it, making careful selection from surgical and dental equipment on hand, purchase such as could be found in French markets, and specially manufacture appliances necessary in this class of surgery. This lack of preparation has, in certain instances, retarded the activities of the maxillo-facial services. Eventually all the necessary equipment was procured, issued to the several hospitals, and utilized to the fullest extent. In this connection, attention is invited to the development and manufacture of the so-called Amex Casque, which was used to great advantage in this special service in maintaining fixation, of both osseous and soft parts, in reconstruction of faces and jaws, for this class of battle casualties.

A Dental Equipment Board operating in conjunction with the Medical Equipment Board, was convened for consideration of the essential dental equipment for dental officers with combat divisions for an army on campaign. The findings and recommendations of this board, will result in greatly modifying the old portable dental outfits for field service, and will reduce to the minimum, the size and number of containers for articles deemed necessary in field dental surgery.

INSPECTIONS

The need for special technical inspections of dental officers, by officers thoroughly conversant with dentistry, was early manifest. Directions were issued which resulted in regular and systematic inspections being carried on by division dental surgeons within their divisions, corps dental surgeons with corps troops and the divisions of their command. Army dental surgeons with field army troops and their respective corps and division dental surgeons; and by supervising dental surgeons of the several sections S. O. S., with the dental officers of their respective sections. This has also been augmented by inspections, when deemed practicable, by the Chief Dental Surgeon, A. E. F. Adequate reports covering said inspections have been forwarded to the Chief Surgeon's Office, with the result that the dental service in the several commands and areas, has been greatly improved.

CASUALTIES

Several dental officers in combat divisions have been killed on the field of honor and a large number have been wounded or gassed during the combat activities during the period from May to November, 1918. * * *

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Most of these officers were killed while performing the duties of auxiliary medical officers. Commendation and citation orders and special reports of division commanders and division surgeons have been forwarded for a number of dental officers in the A. E. F. Several officers have been awarded the distinguished service cross

(two posthumous awards), and the croix de guerre. In addition to the dental officers listed in the roll of honor, we have several records where enlisted dental assistants have also made the supreme sacrifice in the service of their country, and several that have been wounded or gassed in the discharge of their duty. These names will appear in another report of enlisted men of the Medical Department.

ROSS T. OLIVER,
Col., D. C., U. S. A.

HISTORY OF VETERINARY CORPS, A. E. F., FROM AUGUST 24, 1918 TO MARCH 1, 1919.

By an act of Congress, on June 3, 1916, the Veterinary Corps of the Am. army was transferred from the Q. M. Corps to the Medical Department. At the outbreak of the present war the Surgeon General took steps to have the Veterinary Corps put on an efficient basis, and on October 4, 1917, G. O. 130, W. D., was published. This G. O. authorized one veterinary officer and sixteen enlisted men of the Veterinary Corps for each four hundred animal strength.

On Sept. 18, 1917, G. O. 39, G. H. Q., A. E. F., was published, which created a Remount Service in the Q. M. Corps. and placed the Veterinary Service under the Remount Service.

In November, 1917, the Surgeon General sent to the A. E. F., two selected veterinary officers to be placed at the disposition of the C-in-C, with a view of organizing the Veterinary Service, A. E. F., on similar lines to that in the United States. The recommendations made by these two veterinary officers were not acted upon favorably at this time and the Veterinary Service remained under the Remount Service until August 24, 1918.

On July 26, 1918, G. O. 122, G. H. Q., was published, revoking G. O. 39, G. H. Q., 1917. This G. O. designated a field officer of the Mounted or Remount Service as Chief of Remount Service, A. E. F., as Assistant to the Chief Quartermaster, A. E. F., and an officer of the Veterinary Corps was detailed as Assistant to the Chief of Remount Service, and was to be designated as Chief of Veterinary Service, who was to have technical supervision of the Veterinary Service, A. E. F.

The failure to accept the comprehensive organization as outlined by S. R. 70, W. D., 1917, and as outlined by the two veterinary officers that were sent to the A. E. F. from the Surgeon General's Office in November 1917, was a grave error and indicated a lack of understanding of what the animal situation was to become in the A. E. F.

On account of the absolute inefficiency of the Veterinary Service in the A. E. F., a change was necessary, and on August 24, 1918, G. O. 139, G. H. Q. was published directing the Veterinary Service, A. E. F. to be organized in accordance with S. R. 70, W. D., 1917, and transferring the Veterinary Corps from the Office of the Chief Quartermaster to the Office of the Chief Surgeon, A. E. F. A Chief Veterinarian was designated who was charged, under the Chief Surgeon, with the administration of the Veterinary Service.

On August 27, 1918, G. O. 142, G. H. Q., A. E. F., was published and announced Lt. Col. David S. White as Chief Veterinarian, A. E.

The adopting of S. R. 70, W. D., 1917, and the appointing of Lt. Col. White as Chief Veterinarian, A. E. F., marked the real beginning of the Veterinary Service as it stands today. This new organization provided a simple, direct and efficient mechanism for the evacuation of sick and inefficient animals from combatant forces to Veterinary Hospitals in the S. O. S., where organized and specially trained units cared for these animals. From these S. O. S. hospitals, the animals that were cured and free from disease were evacuated to the Remount Depots. The animals when received, if they were

considered as not fit for reissue were sold to butchers, sold to civilians, or slaughtered, as the case might be.

Veterinary hospitals were placed under command of their own officers and steps were immediately taken to collect scattered companies and half-companies of such hospitals into whole working organizations. The issue of convalescent animals from veterinary units back to organizations was stopped, and the policy of passing all convalescent animals through Remount Depots for reissue was instituted. The prompt rendering of weekly animal sick report and their accurate compilation was insisted upon. Requirements were anticipated and reinforcements, already overdue, were cabled for. Further hospital accommodation was sought and, with difficulty, an insufficient amount procured.

The use of railhead for evacuation of sick animals was absolutely refused by the First Army, without reference to G. H.Q., in spite of their use being emphatically demanded by the Chief Veterinarian. The result was that while this question was being decided, hundreds of animals were lost, through being evacuated long distances overland, when in a debilitated and sick condition, often suffering from serious wounds, while literally thousands were retained with divisions through the inability of the verterinary personnel to cope with the requirements of long overland evacuation. Eventually the necessity of evacuating by railroads was conceded and the policy adopted, but again a difficulty arose. Instead of it being realized that this was a Veterinary Service, it was considered to come directly under the staff of the armies. This meant that, this portion of the evacuating mechanism being out of the control of the army veterinarian, adequate arrangements could not be made to send trainloads of sick animals to the hospitals prepared to receive them. They were sent to hospitals deemed most suitable by the staff of the army, which did not always possess adequate knowledge of the receiving capacity of such hospitals. Presently this obstacle was removed, however, and veterinary evacuating stations, formed by the Chief Veterinarian in place of corps and army hospitals (sections) and commanded by their own officers, took over the evacuated animals from divisions and moved them by railroad to allotted hospitals.

On account of military necessity, it was impossible to evacuate all animals affected with disease, as it would have made our armies absolutely immobile as far as animal transportation was concerned, as animal replacements were not available in sufficient numbers. Upon the removal of a great percentage of the sick, the efficiency of the animals left was markedly increased.

Sick animals had been so long retained with divisions, however, that their evacuation in bulk, although absolutely necessary, threw great strain on all veterinary hospitals. Under this strain some hospitals perilously approached collapse. Help however was near, no less than ten veterinary hospitals were on the water or ordered to port. The assistance of the labor companies had been asked for to meet the personnel shortage until the arrival of these hospitals. These were promised and some were on their way. The final result, however, of an efficient veterinary service, gradually bringing the animal efficiency of the Am. army to a standard compatible with the Armies of the Allies was not reached before the signing of the Armistice on November 11.

Per telegraphic instructions to C. G., S. O. S., from the C-in-C, Lt. Col. D. S. White was relieved as Chief Veterinarian, A. E. F., on November 1, 1918 and Lt. Col. B. T. Merchant, Cavalry, was detailed as Chief Veterinarian, A. E. F.

On November 1, there were fifteen veterinary hospitals established but not all construction completed. At this time, we had approximately 12,000 V. H. Capacity, but it was necessary to handle many more animals than their capacity, using picket lines, corrals, paddocks, etc. On this date there were 14,861 animals in the hospitals.

A determined effort was made to locate new hospital sites and have more labor troops assigned to Veterinary Corps to aid in evacuation and care of sick animals until veterinary hospital personnel should arrive from the States, which were on the water or

cabled for. At this time, there were approximately 750 veterinary officers and 6,000 veterinary enlisted personnel, and 600 labor troops assigned to Veterinary Corps.

On this date, March 1, there are 20 veterinary hospitals, excluding army veterinary hospitals, with a capacity for 26,664 animals, and animals in hospitals on this date are approximately, 20,000. There are 885 veterinary officers, 9,282 veterinary enlisted personnel, and approximately 2,000 labor troops assigned to Veterinary Corps for duty.

While to a large extent it was impossible to evacuate all sick animals before the Armistice on account of military necessity, immediately on the signing of the Armistice the evacuation began, and to cite one instance of what the Veterinary Corps had to contend with, the First Army evacuated approximately 3,000 animals to the Veterinary Hospital at Verdun within twenty-four hours after the personnel arrived there for station, and the stabling capacity of this hospital is only 1,625.

COMMUNICABLE DISEASES

Upon the appointment of Lt. Col White as Chief Veterinarian, a determined effort was made to have the proper statistical reports rendered, which had not been rendered complete before this time.

The principal communicable diseases that have affected the animals of the A. E. F. are strangles, mange, and glanders.

INFLUENZA

Until the Veterinary Corps was transferred to the Medical Department the practice of placing veterinary hospitals in remount depots was carried out, and upon bringing animals just purchased from the French civilians into the remount depots and veterinary hospitals the whole remount depot would become infected with disease and especially influenza in the A. E. F. By separation of the Remounts and Veterinary Hospitals and proper segregation of the sick, the number of cases of this disease dropped in October 5, 1918 to 900 cases. In the early winter months this disease again climbed to an average of about 1,500 cases, but now on this date, March 1, 1919, there are about 700 cases of this disease on sick report in the entire A. E. F.

MANGE

On August 31, 1918, the most complete reports obtainable show that we had taken up on sick report for the month of August 72,118 cases, or about 44% of the total animal strength. This included 19,316 cases of mange, or about 27% of total sick. On Feb. 15, 1919, the last complete report on this date shows total number of animals taken up on sick report 48,975 or 27% of total animal strength. This includes 30,736 cases of mange, or 62% of total on sick report.

A determined effort is being made and has been made to stamp out mange, and it is succeeding. The above number of mange cases include not only the active cases of mange, but also the contacts.

The First Army has constructed sulphuration chambers to treat mange, while the Second and Third Armies have constructed dipping vats. The treatment is progressing favorably. While it is not believed possible to stamp out this disease entirely, it is under control and as a means of diminishing the animal efficiency of the A. E. F., it need not be considered to a great extent, provided the Veterinary Corps can continue to control the treatment and evacuation as they are now doing.

GLANDERS

In all former campaigns glanders was a disease that took rapid and the great toll of the animal strength of armies.

In recent years, a substance called mallein has been placed at the disposal of veterinarians, which, when properly applied, distinguishes the animals that have this disease before clinical symptoms appear and before there is great danger of spreading the disease. The application of this substance, mallein, is called the mallein test, of which there are a number.

The intradermal palpebral mallein test was declared the official test of the A. E. F. on account of the simplicity and the rapidity with which large numbers of animals could be tested. This was practically a new test to the veterinary officers of the A. F. F., and instructing the veterinary officers in the use of this test has been a big undertaking. The veterinary officers not being familar with this test, and with the reactions, a few cases of glanders undoubtedly escaped their attention.

The average weekly report on glanders showed 6 eases of glanders per week until on Nov. 23, when the report increased to 34 cases. On the increase of this number of cases, an investigation was started by the Chief Veterinarian. It was found on this investigation that some veterinary officers had not been using the test properly, and instructions were issued immediately on the technique and reading of reactors to this test. In addition to these instructions, veterinary officers that knew this test were sent to all different units in the A. E. F. to instruct and demonstrate the palpebral test. On account of a more accurate test the number of cases of glanders steadily increased until the week ending January 18, there were 391 cases reported. While it was found there was a general infection in the A. E. F., the veterinary hospitals and remount depots in the base sections were the worst infected.

On February 7, 1919, the Chief Veterinarian called a meeting of all Asst. Chief Veterinarians, commanding officers of veterinary hospitals, and senior veterinarians of Remount Depots to a conference at St-Nazaire to evolve comprehensive rules for the technique and reading of reactors to the intradermal palpebral test. These instructions have been approved by the C. G., S. O. S., and have been sent to all veterinary officers of the A. E. F. These instructions were published February 25, 1919, in Bulletin No. 16, G. H. Q.

From January 18, to the present time, there was a rapid decline in the number of cases, and on March 1, there were only 44 cases reported which shows that the glanders situation is well in hand. The veterinary officers of the A. E. F. now understand the test thoroughly, and it is considered that this disease will not give more trouble than the usual number of glanders cases that is always found in large numbers of animals.

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SPECIAL DEVELOPMENTS

PROFESSIONAL SERVICES, A. E. F.

Originating with the selection of directors in the different surgical and medical subdivisions by the Chief Surgeon, the organization of Professional Services first functioned as an A. E. F. activity with the arrival of such designated officers in France. They had been chosen with a view to acting as consultants in various special lines, and represented in every case the highest types of specialists in civil practice.

The title of Director was from the first a misnomer, giving to these consultants an improper impression of the work to be performed. It was planned that the chosen officers should not act entirely in an advisory capacity, whereas the term Director implied an entirely different thing. As a result of this misunderstanding, it was at

once realized by the Chief Surgeon that steps to rectify the error must be made at once, for upon arriving at Neufchateau, the designated administrative center, each director established his own service, with a resulting grave lack of coordination. No actual head of the service had been authorized, and after some weeks of unsatisfactory results, General Order No. 88, G. H. Q., A. E. F., June 6, 1918, was published, augmented by Circular No. 25, A. E. F. This changed the title of these professional advisors to Consultant, and placed over them a director for the purpose of coordination and military control.

To more clearly show the organization in its new form, parts of the order affecting Professional Services is herewith quoted:

> I. 1. For the coordination and supervision of the professional care of sick and wounded the following will be appointed:
>
> For the A. E. F.
>
> A director of Professional Services, A. E. F.
> A Chief Consultant, Surgical Services, A. E. F.
> A Chief Consultant, Medical Services, A. E. F.

* * * * * *

Under the above table of organization, the Professional Services, A. E. F., were placed on an efficient basis; activities were centralized. Shortly after the reorganization the Director of Professional Services was granted authority by the Chief Surgeon to procure orders without reference to the Chief Surgeon's Office.

The large expansion of facilities for emergency surgical work in evacuation hospitals by means of operating teams was made imperative by the shortage of these hospitals. It has been mentioned elsewhere that in the beginning of the important offensives in July, only eight of the fifty-two evacuation hospitals called for in Tables of Organization, had been brought to France. This was due to failure in obtaining priority. Operating teams, therefore, had to be secured by depleting surgical staffs of base hospitals; depleting these staffs at a most untimely period, the period of ever increasing battle casualties.

On June 6 there were forty-two operating teams, twelve on duty in French hospitals and the remaining in A. E. F. base hospitals. These teams, modeled after the French operating teams, were taken from base hospitals. Plans were at once made to increase the number, and to further augment this, casual teams were organized. Surgical teams from base hospitals consisted of one surgeon, one assistant, one anaesthetist, two nurses, and two orderlies. Casual teams were organized in the same manner, but with one nurse and one orderly. Following the same plan, splint teams and shock teams were later developed; the former to work with operating teams, the latter as emergency medical formations.

Totals of Professional Services teams were shown in a table presented December 31, 1918, as follows:

		Total Personnel
Operating teams from Base Hospitals	244	1,708
Operating teams, Casual	95	475
Splint Teams	30	90
Shock Teams	78	390
Totals	447	2,662

Owing to prevailing conditions, the above figures are to an extent misleading, inasmuch as the brunt of team work was accomplished by less than 200 organizations.

In conclusion, it might be stated that the value of a centrally organized Professional Services organization is highly essential in present-day Medical Department work, and that in future periods of activity, surgical and similar teams will be recognized and necessary units. Generally speaking, these teams showed remarkable achievements, while the personnel deserves credit and high commendation.

MOBILE HOSPITALS

Another present-war development of the Medical Department is the Mobile Hospital, patterned after the French auto-chir assemblages. In itself, the name describes the unit. The mobile hospital is nothing less than a transportable hospital; a hospital with sufficient personnel, tentage, and equipment, furnished with sufficient trucks to move the complete organization.

It will, of course, be realized that while surgical equipment and other more compact supplies could be transported with little trouble, comparatively few beds and mattresses could be included. Because of this, only upon rarest occasions of great emergency were they called upon to act as independent formations. The actual function of the mobile hospital, then, resolved itself into work of an auxiliary nature. Because of its trained personnel and additional surgical equipment, such units were sent from place to place to assist in overcrowded evacuation and base hospitals. Their mobility saved many situations, and their actual worth has been proven time and again.

During the latter part of March, 1918, the first assemblage was received from the French. Following that time and until August, but three actual units, Numbers 1, 2 and 3, were functioning with the American forces. Having as they did, the auto-chir as a nucleus, it was deemed advisable to acquire from the French command a park suitable for the assembling mobile hospitals. In August, then, arrangements completed, equipment and personnel was collected at Parc-de-Princes, a point about five miles from Paris. The Polo Field, Paris, had been the organization center for Mobile Hospitals, 1, 2 and 3. Number 4 was being equipped at the same point, while the personnel of No. 5 had already reported. Both of these hospitals were ordered to the Parc-de-Princes, and here further training was given, both in technical and practical work.

In further mobilizations, request was made that five officers and thirty enlisted men be sent to the training center before equipment was requisitioned. From this personnel, was to be selected the particular men who would later handle technical equipment. Nurses were to join the units just before the hospitals were ordered away.

In the training period, an attempt was made to pitch the tentage at least twice, to do the laundry and sterilizing twice, and to run X-Ray equipment until the personnel was sufficiently capable to work efficiently under actual conditions. The nurses upon arriving, were instructed in dressing and bandage making. Officers who were later to do administrative work were schooled in army paper work.

The matter of standardizing equipment for Mobile Hospitals was gravely considered, the chief difficulties of this phase lying in the fact that the various specialists deemed special equipment necessary. Until the time Mobile Hospital No. 10 was mobilized, standard equipment was not decided upon. Number 10 could be transported with twenty three-ton trucks, while its predecessors required from thirty-five to sixty. With such conclusive figures in mind, equipment was standardized, and the units following Number 10 carried approximately the same materials.

Between September 4 and September 26, 1918, eight mobile hospitals were mobilized. The ninth hospital so mobilized was delivered to Belgium on November 11, 1918, A

tenth hospital, No. 14, was equipped and assembled by November 14, but cessation of hostilities resulted in its abandonment, its equipment remaining in the park.

Undoubtedly the future will find mobile hospitals, along with dozens of other experiments, as accepted Medical Department units. Their usefulness is marked by the demands made.

HOSPITAL CENTERS

Among these newer developments is the A. E. F. Hospital Center, veritable hospital cities, justified because of the necessary economy in medical personnel, transportation, buildings, and medical supplies. The subject is completely covered in the section of this report dealing with hospitalization.

WALTER D. McCAW,
Brigadier General, Medical Corps,
Chief Surgeon.

C-in-C Rept. File: Fldr. 380: Report

Final Report of the Senior Chaplain, General Headquarters, American Expeditionary Forces

Chaumont, Haute-Marne, April 26, 1919.

From: Senior Chaplain, A. E. F.

To: The Adjutant General

[Extract]

1. At the expiration of my term of office as Senior Chaplain, I herewith submit a report for record and for such use as may be made of it in connection with chaplains' organization and work in the Regular Army of the United States. A copy of this report is also being furnished the Secretary of War, the Committee of Six, the War-time Commission of the Churches, and the Catholic Bishop having spiritual oversight of overseas Chaplains.

I. SUMMARY OF STATUS OF CHAPLAINS AT AMERICAN'S ENTRANCE TO WAR

2. Before taking up the work as I have come to know it, it will be necessary briefly to review the status of the chaplains at the time that America entered the war, April 6, 1917. There was no Chaplains' Corps; but one chaplain was provided for each regiment. There was no sufficient provision made for an increase to cover the need in the National Army and sufficient provision was not made for chaplains in the tables of organization. The only provision for promotion was in accordance with the Act of Congress approved April 21, 1904, which was purely a peace provision and based rather upon seniority than executive fitness. Exclusive of the chaplains of the National Guard, there were on April 6, 1917 between 65 and 70 chaplains in the Regular Army.

3. A bill was passed May 18, 1917, providing, among other things, for an increase of regimental chaplains. Another bill (S. 2527) was passed October 6, 1917, providing for 20 chaplains at large for the period of the emergency. Both these bills had to do with the regular establishment. On September 29, 1917, a bill (S. 2917) was introduced providing for chaplains for the National Army in the ratio of 1 to each 1,200 officers and enlisted men. This Bill, with some changes, was not passed by Congress until April 17, 1918. It was vetoed by the President on May 13, owing to its defective form. On June 23 it was finally passed. No provision was made for any organization of the chaplains, or for any promotion, so that the National Army had a body of chaplains who, unless subsequent action was taken, would remain first lieutenants until they were mustered out of the service. That is to say, for only seven months out of the nineteen from the time of America's entering the war until the date of the Armistice, was our Army of approximately two million men provided by law with an adequate number of chaplains. Even upon the passage of the law there could not be prompt action, inasmuch as men could not be plunged immediately from civil life into active hostilities and other military conditions which obtained in France. Just before the attack at Chateau-Thierry, men who knew that they would in many instances die before a week had passed made requests for spiritual ministrations that could not be compiled with. That which is the birthright and the commonplace of citizen at home in times of peace was not forthcoming at the moment when the flower of America's youth were called upon to make the supreme sacrifice.

II. AID BY WELFARE SOCIETIES

4. The saving element in this situation was aid that come through the welfare societies--not that I feel that any such substitution can take the place of the chaplain. Both in theory and in experience the truth has been driven home that the chaplain must be an integral part of the military establishment which he serves if he is going to reach his highest effectiveness. This, however, must not be allowed to detract from the valuable aid given by the religious workers in the Y. M. C. A. and the priests known as Knights of Columbus chaplains. During long months when there were no chaplains to minister to the troops, in more places than it would be easy to enumerate, the services rendered by these voluntary agencies were simply invaluable. Fortunately, through the prevision of the American Red Cross, hospital units were provided with Red Cross chaplains prior to their sailing from the United States. These men were carefully chosen, and although there was a dearth of Roman Catholic chaplains it was not due to any fault in the Red Cross itself. In most instances, the chaplains were chosen by the unit and the choice fell on clergy of other churches. Later on, the Red Cross used every effort to secure a better balance.

III. ESTABLISHMENT OF G. H. Q. CHAPLAINS' OFFICE

5. Shortly after my arrival in France in December, 1917, the Commander-in-Chief communicated to me his concern over the dearth of spiritual ministrations. He expressed his conviction that there ought to be not less than 1 chaplain for every 1,200 men, and urged upon Washington that legislation to this effect should be introduced into Congress. In the meantime, he felt that we should busy ourselves in using to best advantage such religious personnel as was available among the chaplains and the welfare societies. To this end, on January 10, 1918, a preliminary Board was appointed relative to the organization of chaplains and the coordination of all moral and spiritual agencies at work in the A. E. F. This included the Red Cross, Y. M. C. A., Knights of Columbus, Salvation Army, and Jewish Welfare Board, as well as the chaplains. The report of the Board recommended the establishment of a Chaplains' Office at General

Headquarters. This report was revised on February 16, and at a conference between representative Chaplains and representatives from the welfare societies on March 7 it received still a further revision. On April 3, two Army chaplains, Chaplain Francis B. Doherty of the 3d Cavalry and Chaplain Paul D. Moody of the 103d Infantry, in association with myself, were appointed to consider methods of coordinating and furthering the work of chaplains in these Forces (S.O. 84, par. 23). The report of the Board was accepted, and on May 1, 1918, General Order 66, par 8, was published, establishing the G. H. Q. Chaplains' Office and Board of Chaplains, to develop an *esprit de corps* among the chaplains; to provide such literature on chaplains' opportunities and duties as will tend to develop the highest degree of efficiency; to prevent and forestall duplication of effort, and to coordinate the activities of the various religious and welfare organizations operating with our army. The Board of Chaplains consisted of Bishop C. H. Brent, Senior G. H. Q. Chaplain, and Chaplains Francis B. Doherty and Paul D. Moody as G. H. Q. Chaplains.

IV. WORK OF G. H. Q. CHAPLAINS' OFFICE

6. Immediately upon organization, the Board of Chaplains endeavored to take stock. There was difficulty in finding out just what chaplains were in the A. E. F. at that time, because frequently chaplains were reported merely as first lieutenants without specification as to their office. Through the ready cooperation of the welfare societies, ministers and priests were placed at the disposal of the Army wherever need arose, and for the time being they formed a reserve group of chaplains. As quickly as we could get into touch with the divisions in France, they were organized, with a senior chaplain in each division as its responsible religious head. Owing to the fact that there was up to date no religious census, it was found necessary to secure, as far as possible, the church affilation of the different units. Request was made of Washington that chaplains should not be assigned to regiments already in France, but should be sent over as casuals to be assigned by our office. The school for chaplains which had been started in America, while providing for certain features of chaplains' training, did not possess a personnel equipped to teach chaplains subjects that pertained to actual conditions of warfare. It seemed wise, for this and for other reasons, to establish a school for the reception of all casual chaplains sent over, and on June 1, 1918, a school was begun at Neuilly-sur-Suize, with Chaplain John A. Randolph as Commandant. Later, on October 1, 1918, the school was removed to Le Mans. The course at the school was brief and practical, owing to the urgent demand for the assignment of chaplains which came from every quarter. We had expected to develop the school work along more academic lines than those adopted at the beginning, but the Armistice came before the pressure had been lifted or the number of chaplains brought anywhere near those provided for by law. At the date of the Armistice, the number of Chaplains in France for 2,500,000 troops was between 1,250 and 1,300; at the very lowest computation we should have had 1,800.

V. TRANSPORTATION

7. The chaplains' organization followed along the line of Army development. With the establishment of base sections, a senior chaplain for each was appointed and he was given a task similar to that of the senior division chaplains of organizing the chaplains within his section and of coordinating the religious activities in his jurisdiction. Similar action was taken in connection with army corps and armies. With the formation of the Advance Section, S. O. S., a senior chaplain was also provided for this important work. The chaplains shared in the general inconvenience of the whole

army in the matter of transportation. There were a number of chaplains who had been provided with side cars or automobiles by churches and societies at home. At the height of the emergency these were commandeered and went into the common pool. No complaint ever came to our office from any Chaplain relative to transportation except in connection with his responsibilities for work. Transportation was merely a means to him of being able to cover the ground occupied by the troops for which he was responsible. When it was made clear by the Army that transportation was not available, and that chaplains were only sharing the shortage of the whole army, the chaplains settled down with cheerfulness to their work, many of them depending on chance rides and long---some of them inordinately long---walks to reach the men.

VI. TAKING OVER CHAPLAINS FROM AUXILLIARY AGENCIES

8. As time went on, it seemed desirable to focus all our chaplains' work under a single office. The Red Cross chaplains had been well organized and supervised by Bishop McCormick, a Red Cross major and chaplain. He was later succeeded by Bishop Perry. Under Cable No 1860-R from The Adjutant General, Washington, we were authorized to take over all the Red Cross chaplains who were willing to take commissions. This process was still going on when the Armistice cut it short. Those chaplains who did not receive commissions still remained on, working as hospital chaplains with direct responsibility to the G. H. Q. Chaplains' Office. The proposition that the Knights of Columbus chaplains should also take commissions was not carried through. Upon the calling of the second draft, a large number of Y. M. C. A. ministers applied for and received commissions as chaplains. This program was also being put through when it was stopped by the Armistice. Feeling that the law restricting the age of chaplains to 45 years on the date of their appointment was such as to preclude senior men physically qualified and otherwise desirable giving their services, request was made of Washington and approved, for authority to appoint over-age chaplains, not to exceed 100 in number, who would serve at base ports and elsewhere in the S. O. S. We were steadily aiming at such an increase of chaplains as would place the full religious responsibility squarely on the chaplains' shoulders. Of course ministers of welfare societies and Knights of Columbus chaplains continued to function in coordination with and under the supervision of the chaplains. In order to promote mutual understanding, a monthly conference was arranged for at the G. H. Q. Chaplains' Office between the heads of the welfare societies and the chaplains. Similar conferences were held in the different units of the A. E. F. It is appropriate that at this point it should be noted that there has been the minimum of friction between the chaplains and the religious workers of the welfare societies. The monthly reports coming from all over the A. E. F. have contained but few serious complaints. The chief handicap of the chaplain has been that, in every situation where the only buildings available were the huts of the welfare societies, he was dependent upon them for facilities for his meetings and services--- not that the welfare societies were unwilling to provide facilities, but that the great number of activities going on under their roofs made it at times not easy to provide the time or the conditions best suited to religious worship.

VII. SUMMARY

9. The Armistice was declared at a moment when we were receiving from American 150 chaplains a month. We set this as a limit, owing to the difficulties of receiving a larger number under one roof, and also because it would have been always inconvenient, and at times impossible, on account of the shortage of transportation and limitations of railroad travel, to place more than this number during the period. Although we desired that more men should be sent to us, the ruling of Washington was rigid, and no

single chaplain has been added to the service since November 11, 1918. We closed the school early in February. We had begun to issue periodic bulletins and had prepared for a series of spiritual retreats which, in the circumstances, had to be given up. We had hoped that, with the home going of our soldiers, a sufficient number of chaplains could be detached to bring our numbers somewhere near par. This had not proved to be the case up to the date of the writing of this report. The churches at home have been making steady demands upon us for the release of their clergy. Others have been obliged to return home because of family needs. The places that require chief attention are the Army of Occupation, the ports of embarkation, the Intermediate Section and the Advance Section of the S. O. S. We have tried to put our best men in these places, but after we have used our most careful calculation there are a large number of small organizations, especially in the Advance Section of the S. O. S., which are without any religious supervision either by chaplains or welfare societies. When our troops began to move homeward, we endeavored to supply the transports and other ships carrying soldiers with chaplains. This we found impossible, and secured from Washington an agreement to have a Catholic and a Protestant chaplain on each of such ships. These ships were also to be provided with welfare workers. On March 10, 1919, a welfare officer was provided by General Order No. 46. This officer was expected to undertake much of the work that hitherto had fallen on the chaplain's shoulders. He was to have the rank of a field officer and such assistance as was necessary. Experience seems to indicate that in many instances the chaplain was by long odds the best man for the place. Inasmuch as his rank was not that of a field officer, he was not eligible for the position. This is one out of many cases that could be cited of the necessity for rank for the chaplain as a facility. On January 10, 1919, we asked that by the end of March not more than 50 chaplains should be sent home to help the churches in fitting the soldiers into civil life. This was disapproved by the Secretary of War on February 27, 1919, owing to the lack of chaplains and complications in having the chaplain working for the churches and still being responsible to the War Department.

VIII. VENEREAL SITUATION

10. As part of my own personal work, I was instructed by the Commander-in-Chief to confer with the military authorities of the British Army and with the British Secretary of State for War relative to the venereal question, looking toward cooperation between the two armies in combating this evil. As a result of these negotiations, two conferences were held in London at the office of the Secretary of State for War, under the chairmanship of the Under-Secretary, the Hon. Ian MacPherson. Negotiations were also undertaken with the French, but there was no direct result. A conference was held at the G. H. Q. Chaplains' Office on this question on February 27, 1919, as it pertained to the A. E. F., and a report was made to the Commander-in-Chief, with recommendations. The unvarying position of our office has been that, trying as Army conditions are, continence is a possibility and a duty. It has been noted that where officers, noncommissioned as well as commissioned, have a sense of responsibility for the moral not less than the military character of their men, a clean command is the result. The venereal rate is not the true thermometer of an Army. It may simple indicate scientific skill in evading the consequences of sexual looseness. The prophylactic rate in connection with the venereal rate is a truer guage. The former indicates the men who did not escape physical penalties. The latter shows those who have been morally guilty and have had recourse to prophylaxis.

11. The ligitimacy of prophylaxis on ethical grounds is clear in our judgment, provided that it is given under adequate safeguards.

(a) We advocate prophylaxis stations administered by carefully selected men.

(b) The indiscriminate distribution of prophylaxis packages is, in our judgment, a psychological error that carries evil consequences in its train.

(c) Men should be given to understand that prophylaxis is not intended to give immunity to fornicators and adulterers in their uncleanness, but to protect innocent men and women against awful contamination and disease.

CONCLUSION

12. (a) The most striking thing in connection with our Chaplains' Organization has been the loyalty of the chaplains to one another and to our office. At the beginning of our organization it was set as a principle of the office that there were to be no official secrets, but that every problem or letter concerning our chaplains which came to the office should be the property and the responsibility of all. We were to respect the convictions of others as our own, and to minister to the needs of others irrespective of their religious affiliation, as though they were our own. Not only have these principles been carried out in the G. H. Q. Chaplains' Office, so that there has never been any serious shadow or difficulty among ourselves, but it has also been the motive power always of the chaplains' organization throughout the Army. The brotherhood which has sprung up is a living force. A chaplains' fellowship has taken shape by virtue of its own vitality. * * *

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[Carrying letter for above Report is signed by

C. H. BRENT,
Senior G. H. Q. Chaplain]

Welfare Agencies

C-in-C Report file: Fldr. 65: Report

SPECIAL REPORT

ON THE ACTIVITIES OF THE

AMERICAN RED CROSS COMMISSION TO FRANCE

FOR THE

AMERICAN EXPEDITIONARY FORCES

Following the reorganization of the American Red Cross on a war basis, the initial step of which was the President's creation of a War Council on May 10, 1917, the American Red Cross Commission to France, numbering eighteen members, sailed on June 2 to make a survey in France of the work to be done for the civilian population and the Allied Armies and in anticipation of the arrival of the American Expeditionary Forces.

At a conference with General Pershing the problems of relief work in France were discussed and the possible operations of the organization fully considered. General Pershing said that in his opinion the American Red Cross was the agency through which the desire of the American people to help France could best be expressed. For nearly three years, up to the arrival of the American Red Cross Commission, France had

carried on steadily and efficiently virtually all the relief work that had been done among her soldiers and civilians. Such were the circumstances in June, 1917, that the demands upon French relief resources had become wellnigh overwhelming. A rapid survey of the situation indicated that the relief work to be done would fall naturally into two classes: first work among the soldiers; second, work for the civilian population. The Department of Military Affairs was immediately organized to perform the first function, and the Department of Civil Affairs the second. At no time did the American Red Cross seek to supplant any of the relief agencies already established in France. On the contrary, it was from the first the fixed policy to attain the desired end through existing mediums by strengthening them in every way possible. Assistance was given to 157 organizations.

During the year the following were appointed to serve on the American Red Cross Commission to France:

Commissioners: Major Grayson M. P. Murphy

James H. Perkins

Deputy Commissioners:

Walter Abbott
H. O. Beatty
Ernest P. Bicknell
William H. Brophy
James Crosby Brown
J. Ridgely Carter
Arthur Wood Copp
Dr. Robert Davis
Edward T. Devine
James S. Douglas
W. R. Emerson
William Endicott
Stanley Field
Homer Folks
George B. Ford
James B. A. Fosburgh
Russell H. Greeley
Andrew H. Green, Jr.
Joseph M. Hartfield
Charles P. Howland
Edward Eyre Hunt
John A. Kingsbury
Dr. John H. Mason Knox
Dr. Maynard Ladd
Dr. Alexander Lambert
Dr. William Palmer Lucas
Ernest McCullough
Dr. James Alexander Miller
Knowlton Mixer
George Murnane
Robert E. Olds
Charles Glidden Osborne
Dr. Edward A. Park
William S. Patten
Daniel T. Pierce
Bernon Prentice
Ralph J. Preston
Hugh David Scott
R. H. Sherman
Alexander Smith
Horace B. Stanton
Roy N. Strohn
Joseph R. Swan
Carl Taylor
Dr. William Charles White

James H. Perkins was appointed Commissioner to France on September 27, 1917, to serve during the absence on other European Red Cross relief work of Major Murphy. Major Murphy resigned as Commissioner to France on February 5, 1918, to enter the Army. From that date Major Perkins filled the office until June 1918, when he was appointed American Red Cross Commissioner to Europe, Lieut.-Col. Harvey D. Gibson, A. R. C., succeeding him as Commissioner to France. In January, 1919, Lieut. Col. George H. Burr was appointed Commissioner to France, with Major Kenneth Mygatt as Deputy Commissioner. They were charged with the direction of American Red Cross activities as changed by the signing of the Armistice.

To June 30, 1918, the expenditures of the American Red Cross Commission to France were as follows:

General supervision -- military affairs	$35,153.42
Hospitals and dispensaries	1,010,053.11
Diet kitchens	14,603.47
French hospital supply service	1,478,926.63
Relief of mutiles	98,852.20
Convalescent hospitals	92,262.31
A. E. F. field service	1,669,625.43
Line of communication canteens	822,839.67
Metropolitan canteens	91,197.42
Investigation and relief	642,739.61
Manufacturing of artificial limbs	36,629.79
General supervision -- civil affairs	47,826.25
Bureau of War Zone -- civil affairs	955,158.01
Care and prevention of tuberculosis	950,526.45
Children's work	1,303,717.86
Relief of refugees	3,459,046.26
Reeducation of mutiles	163,263.25
Joint commission American and English Friends	172,457.30
Bureau of Finance and Accounts	77,629.79
Bureau of Secretary General	376,878.94
Liaison service	619.01
Bureau General Policy and Legal Advice	5,824.67
Bureau Relations with French Government	800.42
Bureau of Public Information	38,796.45
Bureau of General Manager	2,127.02
Section of Stores	253,981.79
Section of Transportation	2,668,476.14
Section of Insurance	108,379.69
Section of Purchases	117,863.01
Section of Donations	1,926,293.99
Bureau of Personnel	94,368.26
Bureau of Construction	56,983.16
Bureau of Medical and Surgical Service	52,292.04
Section of Women's Hospital Service	141,672.69
Section Hospital Supply Service -- Civil	27,787.37
Supplies -- Friends' Unit	25,962.66
Contingent relief fund	106,911.16
Aid to prisoners	70,665.04
Nitrous oxide service	20,156.10
Contribution French Red Cross	1,751,493.69
Norton-Harjes Ambulance Unit	31,364.67
American Ambulance in France	1,454.96
Extra emergency commutation allowance Army nurses abroad	185,007.09
Transportation expenses Pediatric Unit	1,350.00
Relief of sick and wounded French soldiers	865,805.29
Relief supplies shipped prior to July 1, 1917	48,386.33
	$22,114,209.87
Supplies on hand	13,475,972.86
	$35,590,182.73

During the fiscal year ending June 30, 1918, the majority of the expenditures of the American Red Cross Commission to France were for French military and civilian relief, but from this date onward the expenditures and efforts of the Commission were largely devoted to services for the members of the American Expeditionary Forces. With American troops arriving in France in constantly increasing numbers, the American Red Cross was preparing to serve 2,000,000 men. Its organization in France had grown from less than a score of people into an overseas force numbering at its maximum, in the fall of 1918, approximately 8,000 workers. This personnel administered more than twenty separate activities and handled millions of dollars worth of supplies.

With Paris serving as executive headquarters a decentralized system was established for the more efficient and rapid operation of the organization's activities. This system consisted of nine zones, of which the headquarters were Paris, Boulogne, Brest, St-Nazaire, Bordeaux, Marseilles, Lyon, Tours and Neufchateau. Instead of being dependent upon Paris, the managers of these zones had supreme power within their territories, controlled by the policies formulated at American Red Cross Headquarters in Paris, which controlled all personnel and allocated all supplies through the following departments and bureaus:

Department of Requirement, including the Bureaus of Supplies, Transportation, Manufactures, Personnel, Permits and Passes, Construction; Medical and Surgical Department, including the Bureaus of Hospital Administration, Tuberclosis and Public Health, Children's Bureau, Reconstruction and Reeducation, Nurses; Medical Research and Intelligent Department, including the Bureaus of Research, Medical Information, Library, Publication; Department of Army and Navy Service, including the Bureaus of Canteens, Home and Hospital Service, Outpost Service, Army Field Service; French Hospitals, including the Bureau of Requisitions and Supply and Bureau of Visiting; Department of General Relief, including the Bureaus of Refugees, Soldiers' Families War Orphans, Agriculture; Department of Public Information, including the Bureaus of News and Public Information, Reports and Pamphlets, Photography and Moving Pictures.

The accompanying chart presents in graphic form the functioning of these departments and bureaus of the American Red Cross organization in France:

In each zone were departments corresponding to the departments at Headquarters in Paris, with a chief of each service at zone headquarters unless conditions in a zone were such as to make this unnecessary.

The effect of this organization, planned by Lieut. Col. Harvey D. Gibson, was to bring American Red Cross representatives into closer contact with the members of the American Expeditionary Forces, thereby enabling the American Red Cross better to realize and meet the demands of the army.

The results of this organization were not fully realized because of the signing of the Armistice in November, but the strain put upon the system was sufficiently great to prove that it was an indispensable factor in the achievement of the American Red Cross in France. Through this system which distributed workers and supplies at strategic points, the American Red Cross operated quickly at any point in France wherever emergencies so demanded.

Not only did it have the cooperation of the French Government and Army and the support of the American Expeditionary Forces, from Commander-in-Chief to the enlisted man, but behind it was the never failing war spirit of the American people from whom were recruited many millions of volunteer workers, by whom was subscribed over $300,000,000 -- the most generoud gift of any nation for war relief work.

TRANSPORTATION

In June, 1917, the Transportation Department of the American Red Cross had an initial operating equipment of 78 motor vehicles, secured through the absorption by the American Red Cross of American relief organizations established in France before the

United States entrance into the war. By November 11, 1918, the first day of the period of the Armistice, the American Red Cross had in use 1,437 motor vehicles. Of this number 188 were ambulances, and 29 motorcycles. The balance included camionettes, camions, and heavy trucks.

At all times the American Red Cross was confronted with these transportation problems: the rapid movement of supplies for civilian and military relief, the movement of personnel, the shortage of gasoline and the need of drivers and mechanics who would not be required by the Army.

Motor vehicles alone were not a sufficient means of handling freight and personnel arriving at thirteen ports. After negotiations with the Minister of War, Fourth Bureau and a favorable ruling from the Chief of Staff, of the American Expeditionary Forces, on August 22, 1917, American Red Cross shipments were put on an equal basis with Army supplies. This made possible the use of 3,464 freight cars during the last eight months of war. On the River Seine barges were utilized to convey 95 per cent of the shipment from Le Havre to Paris.

The French Government rendered assistance in decreasing the difficulties connected with shipments under war conditions. Red Cross supplies were admitted to the country duty free except for certain minor restrictions.

At all times the transportation facilities of the American Red Cross were available for Army purposes. Among numerous instances, some of them highly spectacular emergencies, may be cited the use of the American Red Cross repair park at Neufchateau by the Army until other provision could be made for the upkeep of Army cars in that territory, the furnishing of camions and heavy trucks for road construction and the building of barracks in the vicinity of Chaumont and Gondrecourt, the placing of forty cars at the disposal of commissioned officers doing special work for the Army Medical Department, the rushing of hundreds of camionettes, camions, trucks and ambulances into service for hospitalization at Chateau-Thierry and other points where American troops were suddenly called upon to meet unexpected military demands, and the dispatch of ten ambulances for emergency work with the 27th Division.

In this last case a call for ambulances came to Paris from the division the evening of September 27, 1918. By 9 o'clock ten Red Cross ambulances and a unit of fifteen men were en route. They arrived at daybreak the following day, going at once into the field and removing wounded under shellfire that completely demolished two of the ambulances.

After the signing of the Armistice new transportation work developed in Paris when the city became a leave area for the Army. A bus service was established for Army officers, connecting the railroad stations with the hotels operated for officers. During one month, January, 1919, 7,573 passengers were taken care of on 1,408 trips. Special transportation was also required for the operating of twelve hotels and canteens for enlisted men in the Paris metropolitan district.

In addition to the services for the American Expeditionary Forces, the Transportation Department of the American Red Cross performed important work for the French in providing ambulances for the French Army during various emergencies and transporting food, clothing and medical supplies for refugees.

MANUFACTURING

The manufacturing activities of the Red Cross included not only surgical dressings, splints, artificial limbs and nitrous oxide, but also special diets for the wounded and 200,000 cookies per day for distribution in hospitals and canteens.

The manufacture of surgical dressings and kindred hospital supplies by Red Cross chapters in the United States was throughout the period of hostilities supplemented by three workrooms established in Paris by the Commission to France. This local

manufacturing eliminated the necessity for the manufacture of these supplies by the American Expeditionary Forces. The first workshop averaged 60,000 dressings monthly, despite the introduction of new kinds of dressings involved frequent changes in specifications. Upon one occasion when the Chief Surgeon of the A. E. F. requested the American Red Cross to supply 10,000 individual parcels of complete surgical dressings, this workroom turned out 13,938 sets of dressings in sterilized containers for use at the front. In September 1917, another branch was opened for the manufacture of American standard dressings. By February 28, 1918, a total of 1,370,250 had been sent out. From January 21, 1918, to December 1 of the same year, the third workroom shipped 400,000 front-line parcels, 833,543 contagion face masks, 59,912 absorbent cotton pads and 203,284 property bags.

All the splints used in the American hospitals in France were supplied by the Red Cross. From December 1, 1917, to December 1, 1918, the American Red Cross delivered to the Army 294,583 splints with accessories. During the period of May, June and July, 1918, the splint department was working 15 to 18 hours a day, executing orders for splints and surgical dressings.

Following is a statement of the 294,583 splints delivered by the American Red Cross: Thomas traction arm, 20,400; Sinclair modified traction arm, 29,489; Jones humerus, 6,981; Jones cockup wrist, 0,097; Thomas traction leg, 20,034; hinged half-ring (B-K), 21,910; long Liston, 2,035; anterior thigh and leg, 11,928; Cabot posterior leg, 42,914; ladder splints, 99,276; splints woods, 3 ft., 17,349; splint woods, 4 ft., 12,800; adjustable abduction arm splint, 100.

The accessories delivered were as follows: Maddox frame tubing, 3 1/2 ft., lengths, 726: Maddox frame tubing, 8 ft. lengths, 364; Maddox clamps, 5,001; special clamps, 11,972; small iron pulleys, 23,633; strap iron hooks, 57,614; paper clips, 145,656: Balkan frame sets, 11,109; sash cord size 1 1/8 in., 12,000 metres; sash cord size 2 3/16 in., 28,050 metres; iron wire rods 1/4 in., 6 ft. lengths, painted, 1,823; galvanized net wire gauge, 13,950; galvanized telephone wire, 1/8 in., 7,314 kilos; galvanized telephone wire 1/16 in., 7,844 kilos, tool outfits, 200; buckshots, 61,500 kilos; black enamel, tins 150; brushes, 150; stretcher bars, 8,082; French litters, 504; Sinclair glue, 824 kilos; rosin and turpentine glue, 1,000 litres; steel tubing, commercial 8,586 kilos; felt, 7 rolls; leather skins, 1,502; wire leg rests, 54,911; Sinclair foot pieces, 1,011; adjustable traction straps, 2,500.

All the nitrous oxide used by the hospitals of the American Expeditionary Forces was also supplied by the American Red Cross, to which is given credit for the introduction of this anaesthetic into American Army hospitals. By arrangement with the Chief Surgeon of the American Expeditionary Forces, the American Red Cross established a nitrous oxide plant at Montereau, and on March 5, 1917, began deliveries to the Army, using, when the lack of containers threatened to stop the Army's entire supply of this invaluable anaesthetic, 3,000 German hydrogen cyclinders captured by the French. In all the American Red Cross supplied 3,832,986 gallons, of which 3,176,256 were sent to Army hospitals, 405,620 to Red Cross hospitals, 251,110 to miscellaneous hospitals. The list of hospitals supplied included 24 base hospitals, 6 mobile hospitals, 6 evacuation hospitals, 2 field hospitals, 8 American Red Cross military hospitals, 2 French hospitals and 5 British hospitals. In addition, nitrous oxide was supplied to the Central Medical Research Laboratory in Paris and to 5 Army posts. Viewed from the standpoint of lives saved and suffering prevented, the value of this nitrous oxide service is impossible of over-estimation.

CONSTRUCTION

The operations of the Red Cross Bureau of Construction have been of varied character, involving thousands of jobs throughout France, from the ports to the front.

Of the hundreds of American Red Cross buildings all were repaired and many erected by the Bureau of Construction. Between June 1917, and January, 1919, 56 recreation huts and canteens were constructed for enlisted men, 23 clubs for nurses and 16 clubs for officers. These figures do not include barracks erected for French refugees, dormitories built for the American Expeditionary Forces in connection with canteens and infirmaries, tents put up for hospitals and recreation centers, shower baths and complete systems of drainage installed at centers.

The Bureau of Construction drew its own plans and either let contracts or, as was often the case, acted as builder as well as designing and supervising architect. On many occasions, because of the shortage of labor and the difficulties connected with transporting supplies, the Army completed work which the American Red Cross started or vice versa.

Following the signing of the Armistice when there arose the problem of economically disposing of the equipment and materials constituting the plant of the American Red Cross in France, the Section of Salvage was added to cooperate with the Bureau of Construction.

HOSPITAL ADMINISTRATION

During the last six months of 1918, the American Red Cross furnished more than 1,110,000 days of hospital care to military patients and in the last month before the Armistice was signed admitted 37,000 military cases. Hospitalization for American troops increased steadily up to the signing of the Armistice. In September hospital care was double that of August, and in October twice that of September. The maximum of 303,000 days of hospital care was reached during October, with more than 279,000 days of care devoted to men of the American Expeditionary Forces.

The term, American Red Cross Military Hospital, was adopted by the Chief Surgeon of the American Expeditionary Forces. Each of these institutions was given a number, and the word military was never used without his special order. Because of this there were certain instances of hospitals operated jointly by the Army and the American Red Cross that were known only as American Red Cross Hospitals. There were other instances when Army base hospitals moved into Red Cross hospitals as units. These also were operated jointly, but to simplify the keeping of records the names of the base hospitals were retained.

Red Cross hospitalization was primarily an emergency feature, as shown by the dropping of days of hospital care in December to less than 90,000. The closing of hospitals had progressed rapidly as this emergency need disappeared. The signing of the Armistice found the American Red Cross operating 22 military hospitals, with 14,326 occupied beds. American Red Cross Military Hospital No. 5, established in three weeks and the first of the American Red Cross hospitals to close its career, attained a maximum of 2,500 beds. Official records credit this hospital with 8,315 admissions, but additional cases received and immediately evacuated bring the total number of American patients received to approximately 12,000.

American Red Cross Hospital No. 114, which was established as an emergency hospital at Toul and later moved to Fleury, had 14,097 admissions to its credit. This did not finish the career of this formation, as it was taken over by the Army and continued.

American Red Cross Hospital No. 110, at Coincy, had a remarkable record. This hospital was built round a pump found in the middle of a town almost entirely destroyed. Red Cross officials and the future commanding officer visited Coincy and on the spot decided an organization must be effected. With a burnt piece of wood the words, A. R. C. Hospital No. 110, were marked upon a piece of wall, and a representative left to guard the water supply. Materials were assembled from five different points and the

formation was in operation in less than a week. This hospital was one of the biggest contributions of the American Red Cross to the United States Army, serving first as the most advanced hospital in the Vesle sector, and then being moved, at the request of the Army, to assist as an advanced evacuation hospital in the Argonne battles. Distinctly an emergency formation, this was one of the first to be discontinued, but before its close it had 17,446 admissions to its credit. The entire career of this hospital was one of the most spectacular of Red Cross activities.

American Red Cross Hospital No. 107, at Jouy-sur-Morin, was in operation during the second battle of the Marne. It became inactive after the line moved forward to the Vesle, but during its career it received 5,562 different battle casualties directly from the front.

During the last six months of hostilities, the aid given by the American Red Cross to the Army in the nature of supplies continued to be on an enormously increased scale. For example, in a single month from one warehouse alone the following shipments were made to formations operated entirely by the Army: surgical instruments, 77,101; beds and cots, 2,820; surgical dressings, 24,733,126; drugs, 15,300 lbs.

This is entirely independent of equipment and materials issued to the 22 military formations supplied and operated by the Red Cross itself. The signing of the Armistice did not mean the end of emergency work. When the Chief Surgeon called upon the American Red Cross for 600,000 epidemic masks for protection against influenza, the order was completed within two weeks.

Following is the list of equipment supplied by the American Red Cross to the American Expeditionary Forces in addition to the equipment used by the American Red Cross Hospitals, American Red Cross Military Hospitals, and dispensaries and infirmaries for the American troops: Bessoneau tents, 88; tortoise tents, 3; marquis tents, 96; barracks, 120; portable laundries, 7; ice-making machines, 5; disinfecting machines, 4; large stationary laundries, 7; small laundries, 3; 20-spray shower with delousing plant, 2; 40-spray s shower for barracks, 2; 8-spray shower, 41; autoclaves (sterilizers), 36; hot-air sterilizers, 9; water sterilizers, 3; laboratory outfits, 10; X-Ray outfits, 1; dental outfits, 1; electric outfits, 1; dental ambulance, 1.

During the period from April 1, 1918 to January 1, 1919, the American Red Cross delivered the following surgical supplies for American wounded in France: dressings, 778,569, sponges, 41,957,426, compresses, 19,823,392; packing and padding, 1,544,553; absorbent pads, 2,332,201; bed pads, 518,304; drains, 177,726; bandages, 4,348,609; body bandages, 2,611,736; splint accessories, 1,463,200; miscellaneous, 227,269; evacuation hospital dressings, 549,922.

When it became necessary to establish infirmaries along the American Expeditionary Forces' lines of communication, the American Red Cross built, equipped and financed the following infirmaries, which were operated from August to December, 1918: No. 1, Dijon, 1,454 patients; No. 2, Bourges, 307 patients; No. 3, Angers, 235 patients; No. 4, Nantes, 1,024 patients; No. 6, Limoges, 82 patients; No. 7, Brest, 6,557 patients; No. 8, Bordeaux, 6549 patients.

In addition seven dispensaries were maintained by the American Red Cross. They differed from the infirmaries in that no provision was made for bed patients. The list follows: No. 1, Bordeaux; No. 2-4, Brest; No. 3-10, Lorient; No. 4, Nantes; No. 5-2, Neuilly; No. 6-16, Paris; No. 7-16, St-Nazaire.

Although the hospital work of the American Red Cross naturally decreased after the signing of the Armistice, the American Red Cross was asked on November 27, 1918, to care for the Allied sick and wounded left by the retreating Germans. Immediately the Red Cross dispatched for the territory of occupation six mobile units, each including two doctors, four nurses, one camion of food supplies, one camionette of medical supplies, one touring car and ambulance. The original plan was to send these units into the area ahead of the Army. This was not possible, but the personnel were

attached to Army hospitals where their services were needed, in some instances the units taking over the entire hospitals. These units were stationed as follows: Nos. 1, 3, 4 at Treves; No. 5 at Montmedy, with the Fifth Division; No. 6 at Stenay and No. 2 at Vitron.

AMERICAN RED CROSS NURSING SERVICE

The program of activities of the American Red Cross Bureau for the American Expeditionary Forces included the assignment of staffs to American Red Cross Military Hospitals, the transfer of nurses to the Army Nurses Corps, the establishment of a diet kitchen service, and the supervision of nurses' aids. Minor activities were recreation huts for nurses at Army base hospitals, improvement of nurses' living quarters and an equipment bureau to supply and replenish their outfits of clothing and comforts.

Under the Bureau of Hospital Administration, 200 nurses and aids were sent to French hospitals to care for American wounded. Six units of nurses were loaned to the British Expeditionary Forces.

During the period from July, 1918, to January, 1919, the Nurses' Bureau supplied all or a part of the nursing staffs of twenty military hospitals. These were located in and about Paris and in the Chateau-Thierry and Toul sectors.

One of the most conspicuous pieces of work during the month of July, 1918, was the opening and equipping of American Red Cross Military Hospital No. 6, at Bellevue, for soldiers who had been gassed. The staff consisted of about 40 American Red Cross nurses and 12 nurses' aids.

In the Chateau-Thierry sector, the work of the nurses was rendered extraordinarily difficult, not only on account of shell-fire but because of the necessity of moving stations from time to time. The hospital known as American Red Cross Hospital No. 107, located at Jouy, became very active. The main operation of the organization proceeded in August to Chateau-Thierry, where the hospital was opened in the Hotel Dieu, known as American Red Cross Hospital No. 111. This was chiefly a tent hospital and for many weeks was filled to the limit of its capacity.

American Red Cross Hospital No. 104, in Beauvais, was located in a large school building. About 60 American Red Cross nurses and aids were assigned to duty there. This organization underwent many changes as the line of the front advanced, and many surgical teams were sent out from this center to assist in the surgical work nearer the front.

Other conspicuous organizations were American Red Cross Evacuation Hospital No. 114, American Red Cross Evacuation Hospital No. 110, and an organization which later became Base Hospital No. 82. These were operated during a season of great stress, and the personnel of the nursing staffs were made up entirely of American Red Cross nurses and nurses' aids and Army nurses who had been assigned to the American Red Cross by the Chief Surgeon.

During epidemics large numbers were withdrawn from social service work and sent to camp hospitals. In October, when the influenza epidemic was at its height, American Red Cross nurses showed great spirit and self-abnegation in caring for those stricken while crossing on ships from the United States.

With the signing of the Armistice the entire work of the Nurses Bureau underwent a change. At that time the personnel numbered 882 nurses and 852 nurses' aids. Fifty American Red Cross nurses were sent to Luxembourg to care for American prisoners returning from Germany. These nurses went in two groups as mobile units under the direction of American Red Cross surgeons and conducted the relief work until the Army was ready to assume the responsibility. Nurses were also sent to dock infirmaries at Brest, St-Nazaire and Bordeaux to assist with the care of evacuated hospital patients

being sent to America on transports.

The work of American Red Cross nurses and nurses' aids in the field was courageous, unselfish and well sustained. On a number of occasions groups of nurses were sent, at the request of the Chief Surgeon, to Army camps before the arrival of Army nurses. These nurses won high commendation from the Commanding Officers of such organizations.

The following list of American Red Cross Military Hospitals, conducted jointly with the Army, reveals, with the dispensaries and infirmaries, the scope of work of the Nurses' Bureau:

No. 1	Neuilly	July-December, 1918	175,872	patients
No. 2	Paris	June-December, 1918	2,283	
No. 3-4	Paris	December, 1917-Dec. 1918	2,019	
No. 5	Auteuil	June-November, 1918	8,315	
No. 6	Bellevue	July-December, 1918	3,052	
No. 7	Juilly	July-December, 1918	475	
No. 8	Malabry	September-December, 1918	1,789	
No. 9	Paris	July-December, 1918	1,125	
No. 107	Jouy-sur-Marin	July-August, 1918	5,562	
No. 110	Villiers-Daucourt	August-November, 1918	17,446	
No. 111	Chateau-Thierry	August-November, 1918	2,695	
No. 112	Paris (annex to Aueuil)	October-December, 1918	307	
No. 114		September 12-25, 1918	674	
Evacuation Hospital No. 114		September 25-Oct. 15, 1918	14,097	
Base Hospital No. 41, St. Dennis		August-November, 1918	4,617	
Base Hospital No. 82, Toul		October-December, 1918	3,605	

The following hospitals were maintained and staffed by the American Red Cross:

No. 100	St-Julien...Medical personnel from Navy.	Feb.-Dec. 1918	1,722
No. 101	Paris...Intended for auxiliary organizations, used for A. E. F.	Jan. 1918-Jan. 1919	592
No. 102	Neufchateau...Civilian hospital with 40 clinics in district, protect A. E. F. by preventing epidemic	Feb.-Dec. 1918	675
No. 103	Paris...Overflow from No. 101	Aug.-Dec. 1918	1,101
No. 104	Conducted in French Sector behind American First Division with A. E. F. medical officers, A. R. C. nurses and French medecin chef		
No. 105	Juilly.....Combined with No. 7		
No. 109	Evreux....Origanization plan similar to No. 104.	Oct.-Dec. 1918	832

In January, 1918, the Service of Convalescent Homes was established to meet the needs of the American Expeditionary Forces. The following American Red Cross Convalescent Homes were operated by American Red Cross personnel at the following places:

No. 1...Gironde...For officers.
No. 2...Biarritz...For American and Canadian officers.
No. 3...Morgat...For enlisted men.
No. 4...St-Cloud...For enlisted men
No. 5...Vatan-Indre...For aviation officers.
No. 6...Le Croisic...For Army Nurses.

No. 7...Rochefore-en-Terre...For enlisted men.
No. 8...Chateau de Villengenis...for officers.
No. 9...Huisseau-sur-Cosson...For officers.
No. 10..Avignac...For enlisted men.
No. 11..Antiles...For Army nurses.

MEDICAL RESEARCH AND INTELLIGENCE

In July, 1918, the Department of Medical Research and Intelligence was created for the extension and development of already existing activities. American Red Cross Laboratory No. 1, at 6 Rue Piccini, Paris, was reassigned to the department; the Medical Library was separated and established at 12 Place Vendome, Paris, and the Bureaus of Medical Research, Publications and Intelligence were organized with quarters at 9 Rue du Mont Thabor, Paris. Later the Bureau of Animal Production was added.

Regular monthly meetings of the Medical Research Committee continued until the end of November, 1918. These meetings were organized primarily for the purpose of disseminating new information that might be used by the medical services in lessening the wastage of manpower in the Allied Armies from wounds and disease. One of the Committee's most valuable contributions was its publication on Trench Fever. Research work was carried on in methods of field sanitation, transportation of the wounded, treatment of fractures of the femur, wastage of men, shock, thypus, respiratory diseases, etc., etc.

On August 1, 1918, the Bureau of Medical Intelligence was organized for the purpose of sending out to the medical men in the various active fields textbooks on medicine and surgery and the latest news of their profession in regard to war work. This entailed an increasing amount of office work in the line of collecting and abstracting material from all the leading medical publications received from American, England, France and Germany, as well as research work in the medical laboratories of Paris.

The publication of War Medicine continued regularly each month, as the official organ of the Research Society. Every effort was made to bring the journal to a high standard of technical excellence and to make it not only of the greatest usefulness possible to medical officers, but also as a permanent professional record of this great war. The publications Department also put forth a Manual of Splints and Appliances, Report on the Transfusion of Blood, Manual of Urology, and other important bulletins, pamphlets, charts, posters, etc.

The records of the Medical Library show 1,150 reference books, 4,307 medical journals and over 6,800 medical textbooks distributed.

In July 1918, the Bureau of Animal Production was transferred to ampler accommodations at Croissy (Seine). During the six months of hostilities, 1,697 small animals were distributed amongst the various laboratories.

ARMY AND NAVY SERVICE

Canteens, the first American Red Cross service to the soldier in France, were continued, increased and improved by the Red Cross even after the Armistice was signed. On November 11, 1918, there were 392 American Red Cross women in the service in France; on December 31, 1918, the number had actually increased to 484.

During the hostilities and at the period of the Armistice there were canteens at evacuation hospitals and aviation camps, canteens at cross-roads behind the lines, canteens in occupied Germany, canteens in the concentration areas where men were gathered for return home, hotels and canteens for Paris leave men, and canteens at the

ports of embarkation, where first the streams of convalescent wounded passed through and then the men who had finished their part in the war.

In July, 1917, under the Military Affairs Department plans were formulated for extensive canteen service with the French and American troops. There were canteens already existing with the French at that time. In February, 1918, canteens for the American Expeditionary Forces were operatigng at Issoudun, Bourges, Dijon and Nantes. During the fighting at Chateau-Thierry, the Argonne and St-Mihiel, approximately 14 emergency canteens were opened for the wounded. After the signing of the Armistice canteens for the care of the returning Allied prisoners were established at Nancy, Sedan, Verdun, and Dun-sur-Meuse.

At the end of December, the following line of communication canteens were in active operation (exclusive of Paris):

Chalons-sur-Marne	Canteen
Epernay (Marne)	Canteen
Orry-la-Ville (Oise)	Canteen
St-Germain-des-Fosses (Allier)	Canteen
Survilliers (Seine-et-Oise)	Canteen
Bourges (Cher)	Canteen; dormitories and baths
Nantes (Loire-Interieure)	Canteen; dormitories and baths
Angers (Marne-et-Loire)	Canteen; dormitories and baths
Neufchateau (Vosges)	Canteen; dormitories and baths
Limoges (Haute-Vienne)	Canteen; dormitories and baths
St-Pierre-des-Corps (Indre-et-Loire)	Canteen; dormitories (men)
Tours (Indre-et-Loire)	Canteen; dormitories (men)
Bordeaux (Gironde)	Canteen; dormitories and baths
Nevers (Nievre)	Canteen; dormitories and baths
Chateaurous (Indre)	Canteen; dormitories and baths
Dijon, Porte-Neuve Station (Core-d'Or)	Canteen; dormitories and baths
Dijon, Ville (Core-d'Or)	Canteen; Officers' hotel
Langres (Haute-Marne)	Canteen
Toul (Meurthe-et-Moselle)	Canteen; dormitories and baths
Nancy (Meurthe-et-Moselle)	Officers' hotel
Strasbourg (Alsace)	Canteen
Souilly (Meuse)	Officers' club
Coblenz (Baviere-Rhenane-Germany)	Officers' club
Treves (Province Rhenane-Germany)	Canteen; restaurant and dormitories for men; officers club and hotel
St-Aignan-Noyers (Cher)	Canteen
Le Mans, Station (Sarthe)	Canteen; dormitories and baths
Le Mans, Maroc (Sarthe)	Coffee station
Issoudun (Indre-et-Loire)	Canteen; dormitories
Vierzon (Cher)	Canteen; dormitories and baths
Saint-Nazaire (Loire-Inferieure)	Canteen
Lorient (Morbihan)	Canteen
Brest (Finistere)	Canteen
St-Brieuc (Cotes du-Nord)	Canteen
Marseille (Bouches-du-Rhone)	Canteen; officers' club
Is-sur-Tille (Cote-d'Or)	Canteen; officers' hotel

Canteening in Paris:

When members of the American Expeditionary Forces began going to Paris by

thousands, a new canteen problem was presented. The city was already over-crowded, and the men could not afford to pay Paris prices even if accommodations had been available. The American Red Cross therefore opened ten hotels and canteens at or near railroad stations where beds were free and where a full meal could be obtained for 14 cents such as cost $2.00 in a restaurant. Frequently these canteens fed 30,000 men a day.

For officers there was opened a club in a residence at 4 Avenue Gabrial which had been one of the Red Cross office buildings before all offices were concentrated in September, 1918, in the Hotel Regina. In addition to offering all the comforts of a club for officers on leave, this house provided sleeping accommodations for about 100 nightly. Shortly afterward, the American Red Cross leased for the Army the Hotel du Louvre, known after that as the American Officers' Hotel. Its original capacity was 250 rooms. By re-arrangement it was made to house 500 guests nightly.

Canteens for the Aviation Sections and the Army of Occupation:

Another development of canteen service was represented by installations at aviation and balloon camps. These were undertaken at the request of the Army, largely because of the success at the Red Cross establishment at Issoudun. A grill for meals at odd hours, a mess for regular meals, and comfortable lounging rooms formed these installations, expanding at some points to include a mending and pressing shop, laundry, baths and library. More important than equipment was the companship of the American girls who formed the staffs of these establishments. Even more isolated than the fliers were some of the balloon men who were hidden away in the most forsaken spots. The Red Cross carried to them comforts, tents, food and newspapers, to make their lives more bearable. In order to facilitate the distribution of material to front aviation and balloon centers, the camp service section opened a branch depot in the advanced eastern zone.

When the Americans entered Germany as a part of the Army of Occupation, the Red Cross of course accompanied them. By the end of December there were 40 workers in occupied territory, and 40 car-loads of foodstuffs, medical supplies, underwear, socks and sweaters had been shipped for the men guarding the Rhine. Canteens and clubs were promptly opened in Treves and Coblenz.

Out-Post Service:

There is nothing in the record of American Red Cross effort in France so romantic as the story of its outpost service. An outpost was anything from a tent, as at Varenne in the Argonne, to a dugout, as at Ansonville, or a former German picture house, as in the Nonsard Woods near St-Mihiel. Before a drive these outposts were usually located at advanced points where large numbers of men were passing to and fro from the trenches or artillery positions, or at a divisional headquarters. When an advance was made the outpost moved forward. Its equipment was a stove or rolling kitchen thermos containers for hot chocolate, tobacco, perhaps some hard chocolate and crackers, toothbrushes, shoe strings, writing paper. The whole stock in trade could easily be loaded on a small truck. During the day, unless a battle was going on and hot chocolate was needed at dressing stations, the outpost was comparatively quiet. At night and all night it was a busy place. Long lines of spent men, often soaked with rain, filed through to have their cups filled with steaming chocolate and to smoke a cigarette under the cover of the outpost roof, if it had one. For no smoking was permitted in exposed places.

The outpost at Roulecourt was in plain sight of Montsec. The outposts at St-Benoit and Bouillonville were always under shell-fire, and in the Argonne they were in the midst of the battle. They gave first aid to scores of thousands of men who had not eaten for many hours, or perhaps dry underwear and socks to men who had been wet for days. Another outpost quickly established in Sedan supplied the inhabitants with the first food they had had for several days after the Germans were driven out. Other

outpost men with American troops on the British front carried food to the civilians caught in the battle lines in October and shelled by both armies.

The outpost man had to think for himself and get supplied as best he could. Depots were far away and as likely as not he had no transportation of his own. If he had made a sudden move headquarters probably did not know where he was until he jumped from the army truck on which he had begged a lift to the rear to get supplies. There were old and young men in the outpost service of the American Red Cross. It broke the health of many, but there were always plenty of volunteers for it, and the record contains no case where any man flinched from duty.

The Division Men:

With all of the divisions of the American Expeditionary Forces in the battle area, the Red Cross had a divisional representative, whose duty was to keep closely in touch with medical officers in order promptly to supply all requisitions for hospital needs, to handle comforts and newspapers for the men and in general to be the liaison officer between the Red Cross and each divisional organization and to command all other Red Cross personnel attached thereto. The equipment and staff of a division representative varied greatly. At its best the equipment included a large camion, a camionette, a Ford touring car and two rolling kitchens. As helpers, the representatives might have one to five Red Cross men and details of soldiers.

The duties of divisional representatives were clearly defined, but in practice they made themselves useful to the Army in whatever way circumstances demanded. This might be in the supplying of ambulances for an unforeseen emergency, ether, hot chocolate, flu masks, food, blankets and what not. In the Argonne fighting, the division representatives had the advantage of a large dump established at Varennes, where Bessoneau tents sheltered some 150 tons of supplies that could be quickly drawn upon. At this time and place the division men had no headquarters; they lived in their Fords and camions, making frequent trips to the dump to replenish their stores of newspapers, tobacco, food, underclothes and other material.

In the St-Mihiel drive the division men, often taking the outpost men with them, moved forward with the rapidly advancing doughboys. In some cases field hospitals were on the move the first day of the attack; Red Cross supplies were hastily loaded on trucks, with kitchen trailors coupled up, and rushed along the roads of the advance. To the Red Cross warehouses in the advance zone came rush orders for supplies to the forward points. Sometimes they were accompanied by brief pencilled reports mentioning such incidents as the serving at one point of a hundred gallons of hot chocolate between daylight and 9 o'clock. At another place 120 gallons of hot chocolate and six big sacks of bread were served to the men who had reached their objectives hours ahead of the schedule and were feeling hungry after ten hours of victorious fighting.

This in outline is what was done by the division men of the Bureau of Army Field Service. Of tributes to these men from Army officers there is no lack.

Newspapers by the Million:

Next to cigarettes, the American soldier wanted newspapers most of all. To meet this demand the Recreation and Welfare Bureau of the Army and Navy Department arranged a system of distribution which made it possible to deliver in November 2,500,000 daily newspapers, 450,000 magazines and 270,000 weekly papers. These magazines and newspapers were delivered to more than 400 different points in France and reached virtually every branch of the Army, including all of the hospitals.

Games and other recreational material and a film service for hospitals were also supplied by this bureau.

HOME AND HOSPITAL SERVICE

In the last six months of 1918, the personal services of American Red Cross workers

for wounded and sick in hospitals became more and more important. In this category falls the hospital hut work.

The Hospital Huts:

The first American Red Cross hospital hut opened July 1, 1918, in American Red Cross Hospital No. 5 at Auteuil, and before the end of that month six others were in operation at Bazeilles Hospital Center; Base Hospital No. 9 at Chateauroux; Base Hospital No. 20 at Chatel Guyen; Base Hospital No. 44 at Peuguesles-Eaux; Base Hospital No. 30 at Royat, and Vichy Hospital Center.

In August seven more huts were opened, and with the increasing roll of wounded the need grew. By the end of the year 94 huts were in operation with a personnel assigned of 304 workers. A majority of these huts were built by the Army but furnished and decorated by the American Red Cross.

Different huts were characterized by individual features, as for instance at Vichy, the largest hut in France, with an average daily attendance of 5,500 men, was established a theatre under the direction of a professional dramatic coach. Four shows were given daily with an average attendance of 750 men at each performance. In this hut also was a pressing room for the men's uniforms and a sewing and refitting room for their convenience.

At Base Hospital No. 8, at Savenay, there was a registration book where the men signed up and from which state clubs were formed. Also at this hospital an army rolling kitchen was operated to meet incoming hospital trains and supply hot chocolate to the wounded on their arival.

The Nantes hut had an ice cream room, constructed by the soldiers, where quantities of ice cream were made each day for the very sick in the hospitals and distributed by the searchers through the wards. The hut at Base Hospital No. 20 had a diet kitchen, where broths, wine jellies, chicken, junket, etc., were prepared for an average of ninety patients a day.

At the time of the heavy drives, when the wounded were pouring in day and night, many of the huts were used as wards, and the workers gave up all recreational activities in order to distribute supplies, write letters, and, in some instances, to help the nurses. This emergency service continued in some instances for as long as six months.

Home Communication:

The Home Communication Section of the Home and Hospital Bureau was formed that there might be a central source to which families and friends of the men in the United States Army and Navy could apply for news of them.

No aid offered by the Red Cross in the United States was more eagerly sought, especially as the casualty lists grew longer, nor has any branch of the work received greater appreciation and gratitude. The inquiries might apply to the well man, the sick man, the dead, the missing or the prisoners -- any man regarding whose whereabouts or condition there was a doubt. The work was carried on through the searchers placed by War Department authority in each statistical section of the Adjutant General's department throughout the American Expeditionary Forces, and by the women searchers in the hospitals. Their reports were forwarded to the Paris office, from there to the National Red Cross Headquarters in Washington, and then to those seeking the information.

Some idea of the scope of the task may be gained from the fact that during the six months from July to December, 1918, 3,000 obituary letters were written, giving not the bare fact of the death, but telling all possible details of the soldier's last hours, the circumstances of his death and anything that might be gleaned from official reports of comrades. During the same period, 27,000 reports were sent to families of wounded men too ill or disabled to write for themselves, 22,000 inquiries were answered, and 10,500 reports on prisoners and missing men were made.

The women searchers, of whom there were 170 in France at the end of December, did Home Service work in addition to their searching. Welfare work took much time also, and

under this heading came the investigation of the minor personal needs of the men, shopping for those unable to do it for themselves and the distribution of socks, sweaters, Red Cross comfort bags, tobacco and chocolate.

After the signing of the Armistice, the workers in this department did notable service among the returning American prisoners, going even beyond the German frontier to meet the men, providing them with food and clothing, sending immediate messages telling of their safety to their families or friends in the United States, and caring for those wounded who were still in some of the German prison hospitals under the most deplorable conditions. This department working through Berne, Switzerland, was able to help 3,428 prisoners before and after the Armistice.

At the Hospital Centers:

In the field, that is, at the hospital centers, great and small, the actual contact of the Red Cross workers with the soldiers was established. The following summary gives an outline of the workings of Red Cross Home and Hospital Service in the hospitals:

1. Personel: At a hospital center of 15,000 beds, there were usually about seven base hospital units. At such a center the Red Cross has approximately the following personnel: a hospital representative and two or three assistants; eight women searchers; about thirty recreation hut workers, and two or three stenographers. In addition to this personnel there were usually a number of corps men or convalescent patients assigned assigned to the various departments.

2. Duties of the Personnel: The hospital representative is the representative of the Red Cross at that hospital center, and the connecting link between the Army authorities and the other Red Cross personnel and Red Cross activities. His assistants aid him in carrying out the Red Cross service for the patients, nurses, enlisted personnel and officers at the hospital center.

The searchers attend to the Home Communication and Home Work of the Red Cross. The Home Communication work consists of searching at the hospital center for men inquired about on the Red Cross inquiry list or on the Red Cross missing list and, when information is secured, of sending it home to their families by way of American Red Cross Headquarters, PARIS.

The searchers also write mortality letters to the families of the men who may die in the hospitals. This work takes them into the wards and they help the men in writing their letters and in doing little errands for them. They also do Home Service work, reporting on any troubles or worries the men may have regarding family conditions at home. This is done through the Red Cross Home Service Department, and the organization in the United States, which looks into the difficulty, helps the family in the way that is needed, and reports to the soldier as soon as possible on the conditions discovered and on the relief given.

The hut workers have charge of the Recreation Huts, in which there are stages for movies shows and plays; also the dry canteen, at which quartermaster supplies are sold at cost, and the wet canteen, at which from time to time hot chocolate, ice cream, cake and other delicacies are made and given away.

3. The Character of Service: In order to carry on the Red Cross activities at a hospital center, a large number of daily papers and magazines are sent out and distributed through the wards and in the huts. Playing cards, games of various kinds and letter paper are also supplied. In addition to keeping the men supplied with these things in the wards and in the huts, there is free distribution of tobacco, fruit, candy and other delicacies from time to time.

In the huts the women try to decorate them and have them as cheerful and attractive as possible, and the men are encouraged to congregate there whenever they are allowed out of the wards, to get together in groups for singing and other entertainment and, if possible, to get up their own plays.

In the huts are also libraries in charge of the hut workers in which the men can read and write or take the books to the wards. Books are also taken to bed-ridden patients.

These huts are a very popular feature of hospital life. The moving picture shows, plays, concerts, etc., are invariably crowded, and any dances given are always largely attended.

In addition to these large recreation huts. the American Red Cross has either constructed or furnished rooms for the use of the nurses and officers. These rooms generally contain a piano and phonograph, desks and comfortable chairs.

The underlying idea of the work done by the men and women of the Red Cross at hospital centers is that they should take the place of a man's family, and do for him in the hospital what his family would do for him if he were ill in a hospital at home. The Red Cross has tried to do this, in reality, so far as amusements and equipment are concerned, has done much more.

In addition to the indoor games provided in the huts and wards, baseball, football, basketball equipment, tennis, quoits, etc., are provided for outdoor amusement of the convalescent patients and corps men. At some of the hospitals the American Red Cross has hired the ground and laid out golf links, which are enjoyed by the officers, men and nurses.

4. Farms and Gardens; At some large hospital points, farms and gardens have been provided, which not only supply vegetables, eggs, pigs, chickens, etc., to the hospital center, but provide good, healthy outdoor work for convalescing patients.

5. Baths and Laundries: In many cases where laundry conditions and bathing facilities were difficult to arrange, the Red Cross provided laundry machinery and shower baths.

In June, 1918, only 29 hospital representatives had been assigned, since the men personnel had been placed as far as possible in the field service. At the time of the Armistice, however, 68 representatives and 12 assistants were at their posts. These were assigned as follows, with groups of searchers and hut workers:

American Red Cross Military Hospital No. 5;

Base Hospitals Nos. 1, 3, 5, 6, 7, 8, 9, 13, 15, 17-annex, 18, 20, 23, 24, 27, 28, 30, 31, 32, 34, 36, 38, 41, 43, 44, 47, 51, 52, 53, 65, 66, 78, 81, 84, 101, 116, 117, 202, 206;

Hospital Centers: Allerey, Beau Desert, Mars;

Evacuation Hospitals Nos. 5, 6, 8, 13;

Camp Hospitals Nos. 1, 11, 15, 18, 20, 23, 29, 31, 33, 46, 51, 59;

Convalescent Camps: Beau Desert, Joue-le-Tours, Limoges, Mars, Mesves.

This work instead of decreasing with the cessation of hostilities grew as camp hospitals were opened with the Army of Occupation. In March, 1919, 69 representatives and 19 assistants were working at base hospitals, camp hospitals and evacuation hospitals.

The American Red Cross personnel has striven at all times to keep a cheerful atmosphere and to maintain the morale of the patients and others at hospitals. This is just as important now since the fighting has stopped as it was before when men were being treated with the idea of sending them back to the front to fight.

AMERICAN RED CROSS ACTIVITIES DURING THE ARMISTICE

In January, 1919, Lieut. Col. George H. Burr was appointed commissioner to France, with Major Kenneth Mygatt as Deputy Commissioner. They were charged with the direction of American Red Cross activities as changed by the signing of the Armistice.

Some of these activities were closed out entirely, while others were amplified to

meet the new needs of the American Expeditionary Forces. Of first importance was the work of the American Red Cross for the Army of Occupation, troops at ports of embarkation and along the lines of communication, and officers and enlisted men on leave. Canteens and clubs were opened in the zone of occupation, additional canteens were established to care for troops moving throughout France, and hotels and canteens opened in leave areas. When Paris was named as a leave area, the Red Cross did an important work in housing officers and men by establishing hotels and greatly enlarging the metropolitan canteen service. Conspicuous among the hotels is a tent city for enlisted men which provided lodging accommodations and recreation.

On March 31 the American Red Cross had 6,080 workers in France. Of these 3,949 were American and 2,131 of other nationalities, principally French.

So long as the American Troops remain in the zone of occupation and in France, the American Red Cross will be represented by an organization in France to render the services that are its peculiar function.

C-in-C Report File: Fldr. 66: Report

Paris, April 16, 1919.

REPORT TO THE COMMANDER-IN-CHIEF

OF THE Y. M. C. A.

WITH THE A. E. F.

From: E. C. Carter, Chief, A. E. F., Y. M. C. A.

To: C-in-C, G-1, G. H. Q., A. E. F.

1. Herewith is the Y. M. C. A. report in accordance with your request. To it are attached a number of appendices.

2. Any criticisms or suggestions which you may make as to the contents or form of this report will be deeply appreciated.

E.C. Carter,
Chief, A. E. F., Y. M. C. A.

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REPORT TO THE COMMANDER-IN-CHIEF OF THE Y. M. C. A.

WITH THE A. E. F.

The American Young Men's Christian Association entered the European conflict simultaneously with the United States itself. On April 6, 1917, the day of the Declaration of a State of War with Germany, John R. Mott, General Secretary, made to President Wilson a formal proffer of the Association's support. This was accepted and the acceptance was confirmed in orders by the Army and Navy.

On May 29 the War Work Council of the American Y. M. C. A. cabled to E. C. Carter and D. A. Davis, both of whom were engaged in Y. M. C. A. work for soldiers of the

Allied Armies and prisoners of war, to initiate the work for the A. E. F. After making preliminary arrangements for securing on the Strand in London a great building (afterwards named the EAGLE HUT) to serve as the center for American soldiers and sailors in the United Kingdom, Mr. Carter arrived in Paris on June 8 and the first headquarters were opened on June 12 at 31 Avenue Montaigne. After several weeks Mr. Davis was asked to undertake responsibility for extending the Y. M. C. A. work in the French Army. Mr. Carter has served continously as Chief Secretary of the A. E. F., Y. M. C. A. Mr. Carter and Mr. Davis secured the services of several American Y. M. C. A. men who had been serving with the French and British Armies and on July 4, 1917, twenty secretaries arrived in France from America. These formed the nucleus of the large present staff.

During the early months the leaders were engaged in the dual task of meeting the recreative needs of the small detachments of soldiers as they arrived and in building up the frame work of a large organization to carry the enormous burden involved in serving an army which was to be numbered in millions. The Association's representatives in France experienced difficulty in getting the Associations in the United States to realize the enormous size of the task in hand and the necessity of discarding former precedents as to the number of workers and the amount of supplies and equipment required.

Throughout the whole period of active operations the majority of the workers have been characterized by the spirit of the first small group, who were indefatigable in improvising methods and materials to insure that some service was rendered to the soldiers no matter how inadequate were the materials obtainable from abroad.

Soon the Associations in the United States began to realize the size of the task involved in France. The assembling of several thousand suitable workers was fraught with difficulty. Over half of the Y. M. C. A. secretaries were already drafted. The youth of the land had entered the Army. Service with the Association was voluntary. In most cases it involved a financial sacrifice, the average living allowance paid to Y. M. C. A. workers with the A. E. F. being 550 francs a month. Hundreds of men who would otherwise have been acceptable were rejected by the doctors because they would be unable to stand the arduousness and exposure of Association service. Finally, the vast majority of the workers were untrained for the exacting work in France where many a man and woman has had to combine many of the qualities of preacher, professor, physical director, grocer, accountant, carpenter, actor and chauffeur. In view of the limited supply of available men and the unusual demands placed upon the personnel the wonder is that so high a percentage of the more than ten thousand workers actually made good.

Recreation work was already well under way in Paris, Brest, St-Nazaire, Valdahon, Avord and the Gondrecourt Area when General Order No. 26 was issued by General Pershing on August 28, stating the purpose of the Association to be to "provide for the amusement and recreation of the troops by means of its usual program of social, educational and religious activities," the whole idea of the Y. M. C. A. being to increase the striking power and military efficiency of the soldier. Nothing was undertaken which would not have a direct bearing on strengthening morale and thus speeding up the winning of the war. This automatically meant that the Association's activities would prove invaluable in preparing for better citizenship in future years those whose lives were spared.

STATUS

Status of Y. M. C. A. Secretaries. In June and July 1917 the advice of the English and Canadian YMCA'S was sought with reference to the official status of Y. M. C. A. workers. The Canadians urged that the Americans follow the example of the Canadian YMCA in being incorporated as a Y. M. C. A.

Corps of the Army and hold regular commissions. The English Y. M. C. A. urged the importance of maintaining the non-military character of the organization.

The leaders of the American Y. M. C. A. in France were strongly of the opinion that the organization would prove of the largest usefulness if they did not seek commissions. They felt it was important that the personnel of the Y. M. C. A. should be more identified with enlisted men than with officers. During the brief period in which Major Grayson Murphy was attached to General Pershing's staff to coordinate the work of all relief and welfare societies he recommended very strongly that the officials of the Y. M. C. A. in America urge Washington to sanction the giving of assimilated honorary rank to the secretaries of the Y. M. C. A. similar to the arrangement proposed for the Red Cross. In deference to this suggestion the Chief Secretary cabled to New York recommending that the sanction of Washington be secured to this proposal, Subsequently the arrangement was approved but the Chief Secretary and his associates never availed themselves of assimilated rank and honorary commissions because they felt that this would be a barrier to the largest service Instructions were given by the leaders of the A. E. F., Y. M. C. A. to all male personnel that the Y. M. C. A. desired that they should invariably salute officers of the American Army and avoid taking the salutes from the enlisted men. Strict orders were issued by the Y. M. C. A. to its personnel to insure that all braid was removed from their caps and coats so that the enlisted men should not mistake Y. M. C. A. secretaries for officers.

The wisdom of the course adopted by the Y. M. C. A. in the summer of 1917 has been confirmed. Experience has shown that while the Y. M. C. A. secretaries require direct access to officers of rank in the pursuance of their duties, their classifying themselves as enlisted men rather than with officers has been highly advantageous.

THE Y HUT

The Association's leaders, profiting by experience in other armies, realized that the hut was the aim and apex of the whole organization. Everything was to conspire to insure that the hut in Europe was to take the place of the American home, school, club, country store, stage and in a sense the American church, for many of the huts have been the only building available for the chaplains' services. The hut in hundreds of cases is a large, long, commodious wooden building uniquely fitted to be the center of the social life of the military community, but in crowded temporary training areas or in support positions, or actually at the front, the hut has had to be substituted by a barn, a tent, a requisitioned cafe, the first story of an otherwise shattered residence, a cellar or a derelict or specially constructed dugout. Around these centers has revolved the off-duty life of a great section of the army. Whether they were large, well equipped buildings in the S. O. S. or small, cramped, unkept cellars at the front, the huts have almost invariably been over-crowded with men for many of the hours of the day and evening. At or near the front large buildings or even commodious dugouts have been a military impossibility, for any large gathering of soldiers was an inevitable target for the German guns. Again and again even the serving of hot drinks has had to be prohibited because the small column of smoke assisted in the direction of the enemy's fire. A Y. M. C. A. staff varying from twenty-five to seventy-five workers has been attached to each combat division throughout nearly the whole period of operations. This staff and their equipment moved whenever the division moved. Some idea of the difficulties of maintaining large and well equipped clubs can be gained from the statement that for each of the several oldest divisions the Y. M. C. A. in a period of eighteen months has had to open about six hundred and close about five hundred and sixty or seventy Association centers, in order at all times to provide thirty or forty centers for the division wherever in its wanderings it happened to be located. Thousands of centers of work have been opened for periods of from five days to five weeks, then to be closed and never

used again for recreation purposes. The larger huts, tents and buildings have of course, been amply provided with tables, chairs, pianos, musical instruments, books, magazines, stationery and games and a well conducted program of entertainers, lecturers, religious speakers, athletic directors, etc., has been carried out; but the small, temporary clubs in temporary or devasted areas though painfully deficient in appearance and equipment have been a haven of refuge because nearly always they were supplied with the all-too-difficult-to-secure writing paper and envelopes to maintain communications with home and a modest supply of biscuit, candy and tobacco which in nineteen villages out of every twenty were absolutely unobtainable except at the Y. M. C. A.

It is impossible to measure the value in morale both to the soldier and to his family at home of the A. E. F. Remittance System by which practically every Y. M. C. A. in France, no matter how primative, was a miniature bank through which spare money on pay day could be sent, without commission, to dependent relatives at home. In the larger hut and at many of the smaller centets as well, movies were a part of the program Eventually the American Library Association was able to place its libraries in many centers. The professional entertainers and soldiers shows, the itinerant lecturer and the local chaplain usually found the Association hut provided the best platform. The daily paper, indoor games and sometimes the open fire made the hut a club. The comradship of the men secretaries and the presence of the women workers made of many a hut a real home.

The leaders of the Association with the A. E. F. made their plans for personnel, supplies, equipment and motor transportation on the basis of providing a recreation center for every military unit and for scattered detachments of as few as four or five hundred men. From the time of the second financial drive in November, 1917, the Association had ample funds with which to carry through a program that would provide a reasonably full recreation service for the whole A. E. F. Unfortunately, the limited markets in Europe. the inevitable limitation on Atlantic tonnage and the extraordinary difficulty in recruiting and sending workers to France prevented the Association from carrying out its full program and the program for which it had made adequate plans and had raised adequate financial support. Throughout the whole period of active operations as a result of limitations imposed by the nature of the war itself, the Y. M. C. A. never had more than from thirty to forty-five per cent of the transportation, canteen supplies, equipment and personnel for which its officially adopted plans called. It is believed that the enormous, though inadequate service rendered by the Y. M. C. A. to the American soldier is fully three times as great as that rendered by all English and French welfare societies combined to the English and French soldier.

LEAVE AREAS

Realizing that unlike the French and the English the American soldier could not return home for his leave, the Chief Secretary intimated to the C-in-C in August, 1917, that the Y. M. C. A. would be prepared to workout a plan for providing holiday and vacation centers for members of the A. E. F. at such time as regular leave became a military necessity. As early as September 4, preliminary reports were made of the possibilities of resorts on the French Alps. In November a survey was made of the Savoie Area and in February, 1918, the A. E. F. in cooperation with the Y. M. C. A. opened the Savoie Leave Area, including Aix-les-Bains, Annecy and Chambery. The A. E. F. sanctioned a seven day leave, the expense for board, lodging and transportation being borne by the Army and the Y. M. C. A. assuming full responsibility for the entire entertainment and recreation program. By February 12, 1919, 220,000 members of the A. E. F. had been entertained at thirty-three leave centers in sixteen areas. These included such well-known resorts as Chamonix Dinard, St-Malo, Nice and Monte Carlo, Casinos which had

been the resorts of wealthy tourists, great chateaux and historic castles celebrated in song and story have been transformed by the YMCA into soldiers clubs dedicated entirely to the use of the enlisted men of the A. E. F. A few separate clubs have been maintained for officers. In addition to the usual equipment and program of a canteen and club the leave area casinos have been the center of a wealth of entertainment, music, dancing a and excursions to such an extent that a great proportion of the soldier visitors have said that in these leave areas in France they have had the finest vacation they have ever had in all their lives. The richness and variety of the program, the complete anticipation of every possible recreative need of the soldier, the enthusiasm prevailing throughout the casinos and the surrounding country, are beyond description.

Five recreation centers have been opened for the Army of Occupation in Germany. Leave to these centers is usually of shorter duration than that in France and does not take the place of the regular leave authorized in the general orders of the A. E. F. The Army has assigned to the Association a fleet of sight-seeing steamers on the Rhine which provide a memorable experience for men on one day leave.

SPECIAL DEPARTMENT OF ACTIVITY

With the individual hut and military unit as the aim of the whole work the activities have been so extraordinarily varied that a large number of different departments have had to be built up at headquarters in Paris and in the field, in order that each might specialize on meeting some aspect of the soldiers' needs. These departments are as follows:

Religious
Entertainment
Cinema
Athletics
Books and Periodicals
Educational
Hygiene
Ocean Transport Service
Post Exchange
Hotels
Motor Transport
Remittances
Soldiers' Leave
Sighteeing
Women's Work
Officers' Clubs and Hotels

RELIGIOUS

In the early months the shortage of chaplains threw an unusually heavy burden on the Religious Work Department. Even though the number of Chaplains eventually became much more adequate there were still many units which depended on Association workers for religious services; but in addition to the regular work of the chaplains the spiritual opportunities of the huts were such as to call for Bible classes, informal discussion clubs and the distribution of literature. Informal meetings by the thousands have been held at the request of the soldier under a wide variety of conditions. The Association buildings have always been open on equal terms for services for men of whatever faith, - Protestant, Roman Catholic, and Jewish. The Association aims to conduct all of its religious work in close cooperation with the chaplains. This department has

provided singers and musicians and conducted classes for the development of religious song leaders. There is a staff of advisors on life callings and classes have been organized to consider the constructive issues of the war. An interesting moral and spiritual movement among Negro soldiers called Honey Bee Clubs has enrolled over 20,000. The Comrades in Service movement was first inaugurated by this department, though subsequently at the request of the Senior Chaplain at G. H. Q. it was transformed into a general movement "to perpetuate in civil life the spirit of democratic fellowship created by war conditions and to place it at the disposal of the nation."

The Religious Work Department has distributed to soldiers and sailor Bibles, Testaments, religious literature and study books for men of all faiths. It has provided a large number of reference libraries for chaplains and is now distributing half a million pieces of literature per week. Since the effective "prepare for home" campaigns have been conducted in many division.

The underlying principle of the Religious Work Department has been to insure that all recognize the fundamental spiritual basis of all of the activities of the Association and of the soldier's life itself.

ENTERTAINMENT

Vaudeville and dramatic entertainment is in such sharp contrast to the routine of army life that the Entertainment Department has been invaluable in diverting the soldier's mind and giving him complete relaxation. In addition to ninety-five small progessional units, fifty of which were recruited by the Over There Theatre League, there are six stock companies, the largest of twelve members, producing one act plays and three act comedies, and on the Leave Area Circuit there are seventy-five acts of French vaudeville.

In addition to these professional units the Y. M. C. A. has assisted in the equipment and financing of approximately 700 companies of soldieractors who are giving regular shows, ranging from amateur pieces to really serious dramatic performances. Regimental and divisional companies have had enormous popularity because of the soldiers' personal knowledge of the actors and the actors' intimate knowledge of the ups and downs of the life of the units.

A large number of well known actors from the Army have been secured and installed in the Y. M. C. A. stock companies with actresses from the United States, for the production of such plays as "What Happened to Jones" and "Officer 666."

The department distributed free to soldiers up to March 5 last, approximately 1,000,000 francs worth of musical instruments, chiefly equipments for small orchestras and jazz bands. It gave out also about 4,000 sets of makeup, and 11,000 costumes, the latter of a value of approximately 225,000 francs. The sheet music comprised 30,000 copies, averaging about one franc each.

Distributions in March included 2,636 musical instruments and accessories, of a total value of francs 132,517.80, 4,535 costumes and accessories (francs 60,664.40), and 18,734 sheets of music, play manuscripts, etc. (francs 29,106.69.)

The department has 250 workers in its field organization. In virtually every division and base section or other unit of similar size it has had a representative, whose time was given wholly to the management and production of performances. In the technical work each representative has been assisted by one or two professional organizers. The places in which entertainers are given range from the Association huts, hospital wards and barracks to the Champs-Elysees Theatre in Paris, a luxurious playhouse with seating capacity of 2,100.

The relations between the Army and the department are described in Entertainment

Bulletin No. 1, issued from G. H. Q. January 28, 1919, two sections of which read as follows:

ENTERTAINMENT

A. GENERAL SCOPE OF ACTIVITIES

1. The entertainment program announced in G. O. No. 241, series 1918, is intended to provide so far as possible, suitable entertainment each night in every important center occupied by American troops.

B. COOPERATION WITH Y. M. C. A.

2. To accomplish this, entertainment officers appointed under that order will

(a) Utilize all available facilities and personnel of the A. E. F., and

(b) Effect the fullest cooperation with the Entertainment department and booking system of the Y. M. C. A.

(c) Entertainment activities of other welfare organizations will be conducted through the entertainment organization of the Y. M. C. A.

CINEMA

When the United States entered the war the Community Picture Bureau offered its services to the Y. M. C. A. without profit. This offer was accepted May 15, 1917. In Bulletin 49, issued April 3, 1918, the Chief Secretary announced that the bureau had become the cinema department of the Y. M. C. A.

The total number of showings given by the department is well above 70,000. An average audience numbers about 800 men, hence the audiences have totalled nearly 60,000,000. At no time has an admission fee been charged. 4,405,000 feet of film are now in use; 2,000,000 feet have been worn out and scrapped; 3,000,000 feet of new film have been ordered and are now en route to France. The department is now giving showings regularly each week on many American vessels, navy and transport.

In April 1918, the staff in France consisted of twenty-seven persons; the present personnel in this country alone, including Association secretaries who directly assist in the work and men detailed from the Army, numbers 1,596.

Through fifty editorial experts in New York and London, the department views all new films, wherever produced, which promise to be valuable to soldiers and sailors. Those which are selected for use are organized into programs and distributed throughout the A. E. F.

ATHLETICS

The first athletic director of the Y. M. C. A. in France was assigned from the then existing Recreation Department, September 1, 1917. On May 9, 1918 the Department of Athletics, Hygiene and Health was created and on August 1 the direction of athletics was entrusted to a distinctive department.

The aim from the beginning has been to assist the men to attain the maximum of physical fitness, while affording opportunity for play and fostering a spirit of healthful competition. When the "Keep Fit to Fight" slogan lost its potency, "Keep Fit for Home" became the cry.

From September 1917 to Mar 1, 1918 an average of forty athletic directors were in

the field. Since the latter date the number has increased until at present the staff consists of 313 men as follows:

Headquarters staff, 7; regional and Army directors, 10; corps, divisions and brigade directors, 290; lent to British E. F. Y. M. C. A., 6.

The first consolidated report, that for August 1918, showed a total of 174,391 participants and 720,567 spectators at sports promoted by the athletic directors. For December the figures were 1,661,873 and 2,898,741 respectively. Between August 1 and December 31, 1918, the total of players and spectators was respectively 4,770,546 and 9,006,874. Taking the grand total of nearly 14,000,000 players and onlookers, it will be seen that the equivalent of the entire personnel of the A. E. F. seven times over was reached in one or another form of athletic activity in the short period of five months.

The department's report for February 1919 showed totals of 6,564,747 participants and 4,891,382 spectators. These figures are conservative in the opinion of persons in a position to know what the A. E. F. is doing under the provisions of G. O. 241 a portion of which is quoted below.

The department distributed without costs to the A. E. F. 750,000 dollars worth of supplies in 1918 (initial order for 300,000 dollars worth was placed November 14, 1918).

At the present time it is sending out as rapidly as can be received, largely with the aid of transportation furnished by the Army, 1,500,000 dollars worth of supplies which were ordered for 1919 on June 28, 1918. Distribution of materials is shown in Appendix B. No athletic material is sold. All, whether bought on its order, received through the Salvage Department of the Army or through gifts from other organizations, is distributed free, without any reference to overhead costs.

As early as December 1917, it was the intention to have an athletic director with each 2,500 men in the A. E. F., working on a program to include informal games in the later afternoons and evenings, challenge games on Saturday and Sundays, regular schedules at training camps and distribution of athletic supplies. This program was carried out in the main, even so far as was possible, with actual combat troops.

The department submitted to G. H. Q.; early in October 1918, a tentative plan of athletics for the entire army in Europe, to be put into operation during the demobilization period when that should arrive. Immediately after the signing of the Armistice the department worked out with G. H. Q. the details of a program in a series of conferences which culminated in the issuance, December 29, 1918 of General Order No. 241. Under this order the department is now operating along three lines; (1) Mass games, (2) A. F. F. Championships; (3) Interallied games.

The order specifically provides for a joint effort on the part of the Army and the Y. M. C. A. The exact status of the Association's athletic directors is set forth in the following paragraph:

4. The Y. M. C. A. with the approval of the Commander-in-Chief, has organized a Department of Athletics and is prepared to give every assistance in the development of general athletics and the arrangement and management of competitions between military units. It has a large number of specially trained physical directors, with wide experience in mass play and in other athletic activities now in its rank in France. One of these will be attached to the staff of each division and separate unit, and will be designated in Orders as Divisional (or unit) Athletic Director, and, under supervision of Division Athletic Officer, will be charged with the responsibility for the arrangement, amanagement and general conduct of athletic activities throughout the unit. Under Item 1 (mass games) the department is taking the initiative and working in complete cooperation with the Army in an effort to interest every man to take part in some form of activity. A handbook on the subject was compiled by the department and printed by the Army, and copies have gone to every Army Athletic Officer and Y. M. C. A. Athletic Director in France, England and Italy:

The A. E. F. Championship program is now in full swing. It includes a variety of sports boxing and wrestling, track and field events, baseball, football, basketball and tennis. The games are on an elimination basis, which means that the maximum of participation is involved. The part of the Association's Directors is to supply technical knowledge in the drawing up and conduct of complicated schedules, and advice and assistance in the selection, coaching and training of representative teams. The finals are to take place in Paris in buildings or grounds leased by the Association and turned over to the Army.

The Interallied games are being arranged at the direct suggestion of this department. They will be held in June, with representatives of the various Allied and Associated Armies as participants in response to General Pershing's invitation. The games are to take place at Joinville-le-Point in a concrete stadium being erected by the Association and called the Pershing Stadium, with the consent of the Command-in-Chief.

BOOKS AND PERIODICALS

This department was formed to supply good reading matter and home news. It has distributed without charge magazines, newspapers, books, music, religious matter and patriotic publications to the value of approximately 857,806 dollars. Up to March 7, 1919 distributions had been made as follows:

Bound Volumes:	Fiction	116,296
	General literature	133,043
	Text Books	229,336
	Song Books	717,790
	Hymn Books	443,997
	Religious literature	611,965
	Testaments	268,941
	Physical	5,757
		2,527,125
Pamphlets, etc.	Song Sheets	173,032
	Music in sheets	28,520
	Hymn sheets	84,638
	Religious literature	2,947,709
	Posters	1,824
	Physical	58,137
	Maps	660,087
	Educational material	1,446,258
	Magazines	2,465,380
	Newspapers	14,254,414
	Post cards	49,383
		24,583,382
GRAND TOTAL		27,110,507

The department has assisted distribution also in Italy, among German prisoners, among Portuguese, Poles and Belgians and to the Foyers du Soldats, the American Red Cross and the Y. M. C. A. Its staff numbers thirty-seven workers, six of whom are in the field.

The Library Department, as it was called originally, came into being in September 1917. At that time the service was performed by four persons. Prior to the coming of

the American Library Association to France the entire responsibility of distributing books fell upon this department. At first great difficulty was experienced in obtaining materials in sufficient quantities.

Early in 1918 the American Library Association obtained from the Commander-in-Chief the exclusive right to import books, other than textbooks, for the A. E. F. This relieved the department of one of its principal tasks.

A short time later a newspaper service was established. Copies of the Paris editions of the New York Herald, the Chicago Tribune and the London Daily Mail were dent to many points where troops were stationed and sold in the canteens. In June 1918, it was decided to distribute the papers free to combat divisions in the fighting area. On the St-Mihiel front, Army aviators were so eager to assist in the distribution that they occasionally dropped papers to the men in the front lines, motor trucks carried copies up through the Argonne each day during the time of the most strenuous action there; couriers made distribution to the divisions encamped on the Vosges and, later, when some of our troops moved into Germany, the assignment by the American R. T. O. to this department of a special car daily made possible the transport of papers to Coblenz within thirty hours of publication.

The distribution of music is another feature of the work. Following a survey of the field to ascertain favorite pieces the department incorporated thirty-five songs in a book which it issued under the title, "Popular sons of the A. E. F." A second edition has been printed. One million copies of a smaller book of music were distributed recently. In addition, thousands of copies of quartette arrangements, or orchestrations, band selections and popular sheet music have been sent to all points in the field. The department has had to face the task of delivering to the Army nearly 2,000,000 textbooks required by the Army Educational Commission for the furtherance of its program.

EDUCATIONAL

During the autumn of 1917 the leaders of the Y. M. C. A. with the A. E. F. urged the War Work Council in New York to send one or more of the leading educators of America to study the educational needs and opportunities with the Army in Europe. On January 8, 1918, Anson Phelps Stokes, of Yale University arrived in France to make an educational survey. On February 18, 1918 the Chief Secretary submitted Mr. Stokes report to G. H. Q. and on March 15 the Chief of Staff replied:

> The C-in-C; approves the project in principle and has directed that proper facilities be given for this work throughout this command.

As a result of the lines laid down in a draft of two proposed general orders submitted by G. H. Q. on the 4th of May the Y. M. C. A. undertook responsibility for educational work in the A. E. F. and constituted the Army Educational Commission composed of Prof. John Erskine of Columbia University, Mr. Frank Spaulding, Superintendent of Public Schools in Cleveland and President Butterfield of Amherst Agricultural College. On October 31, 1918, the Commander-in-Chief issued the first general order of the A. E. F. on education, the first paragraph of which read as follows:

> The Young Men's Christian Association through the Y. M. C. A. Army Educational Commission, has organized, with the approval of the Commander-in-Chief, an educational system charged with the standardization of educational methods and the establishment of schools for instruction of officers and soldiers in all of the large posts, camps and hospitals of the American Expeditionary Forces.

Subsequent to the cessation of hostilities several general orders and bulletins were issued covering the expansion of the educational system demanded by Armistice Conditions. Operating under general orders, the Y. M. C. A. has recruited and brought

to France from America, several hundred of the ablest public school superintendents, school and college teachers and professors. Under the direction of the Commission this large staff has assisted the 5th Section of the General Staff in the development of the army corps, division and posts schools throughout France and Germany and rendered important service in the various departments of the A. E. F. University at Beaume, Allerey, and Bellevue, in accordance with Paragraphs 8 and 9 of General Order No. 9 dated January 13, 1919 * * * Even during hostilities the educational work carried on by the Y. M. C. A. was of large dimensions. It all had a direct bearing on military efficiency and morale. It is estimated that at least 300,000 American soldiers studied the French language in the days which preceded the Armistice. Large numbers studied European geography. Through lectures, pamphlets and posters effort was made to build up an intelligent appreciation of the achievements and ideals of our principal Allies and of the great aims for which the Allied Armies were fighting. With the coming of the Armistice there was a marked falling off in the attendance at French classes and an increasing desire to study American problems and to prepare for the return lo civilian life. The hundreds of thousands of text books which American publishers had produced for the Educational Commission at unprecedently low prices had not begun to arrive in France until after the Armistice though most of them had been prepared in the hope that they would be in France at the beginning of demobilization. In the months following the Armistice the Army was able to assume an ever increasing responsibility for the educational work. By G. O. 30 division educational centers and university courses were established and G. O. No. 27, issued in March, it became possible to excuse men from military duties during the afternoon, to permit of their attendance at post schools. A survey showed that 50,000 men of the A. E. F. were competent to teach. From this number men were detailed as instructors. Enrollment in the post schools was voluntary except for illiterate and non-English-speaking persons.

The division educational centers were organized to offer advanced courses in trades and vocational training as well as advanced academic courses.

Through arrangements with French and British authorities the Army made it possible by March 15, 1919 for approximately 8,000 American officers and men to attend classes at French institutions and 2,000 at British universities. As entrance requirements of European universities are very high it was deemed best to send only men who were graduates of American universities or who had been upper classmen.

For men desiring university work corresponding to freshmen and sophomore work in American colleges, the A. E. F. University was established by the Army at Beaune, Cote d'Or. This university took over an American base hospital camp and converted the buildings into classrooms, study hall, offices, and laboratories. Colonel Ira C. Reeves was appointed military superintendent, or commandant and Dr. Erskine, of the Y. M. C. A. President.

On March 14, 1919, the Chief Secretary inquired of the C-in-C whether in view of the fact that as a result of the preliminary work of the Y. M. C. A. the Army itself had established an educational system as an integral part of the A. E. F. there would not be advantages is having G. H. Q. assume complete responsibility for the Army Educational Commission and its staff. To this inquiry the C-in-C replied as follows:

> With reference to your letter dated March 14, 1919, with inquiry as to whether it is deemed advisable for the Army to relieve the Y. M. C. A. of all further control and responsibility for the Educational work in the A. E. F., you are informed that it is considered, in view of the extensive educational system now being developed, that complete control should now vest in these headquarters.
>
> Recommendation to that effect has been made to the War Department and authority obtained for the Government to assume complete financial responsibility for the entire educational project, including the taking over the

placing under Government control the members of the Army Educational Commission, Y. M. C. A. and all persons within its organization who are required in educational work. The transfer will also include the purchase of text books previously authorized and relieving you from further financial responsibility for other items of current operating expenses of the Commission at the earliest practicable date.

It is desired in conclusion to express the highest appreciation of the work of the Y. M. C. A. through its Educational Commission in organizing the educational work at a time when it was impracticable for the Army to do so and for the continued assistance up to the present time in the wide development of the educational system in the A. E. F. The large number of well qualified educators brought to France by the Y. M. C. A. during the past year will be of inestimable value to the Army in its educational work and this contribution is especially appreciated.

HYGIENE

Acting in liaison with the Surgeon General's office the Department of Hygiene has conducted an unobstrucive campaign of sexual education. The work has been along preventative lines. The activities include lectures to the troops at ports and camps, the distribution of carefully selected literature and posters, the use of lantern slides and films and the organization of discussion groups. Copies of four films are in use, "Fit to Fight", "The End of the Road", "How life Begins", and "A day in Gulick's Camp". These are progressive dealing respectively with venereal diseases from the man's standpoint, venereal diseases from the woman's standpoint, instructions in the biology of reproduction with an appeal for the best in family life, and illustrating the preparation being made by the young women of America for their life duties.

Discussion groups to consider these problems have been formed in 58 centers. The meetings are conducted by normal teachers, usually members of the military organization. Phamphlets to the number of 367,234 and 3,141 posters and 2,360 books have been distributed. From November 1, 1917 to January 1919 a total of 579 lectures has been given with a total attendance of 310,051.

OCEAN TRANSPORT SERVICE

The Association's service to the soldier does not end when he takes ship for home. The Embarkation and Ocean Transport Division seeks to make every westward bound transport a floating hut, with entertainment and a limited amount of free canteen supplies.

During January and February 1919, supplies for free distribution to returning troops (nothing whatever is sold on shipboard) were placed aboard ships leaving three ports as follows:

	Brest		St-Nazaire		Bordeaux	
	Jan.	Feb.	Jan.	Feb.	Jan.	Feb.
Cigarette Packages	146,000	159,980	32,818	28,275	52,870	101,163
Chocolate bars	14,920	139,410	7,400	23.070	32.680	54.698
Gum packages	8,000	4,000	13,500	23,430	31,960	46,800
Boxes of Cigars		43	45	6	22	34
Cases of cookies		33				
Cases of lemons		19	11	8	6,925	17,275
Cases of cough drops			7	10		
Cases of jam			16			
Cases of tobacco			10			
Packages of matches			288			
Cans of jam			800			
Sardine packages			400			
Oranges					21,600	33,798
Secretaries doing transport work	68	61	28	35	35	50

In addition to canteen supplies the Y. M. C. A. provides for each transport full sets of athletic equipment for deck games, phonographs and records, movie machines and films, stereopticans and slides, indoor games, writing materials, pamphlets literature, sheet music, telegram blanks, soap and bouillon cubes.

POST EXCHANGE

In August 1917, the Army asked the Association to undertake the operation of the entire Post Exchange Service, thereby releasing many officers and men for training and fighting. With the assumption of this work were involved the following task:

Recruiting of a large additional personnel. Importing, purchasing in the local market or manufacturing vast quantities of supplies; Arranging for the reception at the ports of France, the storage, transportation and sale or other distribution of merchandise; Installation of a comprehensive system of accounting.

Ordinarily to be found in the post exchanges were cigars, cigarettes, smoking tobacco, chewing tobacco, cigarette papers, matches, biscuits, jam, canned fruits, sardines, sweet chocolate, hard candy, chewing gum, handkerchiefs, sewing kits, shoe polish, soap, razors, razors blades, shaving sticks, shaving brushes, tooth brushes, tooth paste, candle and playing cards, besides other articles needed or desired by soldiers.

Wet canteens, in which cocoa and at times tea, coffee and cold drinks were dispensed, were maintained also and in a large number of the post exchanges both wet and dry services were rendered. On February 1, 1919, 1,591 canteens were in operation. * * *

By direction of the Commander-in-Chief, the Y. M. C. A. was to operate the post exchanges on a self-sustaining basis. This meant that the prices must include the cost of the merchandise, plus receiving, storage and delivery expenses in France, plus an item covering losses due to pilfering and damaged goods. The difference between the Associations prices and the Army sales commissary's prices for American goods was the total of these expenses above the original cost of the merchandise. A law enacted many years ago required Army sales commissaries, wherever located, to sell all goods at factory cost. While in the case of these commissaries the War Department absorbs in its general

funds the expenses of freight, insurance, storage and inland transportation, the Association had to include all these in its selling prices. In the fixing of prices, no account was taken of the rentals or warehouses, huts or other premises, of the living allowances to secretaries of of administrative or overhead expenses of any kind.

The expense of ocean transport was heavy. There may be mentioned hereto shiploads, in particular, of the many which the Association brought to France, paying sometimes as high as $200 a ton for freight space. These loads were consigned to Marseille. The cargoes were of a total value of 250,000 dollars; the freight charge was 150,000 dollars, the insurance 15,000 dollars. The shipments were made at a time when the submarine menace loomed large.

It was apparent from the beginning that the Post Exchange could not be operated successfully unless sufficient ocean tonnage was placed at the disposal of the Association. The Y. M. C. A. asked for 208.83 tons a month for each unit of 25,000 men. This request was made December 1, 1917, after consultation with the Quartermaster and a careful study of soldiers' requirements under war conditions. On January 13, 1918, G. H. Q. informed the Association that only 100 tons a month for each 25,000 men could be alloted. Thus at the outset the Y. M. C. A. was faced with a shortage of more than 50 per cent of the space estimated as necessary to care for the troops properly.

On January 30 and again on March 23 the Chief Secreyary asked in vain that the allotment be increased. But during the next two months conditions grew worse. The inadequacy of the ocean tonnage was emphasized by the fact that the allotment for May, for example, was on the basis of the number of troops in France in that month, instead of on the basis of the number expected in France in July, when the supplies shipped, during May could be made available for the canteens.

During the winter and spring the Association had supplemented the Government tonnage by chartering and purchasing space on merchant ships. But as the Shipping Board gradually assumed control of all such vessels it became practically entirely dependent on the Government ships for the bringing to France of its supplies.

On May 2 the Chief Secretary again asked for increased tonnage. The request was renewed September 5, and on September 12 satisfaction was obtained at last, the allotment being almost doubled.

Meanwhile, the Y. M. C. A., through its purchasing Department, which was organized with a representative on the General Purchasing Board of the Army, has bought a large quantity of Turkish cigarettes in Switzerland, dates, figs, nuts, and oranges in Spain, towels, pencils, handkerchiefs, sewing kits, soap and other miscellaneous articles in France. But war conditions had prevailed in Europe for three and one-half years, stocks were low and prices were high, often excessive. The Association was faced by the alternative of paying and in consequence, charging high prices, rendering service meanwhile, or of limiting its sales to merchandise imported from the United States and rendering less service. It chose the former course.

To compensate further for the failure to receive adequate supplies from America; the Y. M. C. A. took over a large number of factories in France - plants which had been closed in conformance with the French Government's decree forbidding the sale of sweets or pastry to civilians. The Association supplied flour and sugar, the manufacturers most of the other raw materials. The prices were approved by the French Ministry. Here again the cost exceeded that of similar commodities in the United States, but had advantage not been taken of the local manufacturing facilities the Association would have had practically no chocolate or biscuits for sale during many months of 1918.

At the end of November, 44 factories were in operation, as follows: 20 biscuit factories, with an approximate monthly yield of 10,160,000 packages of biscuits:

13 chocolate factories and 3 candy factories, which were producing monthly.

7,436,000	tablets fondant chocolate, selling at	50c. each
3,536,000	tablets sweet chocolate, selling at	50c. each
1,000,000	tablets milk chocolate, selling at	75c. each
3,854,000	chocolate cream bars selling at	25c. each
1,590,000	nut-covered chocolate rolls selling at	25c. each
3,120,000	cartons of caramels selling at	50c. each

8 jam factories, producing approximately 2,000,000 tins, selling at franc 1.20, and 1,300 5-kilo tins for use in canteens.

The raw materials which it was necessary to obtain in other countries and transport to and about France each month for this manufacture amounted approximately to 850 tons of flour, 1,500 of sugar, 275 of fruit pulp, 150 of tin (for boxes) and 500 cocoa beans. Imported from England when the stock in France was exhausted were smaller quantities of bicarbonate of soda, ammonia, spices, cocoa, butter, lard and other ingredients.

After the signing of the Armistice the Y. M. C. A. raised with G-1 the question whether the time had not come to relieve the Association of the operation of the post exchanges, as there was no longer the same pressing demand on the personnel of the army for training and fighting. However, a change at that time did not appear to G-1 to be feasible.

On January 29, 1919, the Chief Secretary again brought up the subject, called attention to the rapidly increasing burden on the Association in assuming the responsibility of promoting educational, athletic and entertainment activities in the A. E. F. On February 22, the Commander-in-Chief replied, approving the suggestion, and stating that he had given directions to Army units to take over and operate their own post exchanges. * * * The concluding paragraph of the Commander-in-Chief's letter to the Chief Secretary reads:

> In making the change, permit me to thank you for the very valuable services and assistance which the Y. M. C. A. has rendered to the A. E. F. in handling these exchanges. Handicapped by shortage of tonnage and of land transportations, the Y. M. C. A. has by extra exertion served the Army better than could have been expected, and you may be assured that its aid has been a large factor in the final great accomplishment of the American Army.

The operation of the post exchanges by the Association ceased with the closing of business March 31, 1919, but at the request of the G. H. Q. the organization continued operation of wet canteen service as provided by G. O. No. 50. This service is now being greatly enlarged.

In an address at Le MANS, January 29, General Pershing said:

> Possibly there have been some mistakes made, but then everyone makes mistakes. Even the Army has not been entirely free from them.

Concerning the difficulties connected with the post exchange service, he stated that one of the causes lay in the Army's inability to provide adequate sea transportation facilities. He added:

> It was the fault of war conditions. We could not have supplied any more war tonnage if we had been running the canteens ourselves.

HOTELS

The Y. M. C. A.'s system of chain stores in France probably was the largest in the world. This is certainly true of its hotel system. It conducts no fewer than 73 hotels, restaurants and clubs for enlisted men and officers. The hotels are operated at a loss

for the rent is paid out of the General funds of the Y. M. C. A. and is not included in the cost of operations. The prices charged are just sufficient to cover out of pocket expenses (not including rent). The operation of most of the hotels was undertaken at the request of the commanding officer, who desired the Association to assume this form of welfare work sometimes to protect the Army against excessive prices, sometimes in order to improve moral conditions and always with a view to furnishing as many comforts as possible. * * *

MOTOR TRANSPORT

Quite 80% of all supplies and goods used by the A. E. F., Y. M. C. A. have been transported by this department. About 1,450 cars - trucks from 1 to 4 tons capacity, touring cars, camionettes and a few motorcycles - are now in use. Passengers are carried in the cars only when in the actual performance of their duties. About 600 secretaries are serving the department and it is assisted also by details from the Army and some civilian help.

During the fighting period much difficulty was experienced in transporting supplies to various points of activity. The War Department again and again refused tonnage for motor transport, as a result, from the beginning of last June until the signing of the Armistice the Association's total shortage was so great as materially to limit its service.

Many of the Association's were commandeered by the Army, many others were forced to abandon or postpone trips so that cars carrying troops, rations or ammunition to the front might have the right of way. These difficulties caused serious shortage in many canteens from time to time.

DISTRIBUTION OF STATIONERY

As regular correspondence between the soldier and his home is one of the most vital factors in maintaining morale, both on the part of the soldier and his family, efforts to provide pens, ink and tables, as well as paper and envelopes have formed an important activity. Owing to the shortage of paper it has been with difficulty that the supply has been maintained. Between June 1, 1918 and April 1, 1919 there have been given out free of charge approximately 304,717,000 letterheads, and 225,221,700 envelopes, and 10,000,000 post-cards.

REMITTANCES

Without any charge for handling, the Y. M. C. A. on behalf of members of the A. E. F. has remitted to friends and relatives in the United States and in other countries, up to January 31, 1919 a total of over 84,000,000 francs.

WORK IN ITALY

The work with the A. E. F. in Italy was organized in July 1918, with 15 secretaries in the field. Canteens were opened first but as soon as troops were stationed athletic work and entertainment activities were introduced. The number of secretaries increased with the demand until, in September, there were 40 in Italy.

Fifteen secretaries were with the troops in the memorable drive against the Austrians, 12 of them operating camions loaded with supplies. At three points educational work has been carried on covering studies in mathematics, languages, history, music and other branches. Secretaries have been stationed in all hospitals and one has

devoted his entire time to the direction of athletics, among ambulance units stationed at twenty differnt points. In addition to organizing athletics this secretary has maintained an emergency automobile service for the providing of reading matter and canteen supplies. The work at present is largely in leave area centers. The maximum number of points operated at one time was 53, in October last.

The American Y. M. C. A. has conducted an extensive recreation work for the Italian Army called the *Case del Saldato.* While working in cooperation with the A. E. F., Y. M. C. A. it has been a wholly independent organization, supervised directly by the Y. M. C. A. in America and under the immediate control of the Commander-in-Chief of the Italian Army.

WORK WITH THE FRENCH ARMY

Soon after his arrival General Pershing indicated that he felt the American Y. M. C. A.'s service would be of great value and deeply appreciated if extended widely to the French Army. This suggestion was cordially welcomed by General Petain and as a result "*Les Foyers du Soldat,*" a French organization which had been largely supported by the American Y. M. C. A. before the United States entered the war, was reorganized as "*Le Foyer du Soldat. Y. M. C. A. (Union Franco-Americaine)*" and has operated ever since on a very extensive scale throughout the French Army. Up to February 14, 1919, a total of 1,452 foyers had been established. Of a total staff of 1,123 workers 273 were American men, 55 American women and the remainder French. The American personnel have been militarized members of the A. E. F. but the Association's organization in the French Army has been administered and financed direct from the Y. M. C. A. Headquarters in New York, not as an administrative part of the Y. M. C. A. with the A. E. F.

At the request of the French Government American athletic directors have instituted systematic athletic programs in many camps and training schools, basketball is being taught by Americans to the members of the Paris Fire Department (an integral part of the French Army) and a large proportion of the foyers are to be retained after the war as permanent recreation centers for civilians.

WORK WITH THE CHINESE

The Y. M. C. A.'s of the French and British Armies have cooperated with the Y. M. C. A., A. E. F., in providing regular Association privileges for the 97,000 Chinese laborers attached to the three Armies. A considerable staff of Chinese speaking men, both Americans and Chinese, who have served with the Y. M. C. A. in China are conducting an invaluable service in this department.

WORK IN GERMANY

When the Third Army moved into Germany the Y. M. C. A. went forward automatically, though of course, stripped to the minimum so far as equipment and supplies were concerned, during the first weeks. Owing to the enormous difficulties in transportation during the first month the canteen supplies were totally inadequate. This was due to the inevitable congestion of railroad traffic and the impossibility at first of securing priority for canteen supplies. After the first weeks of scarcity, however, a magnificently complete system of distribution was established so that not only were the canteens most generously supplied throughout the Third Army but the whole work of the Y. M. C. A. was equipped and carried on on a scale which had never been approached when the divisions concerned were in the advanced training areas or at the front. No part of our whole work has been more highly praised by officers and men than which is being

carried on with the Third Army in Germany at the present time. Association service is also maintained for Americans now stationed in Berlin and those scattered in small detachments with Russian prisoners in different parts of Germany.

WORK IN THE UNITED KINGDOM

The representative of the American Y. M. C. A. kept in close touch with the military attache at the American Embassy in London prior to the arrival of General Pershing in Europe, with a view to adequate preparations for Americans who might come to the United Kingdom en route to France. In a number of cities preliminary surveys were made and tentative negotiations conducted. The first effort took place in July upon receipt of news that several thousand engineers would be encamped at Bordon, Hampshire, for a few days. Tents, supplies, and equipment, and a number of secretaries proceeded at once, to Bordon and were ready for work a fortnight before the men arrived. Service here was continued until the autumn, when the camp was discontinued.

A little later ten saw mill units, donated by several New England lumber companies as a gift to Old England, began operations in northern Scotland. The Association undertook service to these units immediately upon their arrival.

In May temporary headquarters for the American Y. M. C. A. were established in London at 45 Bedford Square, in a building loaned by the British Association. The American Association purchased from the British Association a large hut that was then construction in the Strand. This was opened in August and called the Eagle Hut.

Mr. Carter who had initiated the work in England soon found it necessary to spend practically all of his time in France. In July he appointed Mr. L. W. Dunn to be responsible for the work in the United Kingdom. In October Mr. Dunn was succeeded by Mr. R. L. Ewing, who has continued up to the present time as Chief Secretary in the United Kingdom. In October 1917 the headquarters were moved to 47 Russel Square.

SERVICE FOR ENLISTED MEN

The work naturally divided itself into the following groups:

(1) Ports of debarkation
(2) Rest camps
(3) Hospitals
(4) Aviation camps
(5) Cities and towns
(6) Leave centers
(7) Lumber camp

Ports of Debarkation: Although a considerable number of troops were landed at Glasgow and other places, Liverpool was the principal port of debarkation. From one to four secretaries went aboard each ship prior to the debarkation of the men, distributing postcards for writing home, exchanging money, receiving telegrams for people at home, and assisting with luggage. A hut for canteen service and money exchange was erected on the Riverside Dock at Liverpool and after a periof of successful operation was turned over to the American Red Cross. Troops trains were visited and there were placed in all the compartments copies of the news sheet published by the Association entitled "Home News," which gave a daily resume of items received by wireless by the United States Navy Headquarters.

Rest Camps: During the autumn of 1917 when the rest camps were being established in the Southampton area, owing to uncertainty as to their location and size, and because of lack of close liaison between Association and Army, there was a period of some confusion and mediocre work. By the late autumn, however, the location and size of the camps having been fully determined, a most satisfactory work was undertaken even though

the inevitable irregularity of the passage of troops through the camps made the work difficult. The Association equipment and personnel was sufficient to provide recreation for all the men in camp. The work at Winchester was perhaps typical of that in all the rest camps. The equipment consisted of a garrison theatre with a capacity of 600, a theatre tent with a seating capacity for 4,000, two large recreation huts, and the triangle hut constructed out of three large tents. In the theatre tent almost every evening some kind of entertainment was provided, consisting chiefly of vaudeville performances, concerts, and lectures. In these quarters and in the adjacent athletic fields a well rounded program was conducted for the enlisted men. During the summer of 1918 there was opened an officers hut equipped with shower baths, billiard tables, fire places. reading and writing facilities, a library, canteen service and entertainments.

Service similar to that at Winchester was provided at the rest camps at Southampton Commons, Romsey, Flowerdown and Knotty Ash.

Hospitals: In January 1918, the Y. M. C. A. and American Red Cross arranged that all recreation work in hospitals maintained by the Red Cross was to be undertaken by that Society and in hospitals maintained by the government, the Association was to be responsible. Large huts at Plymouth, Portsmouth, and at Hursley Park were immediately secured by the Association. In July 1918, owing to the taking over by the government of most of the Red Cross assumed responsibility for recreational work at all hospitals, it being understood, however, that the Association should continue certain responsibility for educational work, libraries, and motion pictures.

Aviation Camps: More than a dozen American aviation camps were established in 1917 with small numbers of men, ranging from ten to about one hundred. Service for these units was rendered by a travelling secretary, who established at nearly every place a recreational room, provided with writing paper and libraries, and in larger camps lectures, entertainment and religious services were arranged. As the number of camps increased the number of secretaries grew, so that on November 11, 200 secretaries were engaged in this work in the seventy-five aviation camps then in existence. At least one secretary was provided for each camp of 200 or more men. Occasionally a camp of as small as 150 had a secretary, but usually such were served by a travelling secretary in charge of several. Nearly all of the aviation camps were well supplied with recreation huts and tents - the canteen and post exchange was almost universal. The majority of huts and tents were provided with a stage for entertainments and motion pictures; an abundance of athletic equipment was provided, and a large number of inter-aviation camp matches were arranged, educational work bearing on military training was conducted. In as much as many of these camps were in reality British camps a certain amount of work was rendered through British Associations.

Cities and Towns: Here two rather distinct types of work were performed - first, the usual hut activities, and second, rather small social clubs, where large numbers of English young women were invited to associate very actively in the club life and not limit themselves, as was necessary in the large huts, more largely to canteen and entertainment work.

The Eagle Hut in London was in reality a series of ten huts, so large and joined together in such a way as to constitute it one of the largest recreation huts in the world. The canteen catered to more than three thousand men daily. In the auditorium was a continuous program of music, vaudeville, educational lectures, and movies, domitory facilities for four hundred, post exchange, kit room, reading and writing facilities, barber shop, American shoe shine parlor, American drinking fountain, newspaper stand, information bureau, ice cream soda fountain, griddle cake service, quiet room for reading and writing, billiard and pool tables, half dozen large open fire

places, etc. The following table gives some idea of the extent of the service rendered:

Canteen:	
Meals served	134,566
Sodas	3,193
Ices	14,540
Cakes	19,335
Dormitories:	
Beds (Men slept)	11,438
Kits	6,985
Valuables	1,564
Baths	1,871
Boots	3,217

The cost of the Eagle Hut was approximately 110,000 dollars.

Where existing buildings were used instead of specially constructed huts, dormitory and canteen features were prominent. Centers of this sort were opened in Liverpool, Plymouth, Glasgow, Cardiff, Southampton, Inverness, Newcastle-on-Tyne. Private hotels in London were taken over and transformed into residential homes for enlisted men from the Army and Navy Headquarters. In London also several large hotels were undertaken so as to provide attractive economical hotel accomodations for soldiers and sailors in transit, on leave, or on duty.

In the social centers which were organized chiefly in the smaller towns and cities adjacent to the camps, the assistance of the British Y. M. C. A. was invaluable in recruiting local young women to assist in the social events, dances, teas and excursions. There is abundant evidence that the invaluable opportunity which these centers gave enlisted men to meet respectable young women, proved of the highest morale value to the Army.

Leave Centers: Though the Armistice made unnecessary the opening of the leave center which was under way at Stratford, the Association has conducted a large amount of sighteeing work and theatre parties in London, Edinburgh, Glasgow and other centers visited by large numbers of Americans.

Lumber Camps: In seven of the ten sawmill camps scattered along the Dornoch River for a distance of ten miles, small recreation huts were built. A larger hut was provided for the unprovided units and for lectures, canteen and other activities involving the men of the whole force.

SERVICE FOR OFFICERS

After the work for the enlisted men was well under way, a number of officers inns and hotels were opened. The Washington Inn in St James Square, London, was a series of eight huts constructed around a central court, and though a temporary building, has proved to be one of the most complete war clubs in existence. It is probably the most unique and attractive building erected by the Association in Europe. In addition to a large dining-room, a great social room for lectures, concerts and dances, and the usual facilities of a first class club, one hundred small bedrooms were provided. The hut was finished in the Elizabethan style and cost $90,000.

In addition to the Washington Inn, there was provided in London a large club and inn in Cavendish Square and the Palace Hotel. Inns were also provided in Edinburgh, Plymouth, Knotty Ash Camp, Cardiff and Liverpool.

INTERNATIONAL Y. M. C. A. HOSPITALITY LEAGUE

This organization represented the combined effort of the Young Men's a Christian Association of Great Britain, Canada, Australia, New Zealand and the United States, on

the streets of London and the other large cities in the United Kingdom. The purpose of the League was to supplement the work done in the huts and other Association centers, it being recognized that all the men did not come to the huts and most of those who did come remained there for only a part of their leisure time. It was found that thousands of men of all nationalities were on the streets, many of them walking aimlessly, not knowing where to go or where to find lodgings or entertainment. The general scheme of operation may be summarized as follows:

1. The provision of information bureaus: In London there were about a dozen and in Edinburg, Glasgow, Dublin, Belfast, Liverpool and one or two other places there was a single such bureau.

2. The securing, for free distribution amongst the men of theatre tickets. This was done through the courtesy of the managers of the theatres.

3. The securing of hospitality in British homes. This consisted of afternoon teas, lodging for a day or sometimes longer.

4. The organization of Church parties and the encouragement of Church attendance.

5. Transportation of men on leave in London from one station to another at night after the buses and other means of transportation had stopped.

In the carrying out of these lines of activity particularly that of hospitality and management of the information bureaus, the Rotary Club was of valuable assistance in some centers, they assuming entire responsibility for the erection of the Information Bureau, and in several centers supplying all the volunteer workers to carry on the activities.

6. Street Patrol Work: It is significant in the development of this work that women patrols were found to be of invaluable assistance on the streets. After a few months experience it was further found that in dealing with the men we were only facing one half of the problem, if that, and that the effective elimination of undesirable women must be done by the women patrols. This work, however, was seriously handicapped by lack of places to which these undesirable women could be sent, once their consent was given to give up their activities on the streets.

The work of the International Hospitality League was essentially confined to the streets. It was on the street that the men on leave who had not sufficient knowledge of the city and without definite information as to where to go, were in great need of assistance. It was here also that the social evil was so much in evidence.

It is gratifying to learn that during the first ten months of 1918, out of over 2,000 American soldiers sent to British homes for hospitality, not a single case of misconduct or undesirable behaviour was reported. It is further gratifying to learn that a considerable number of British homes were open to American and other overseas men who were known to have definitely gone wrong but who needed the retouch of the home influence they had lost and largely in consequence of which they had gone astray.

ATHLETICS

A very comprehensive entertainment, motion picture, athletic, social and religious program was carried on throughout all centers in the United Kingdom.

In connection with the athletic work the cooperation of the British committee on the entertainment of Americans is significant. During the last half of the year 1918, weekly boxing bouts were held at the National Sporting Club's premises under the auspices of the British committee. The programs were arranged by the Y. M. C. A.'s Athletic Director for the United Kingdom. These were attended by a large number of our young men as well as those of the Allied forces, and afforded a great stimulus to boxing in the camps.

Through the courtesy of the British authorities, baseball, track and other athletic

events were arranged in Hyde Park. It was here that the final and semi-finals of the camp series were played off.

EDUCATIONAL WORK

An extensive educational work was carried on even though the soldiers in many of the camps in England were more temporary than those in France.

Libraries, magazines and other literature were provided to all of the camps in the United Kingdom in generous quantities. In this work we had the very hearty and practical cooperation of the American Library Association, whose supply of books was both liberal and of a high character. Good libraries and plenty of magazines were sent to even the smallest and most isolated camps.

The following list of titles indicate the character of the books supplied in the technical library sent to each of the aviation camps:

Glossary of Aviation Terms
Air Navigation for Flight Officers
Autocar Handbook
Photography of Today
The Photo Miniature
How an Aeroplane is Built
Introductory Mechanism
Glossary of Aeronautical Words and Phrases
Metal Tools and their Uses
Magnetic and Electrical Ignition
The Motor Catechism
Wireless Telegraphy
Dyke's Automobile and Gasoline Engine
Encyclopaedia
Mechanical World Year Book
Motor Mechanics
Practical Flying
Flying, some Practical Experience
Airfare
High Speed Internal Combustion Engines
The Aeroplane Speaks
Aviation Engines
Aircraft and Submarines
The Machine Gunner's Handbook
Mechanical Yearbook

Libraries and magazines were also supplied in the city centers and in the rest camps, and while the use here was very gratifying, in the nature of the case, books were not so much required as in the more isolated centers in the aviation camps.

In the city centers and in the rest camps, very little could be done in the way of class educational work, although in both types of centers "drop in" French classes were organized. It was in the aviation camps chiefly that the educational work was found to be most feasible. The work here fell into three groups.

(1) Academic, including English, French and Spanish. Public speaking, letter-writing, English literature. English, American and modern European history. The governments of Europe, Economics.

(2) Technical, including arithmetics, algebra, geometry, trigonometry, mechanical drawing, principles of electricity, gas engines, agriculture.

(3) Commerical subjects, including bookkeeping, accounting, stenography, salesmanship, commercial geography and commercial law.

The attendance and interest in the classes, on the whole, was very good, although naturally, on account of the transitory character of the personnel of the camps, interruptions were frequent and troblesome.

RELIGIOUS WORK

The religious work of the Association was placed from the beginning on a very broad basis.

In all the camps the Association Huts were made available for the use of Roman Catholics for religious services or for any other religious denomination that might desire accomodation. Great care was taken to avoid mixing the religious activities with the social, the former standing apart by themselves and being announced with unequivocal clearness as to their character and purpose. Only in one or two instances, so far as can be determined, was there any confusion of the religious activities with other programs, and these were promptly corrected. The addresses that were given were, as a rule, of a broad devotional and ethical character, dealing with the problems incident to military life.

VOLUNTEER WORKERS

Particular mention should be made of the splendid services renderd by the volunteer workers, both men and women, in the various centers in the United Kingdom. Naturally, their service was confined, almost exclusively, to the city centers or to camps nearby. Something like 3,000 volunteer women workers were enrolled, and as many as 500 were on the list of Eagle Hut.

The tone given to the work by the presence of these ladies, most of them from the very best families, was one of the most valuable assets in the whole range of the Association's services. While the major portion of the women were engaged in the canteen service, yet many of them gave valuable help in organizing social entertainments, in acting as hostesses and in organizing social gatherings.

Too much stress cannot be placed on the services of British men and women throughout the United Kingdom, not only in the huts themselves but as advisers and as members of cooperating committees. They contributed enormously to the welfare of Americans and incidentally rendered an invaluable service in promoting a most friendly relationship between Britain and America.

WOMEN'S WORK

Though the Chief Secretary issued the first call for women workers in July 1917, only a few score American women arrived during the summer and autumn of that year. By the spring of 1918 the work of the women was regarded so indispensable by the Army as well as by the Y. M. C. A. because of the remarkable achievements of the small company of women workers in the preceding months that the Association issued through Dr. Mott an appeal for 1,000 women to be recruited by September 1. This number was enrolled without difficulty. At present over 2,500 American women are serving the Army with the Y. M. C. A. and though the number of troops is steadily diminishing, the number of requests for women workers still greatly exceeds the supply. In many divisions at the front commanding officers sanctioned the service of women as far forward as brigade headquarters. In addition to their canteen work in times of special stress the women

served in forward dressing stations under shell fire, living in dugouts, working in tents or in the open and nursing the wounded. Others in the same divisions remained at the railheads and supply stations maintaining canteens in partially demolished buildings and temporary structures. Upon some occasions the women workers were permitted to distribute doughnuts and other eatables in the trenches themselves. Wherever stationed the women have ministered in a variety of ways, such as the sewing on of buttons, the mending of torn clothing and the writing of letters for the wounded and illiterate. Again and again their services have been commandeered as auxiliary nurses.

No single factor has contributed so much to the influence of the Association upon the Army as the presence of this large company of magnificent American women. The service which they have rendered is beyond praise.

OFFICERS' CLUBS AND HOTELS

In addition to the hundreds of huts and clubs maintained for enlisted men, the Association has operated several score hotels, clubs, canteens and restaurants for officers. Owing to the limitation on its supplies and the number of its personnel, imposed by the War Department, it was impossible for the Y. M. C. A. to respond to the many hundreds of requests that came from commanding officers to open officers' clubs. In the nature of the case Y. M. C. A. had to give priority to the enlisted men and was only justified in sparing some of its personnel for the operation of officers who were stationed or in transit. During his visit to France in 1918, Secretary of War Baker was so deeply impressed with the value of the officers' clubs that he urged the Y. M. C. A. greatly increase the number. Unfortunately the very great difficulties and delays which the Association experienced in getting its personnel to France, and the relatively even greater need for the enlisted men, prevented the Y. M. C. A. from responding to Mr. Baker's request on as extensive a scale as would otherwise have been possible.

WAR PRISONERS AID

The department of War Prisoners Aid has helped approximately 45,000 German prisoners of the A. E. F. confined in 102 enclosures in France. Authority to visit these places was granted by G. H. Q. 2845-A35C, on November 14, 1918.

The work was in reciprocation of that which the Association had been permitted to carry on with American prisoners in Germany. In perfecting its organization for the enclosures the department declared its aims to instill ideas of true brotherhood, keep restless minds occupied and provide facilities for self-betterment. In each prison a Y. M. C. A. help committee of 17 menbers, selected by men themselves was formed, each being divided into subcommittees to promote religious, educational (instruction in English and other branches), entertainment, athletic, musical, welfare (special attention to men in the infirmaries and camp activities). The last named is intended to encourage the beautifying of the enclosure and seek to better sanitary conditions. That each subcommittee might have an English-speaking member it was provided that the Veldwebel (sergeant major) if he spoke English, or the official interpreter should be an ex-officio member. The Y. M. C. A. secretary is at all times free to meet with any committee, directing work in accordance with the department's program and with the advice of the commanding officer of the enclosure.

The enclosures reached are grouped more or less in the neighborhood of eight centers as follows:

City	Province	Enclosures
Bordeaux	Gironde	15
Bar-le-Duc	Meuse	18
Chaumont	Haute Marne	14
Dijon	Cote d'Or	7
Marseille	Bouches du Rhone	4
Nantes	Loire Inf.	5
St-Nazaire	" "	15
Tours	Indre-et-Loire	24
		102

In the holiday season 10,000 copies of Christmas cards were printed in German and distributed, and Christmas trees were set up in the enclosures. The department operates no canteens and sells nothing. The department serves also with athletic supplies, games and other gifts the American soldiers who are guards at the enclosures, when these are isolated from other Y. M. C. A. centers.

"RACE TO BERLIN"

At the request of the commanding general S. O. S. the Y. M. C. A. undertook to assist in the conduct of a great interbase port in unloading freight from incoming ships. Under the leadership of the Commanding General a large number of Y. M. C. A. secretaries assisted in the production of posters, films, lectures and charts which not only strengthened morale but greatly aided in speeding up the all important work of the S. O. S.

SIGHT SEEING ACTIVITIES

In all large centers or places of historic or scenic significance like Paris and the leave areas the sightseeing department is one of the most deeply, appreciated activities. The provision of guides and guide books, the making of special arrangements for visits to galleries and buildings otherwise closed, etc,.....has been not only of recreative but of high educational value.

INTERNAL ADMINISTRATION

In order to administer an organization operating on as wide a scale as that described in the foregoing pages, the Y. M. C. A. has had to maintain an extensive headquarters administration as well as administrative headquarters in regional and divisional offices in the fields. The following administrative departments have been conducted simply as a means to the ultimate end of the largest services to the Army:

Accounting
- Real Estate
- Legal
- General Office Management
- Personnel
- Women's Bureau
- Bureau of circulation
- Treasurer's Office
- General Supply Division
- Medical
- Records

Investigation
Discipline
New Bureau
Salavage

ACCOUNTING

The bookkeeping, accounting and auditing, including the accounting of the Post Exchange and the A. E. F. remittances, as well as all disbursements for Association activities and general administrative expenses, come under the jurisdiction of the Comptroller's Office. The Comptroller, Mr. W. E. Seatree, represents the international accounting firm of Price, Waterhouse and Company of New York, which firm has assumed the official responsibility for the accounting and auditing of the financial operations of the A. E. F. Y. M. C. A.

REAL ESTATE

The operations of this department include the negotiation of leases, and the arrangements for the surrender of properties. It has leased in Paris 38 properties (not including huts or transient premises) with a total approximate rental of francs 1,950,000. Outside of Paris 217 properties with an approximately annual rental of francs 2,397,000, have been leased a grand total of 255 properties, on which a rental of francs 4,347,700 is paid.

LEGAL

The Legal Department is composed of three bureaus; French liaison, which deals with the French, obtaining the permits necessary to lease or erect buildings, gives attention to automobile accidents in which French are involved, and handles contract claims in which there is a possible application of French law; Judge Advocate General's Bureau which considers all cases in which the conduct of Y. M. C. A. secretaries has a criminal aspect, either according to military law or the standards of conduct set by the Association, and Bureau of Contracts, a representative of the Department being attached to the General Supplies Division to pass upon legal questions.

GENERAL OFFICE MANAGEMENT

This division is responsible for the maintenance of the eight office buildings required by the Association in Paris, the principal building of which is the 12 rue d'Aguesseau Office. The division includes the following departments:

Post Office
Telegrams
Cables
Telephone
Messengers
Couriers
Clerical Staff and Supplies
Building Engineer
Building Maintenance
Consulting Architects
Supervising Contractor

The Post Office handled 3,000 letters weekly in November 1917, and in the week ending March 1, 1919 handled 110,000. In addition to the personal and office mail for the Y. M. C. A. staff nearly 2,000 officers and enlisted men make use of the postal privileges of the Y. M. C. A. Between May 1, 1918 and March 1, 1919, the package department handled 571,804 parcels.

PERSONNEL

This bureau is responsible for receiving, training, assigning and arranging for the leaves of the Y. M. C. A. personnel.

WOMEN'S BUREAU

The Women's Bureau was organized in September 1917, to pay especial attention to the training, housing, equipping and assignment of the women workers. It was charged with the responsibility of acquainting the Y. M. C. A. headquarters in America with the need of women workers in Europe.

BUREAU OF CIRCULATION

This department has custody and control of every form of paper required by Association workers in traveling from one point to another, such as passports, red workers permits, movement orders, French *Ordres de Mission*, automobile passes and *sauf- conduits* applications for American and British white passes.

TREASURER'S OFFICE

The treasureres responsible for the actual financial operations of the Association. He pays bills, arranges for the bank accounts, is responsible for the collection of all accounts, including bad checks, and in conjuction with the Comptroller, is in charge of the A. E. F. remittances.

GENERAL SUPPLY DIVISION

For administrative purposes the following departments are grouped under this division:

Hut Construction
Hut Decoration
Hut Equipment
Hotels and Cafes
Motor Transport
Post Exchange
Salvage
Stationery
Traffic
Truck Service
Uniforms
Warehouse
Shipping

MEDICAL

To safeguard the health of all its secretaries, the Association has maintained a Medical Department since January 28, 1918 whose physicians, between February 1 of last year and February 28, 1919, rendered service or made examinations in 22,683 cases.

The department treats sick secretaries at the office or in their billets, refers them to specialists, if desired; sends them to hospitals, if necessary; makes a physical examination of every arriving and homegoing worker, gives a certain amount of sanitary inspection and advice and maintains relations with the A. R. C. Medical and Surgical Department.

RECORDS

This department consists of the following bureaux:

Militarized personnel bureau, where information regarding the assignments and type of work of every secretary is filed:

Station lists bureau, where records of all units are kept.

Military information bureau.

Civilian records bureau, which guards against the employment of persons considered undesirable, either by the American or French military authorities, the French civil authorities or the labor bureau of the A. E. F.

Secretaries' Leave Bureau

Addressograph Service

Filing Bureau

Bureau of Maps and Graphs

Archives Bureau

Bureau of Statistics

Information and Registration Bureau

BUREAU OF INVESTIGATION

This office, with a staff of twelve, all of whom had police or detective training in the United States, is responsible for the searching for stolen or lost property, investigation complaints of alleged robberies on Y. M. C. A. premises, investigating reported losses in canteens and warehouses and searching for lost secretaries.

BOARD OF DISCIPLINE

This body, composed now of three members was organized December 26, 1918 and up to March 7, has heard 53 cases. Of these 44 were finally disposed of; in one, execution of sentence was suspended, seven have not been fully heard and one was referred to the Army authorities for an opinion.

Of the cases in which a final decision was reached there were 23 convictions and 17 acquitals or dismissals of charges. One case was referred to another department and a definite finding was deemed unnecessary in three cases. In six cases the accused were given dishonorable discharges, in 15 resignations were accepted and in two honorable discharges were granted.

Of the 23 cases in which the accused were found guilty, seven involved charges of moral turpitude, four were cases of drunkenness and the others were of minor importance - inefficiency or imcompatability.

NEW BUREAU

Because of the public character of the Y. M. C. A. operating funds contributed by thousands of people in the United States, the function of the News Bureau has been to keep the public informed with reference to the Association's activities. Most of those who have written for publication have done so in addition to their regular activities in canteens and huts. In August 1918, a weekly bulletin, the "Red Triangle Overseas" was established in order to acquaint all Y. M. C. A. workers with relevant Army orders and convey information to them regarding the scope and methods of the Association's work.

DEATHS

Seven Y. M. C. A. men secretaries were killed at the front; one was killed in an air raid; six died of injuries received in accidents. One woman secretary was killed at the front and one in an air raid. Thirty-seven men and fifteen women died from natural causes while with the A. E. F. prior to March 31.

DECORATIONS

Several Y. M. C. A. secretaries, men and women, have been decorated by various Allied and Associated Governments for bravery or marked devotion to duty in the face of perils. A very large number of the Association's workers would have preferred to be in active service in the Army but were prevented for reasons beyond their control. In the places which they have been permitted to fill they have not shrunk from drudgery or danger.

Up to date decorations have been awarded as follows; Distinguished Service Cross, 5 men; Croix de Guerre, 12 men and one woman with the A. E. F., one man and one woman with Foyer du Soldat; Medaile de la Reconnaissance Francaise, two men and one woman; Ordre de St-Stamislave (Russian), three men; Lorraine Cross, one man; Italian decorations; two men.

In addition, the 75 workers with the 3d Division, the 35 with the 28th and 35 other men and four other women have received citations. It is believed that a large number of men and women workers have been cited and decorated regarding whom this office has no information.

DEFALCATIONS

Reported irregularities a Toul late in 1918 led to an investigation by the Legal Department of the Y. M. C. A. and the arrest of a secretary, who confessed to having Association money in his possession. A worker in Brest confessed to taking small sums regularly and another worker was accused of appropriating france 37,000. The discovery of these thefts was made by the Association itself. It turned the men over to the Army and insisted on their vigorous prosecution. All three men have been sentenced to serve prison terms. Practically all of the stolen money was recovered. In a statement issued at the time of the arrests the Chief Secretary said:

> Out of a canteen business approximating 16,000,000 dollars in the six months ending October 1, and out of an A. E. F. remittance, business of 14,912,217 dollars for the year 1918, the American Y. M. C. A. has found in the course of its own investigations up to the present time misappropriations to the amount of 38,940 dollars. Out of the total staff of over 6,000 workers to date three have been charged with defalcations.

SALVAGE

This department was formed in February last "to keep property and equipment of the Y. M. C. A. in active service and dispose of the same when it becomes certain that it will no longer be needed for Y. M. C. A. service." The head is the Association representative of the General Sales Board of the Army. The disposition of property is governed by the regulations of the French Government, as is the case with A. E. F. property.

Nineteen huts had been evacuated up to March 14, 1919. Twelve of these had been disposed of. Four were transferred to the Foyer du Soldat and one was sold to the British Y. M. C. A. At the Tour salvage station the department had gathered from the field more than 60,000 pieces of athletic equipment for redistribution to the Army.

CONCLUSION

In September 1918, the Chief Secretary indicated to several members of the General Staff that he believed that the work of the Y. M. C. A. was of such vital military importance that arrangements should be made to enlarge the administrative section of the General Staff so that it might not only act upon proposals put forward by the Y. M. C. A. and other welfare organizations, but might take the initiative in facilitating the development and extension of recreational service to the Army. Immediately following this there commenced a more active effort on the part of the Army to increase the effeciency and utilize more fully the resources of the Y. M. C. A. It is believed that this was very largely due to the conviction on the part of great numbers of commanding officers that the service of the Y. M. C. A. was an indispensable military asset. Following on the enlarged welfare machinery developed by the Army since the Armistice, the Y. M. C. A. has received assistance on a scale so extensive as very largely to increase the volume of its work. It is believed that if the General Staff during the period of hostilities has emphasized strongly the desirability of commanding officers cooperating with the Y. M. C. A. to the fullest possible extent the amount of service rendered by the Association would have been at least fifty per cent greater without any corresponding encroachment upon the time of the commanding officers or the material resources and transportation of the Army. Experience has shown that in divisions where the commanding general regarded the Y. M. C. A. as indispensable the Association with the same sized personnel was able to render fully twice as big a service as in some other division where the commanding general of his staff regarded the Y. M. C. A. as an extra instead of a necessity.

In spite of criticism that the Y. M. C. A. was profiteering, the records and accounts of the organization indicate, of course, that it has operated solely on a service basis. The assertion that the Y. M. C. A. was commercial grew out of the fact that for the sake of service the Association entered the commercial field because experience in other armies had shown that owing to the lack of freedom of circulation and the consequent inability to choose his own market, the soldier on active service is frequently in danger of being commercially exploited.

It was willing to undertake the heavy commercial burden involved in a considerable hotel and restaurant and an enormous post exchange service, in order that the soldier might, so far as possible, secure what he wanted at cost. The social value of this commercial undertaking can hardly be overestimated, but in addition to this huge service the Association has rendered an even vaster service in the field of recreation, for which of course, no charge has been made to the soldier. It has aimed to provide free to the Army everthing which the most enlightened and up to date community at home provides free to its citizens. Indeed, hardly any community has provided the varied free service which the following list records:

Clubs
Educational Classes
Athletic supplies and equipment
Movies
Vaudeville, dramatic and musical entertainment
Musical instruments and sheet music
Popular and religious lectures
Magazines, papers, books and pamphlets literature
Comforts for ocean voyages
Stationery and envelopes

and in times of special stress at the front or during long enforced marches large quantities of hot drinks and canteen supplies.

The support and cooperation which the headquarters of the Y. M. C. A. has invariably received from G. H. Q. and from H. Q. S. O. S. has contributed in very large measure to the success of the work. If it had been possible for the authorities at G. H. Q. and more particularly at Washington to have sanctioned, in the autumn of 1917 the Atlantic tonnage for supplies the motor transportation and the quota of personnel which were recognized by the General Staff in the autumn of 1918 as not a luxury but a military necessity, the Y. M. C. A. would have been in a position to have more than doubled service. The Association, however, has no cause for complaint for it has realized that nearly every principal department of the A. E. F. had to carry on with inadequate resources and insufficient personnel.

It is confidently believed that eventually the American soldier and the American public will appreciate the magnitude of the difficulties which the Commander-in-Chief had to confront by reason of the unpreparedness of our country, the distance of the theatre of operations from the base of supplies, the submarine and the very nature of modern warfare, and realize the greatness of the skill and abandon with which he and those throughout his command succeeded in achieving the impossible.

The citizens of the United States may well be proud of the ten thousand public-spirited men and women who followed the Army to Europe in the service of the Y. M. C. A. They came from all parts of the land, from all classes of society and were members of every great regligious body, Catholic, Jewish and Protestant. By the very variety of their former callings and prefessions they added richly to the life of the Army. They have cause for satisfaction in that largely as the result of their labors the program of athletics, entertainment, education, leave areas and recreation generally, which they pioneered eventually became an integral and official part of the A. E. F. Proud as they may well be of this, they are prouder still of the stupendous achievement of the A. E. F. itself, the history of which should prove the greatest American epic. To have had a humble part in so high an enterprise has brought the profoundest satisfaction to every worker in the Y. M. C. A. with the A. E. F.

E. C. CARTER,
Chief, A. E. F., Y. M. C. A.

Paris
April 16, 1919

APPENDIX B

ATHLETIC SUPPLIES DISTRIBUTED BETWEEN JULY 1, 1918 and JANUARY 1, 1919

		Unit Cost	Total Cost
Baseball Equipment			
Balls	7,484 doz	$12.00 per doz.	95,808.00
Bats	15,322 only	.90 each	13,789.80
Masks	1,200 "	3.00 "	3,600.00
Catcher's Mitts	1,244 "	6.00 "	7,464.00
Protectors	1,669 "	6.00 "	9,414.00
1st Base Mitts	1,240 "	4.00 "	4,960.00
Fielder's gloves	4,858 "	3.00 "	14,574.00
Bases (sets)	125 sets	4.00 per set	500.00
Indicators	150 only	.50 each	80.00
Rules	102 1/1 doz.	.06 "	73.80
Score Cards	575 only	.01 "	5.75
Home Plates	49 "	.50 "	24.50
Indoor Baseball			
Balls	21,054 "	.85 "	17,895.90
Bats	1,205 "	.60 "	723.00
Rules	96 doz.	.06 "	69.12
Volley Ball			
Balls and Bladders	4,487 only	3.20 "	11,358.40
Bladders (extra)	1,130 "	.73 "	824.90
Nets	1,425 "	1.20 "	1.710.00
Rules	102 doz.	.06 "	73.44
Basket Ball			
Balls and Bladders	4,696 only	7.20 each	33,811.20
Bladders (extra)	2,030 "	.72 "	1,461.60
Goals	602 sets	3.50 per set	2,107.00
Rules	34 doz.	.08 each	32.64
Score Books	376 only	.20 "	75.20
Rugby Football			
Balls and Bladders	6,358 only	5.00 each	31,790.00
Bladders (extra)	1.623 "	.85 "	1,379.55
Soccer Ball			
Rules	126 doz.	.08 "	100.80
Balls and Bladders	6,845 only	5.00 only	34,225.00
Bladders (extra)	1,767 "	.90 each	1,590.30
Rules	105 doz.	.08 "	100.80

ATHLETIC SUPPLIES DISTRIBUTED BETWEEN JULY 1, 1918 and JANUARY 1, 1919 Cont.

		Unit Cost	Total Cost
Cage Ball			
Balls and Bladders	23	$50.00 each	$1,150.00
Bladders (extra)	23	12.00 "	276.80
Golf			
Golf Balls	30 doz.	8.80 per doz.	264.00
Golf Sticks	100 only	3.57 each	357.00
Golf Bags	25 "	4.05 "	101.25
Tennis			
Balls	601 doz.	5.00 per doz.	3,005.00
Racquets	629 only	4.00 each	2,516.00
Nets	727 "	3.57 only	2,726.25
Markers	9 "	5.00 "	45.00
Tennis Shoes	240 pairs	1.25 per pr.	300.00
Fencing			
Foils	16 pairs	4.50 each	72.00
Masks	4 only	4.50 "	18.00
Gauntlets	4 "	4.00 "	16.00
Plastrons	8 "	7.50 "	60.00
Uniforms			
Running Shirts	725 only	.50 each	362.50
Jerseys (sleeves)	2,882 "	1.00 "	2,882.00
Running Pants	2,250 "	.50 "	1,125.00
Supporters	90 "	.50 "	45.00
Miscellaneous			
Extra Laces	3,884 "	.06 "	233.04
Lacers	1,590 "	.01 1/2	23.85
Pumps	377 "	.65 "	245.05
Rubber Cement	854 tubes	.08 "	68.32
Whistles	1,534 only	.30 "	460.20
Boxing Gloves	1,236 sets	8.00 per	9,888.00
Medicine Balls	354 only	8.00 each	2,832.00
Line Tapes	41 "	2.50 "	102.50
Stop Watches	175 "	7.00 "	1,225.00
Punching Bags	10 "	8.00 "	60.00
Swimming Rules	756 "	.06 "	45.36
			$323,147.98

March 31, 1919.

THE SALVATION ARMY

The work of the Salvation Army with the American Expeditionary Force was inaugurated in July 1917, when Colonel William S. Barker arrived in France at the direction of the National War Board of The Salvation Army. After reporting to General Pershing and receiving every facility to make such investigations as was desirable, it appeared that there was a field of usefulness opened to the Salvation Army. The necessary orders were thereupon issued by the Commander-in-Chief and the way opened for the installation of huts and the commencement of operations.

The first huts were opened in the Gondrecourt area, which was the field of training for the 1st Division. These huts were portable, wooden structures, which were made warm and comfortable for the use of the men. Each hut contained a piano and phonograph as well as books, magazines and newspapers; writing material was provided freely; checkers and chess games were also provided, and as the huts were clean, warm and well lighted they furnished a comfortable place for meeting and recreation. A canteen was also run, where such articles as were needed by the soldiers, including candy and chocolate, could be obtained at cost price.

Women were introduced into camp work at the installation of the first hut of the Salvation Army and immediately became a most desirable addition to the camp life of the men. They were carefully selected women; for the most part officers of the Salvation Army trained in public work. They were able to introduce many homely things, greatly appreciated by the American soldiers - such as the making of doughnuts and pies. Their willingness to share the hardships of the men, as well as to brave their dangers, was a source of inspiration and encouragement which had a desirable effect in upholding the morale under the most trying conditions.

One of the first services performed by the Salvation Army was the institution of a money order system, enabling the soldier to send his money home, before the Post Office Money Order System was placed in operation.

As the huts of the Salvation Army were for the most part in small, out of the way places, and the money orders were without charge to the soldier, it was a decided convenience and much appreciated.

Throughout the fall and early winter of 1917, huts were operated in the First Training Area and when the troops moved up to the front additional huts were opened as close to the front line trenches as was at all practicable; the same work of service was continued even though frequently under shell fire or aeroplane attack. Canteens were established in dugouts at the extreme front, and doughnuts and pies were forwarded to the men in the trenches; hot coffee and cocoa were also freely provided for them on their way out. This service continued day and night during the entire time troops were in the front line.

When the front was extended to the Montdidier sector, additional units went forward with them and established canteens, and doing home cooking, in the broken villages upon that front. It frequently happened that the women workers were obliged to sleep out in the open fields when the towns were shelled and bombed incessantly. They always returned to their work, however, in the morning, and in this sector every hut of the Salvation Army was under shell fire more or less at all times. The workers never faltered, but continued to serve the men and their presence with them was a constant source of encouragement and inspiration.

As the front was extended to Soissons and Chateau-Thierry, mobile units of the

Salvation Army continued to serve them and in the great drive at St-Mihiel and in the Argonne Forest men and women workers of the Salvation Army were ever present where their services were most needed.

After the great battles when the wounded were being returned to the dressing stations in great numbers, workers of the Salvation Army left their canteens and ministered to the wounded boys. Here they provided cold lemonade, as also hot coffee and cocoa. They assisted the doctors and nurses when they were worn out with labor.

As the enemy was pushed back and the lines extended, they went forward with the men - establishing canteens, rest rooms and frying doughnuts in the partially destroyed buildings in the devastated regions. Their duty was to serve the men where the need was greatest, without impeding military progress or calling for assistance from the already overburdened military force.

As the troops of the Army of Occupation went forward to Germany, mobile units of the Salvation Army proceeded with them. When they reached the Rhine, doughnuts had already been fried by the tireless women of the Salvation Army. When the lines were extended to the bridgehead, huts were opened and the same form of service continued.

Until the Armistice all the officers of the Salvation Army were used in the advanced sections, no work being attempted in the S. O. S., but with the prospect of embarkation arrangements were made for huts to be erected at the base ports. While the work heretofore had necessarily been in small buildings or rooms made available in partially destroyed buildings and barns, at the base ports large auditoriums were erected, capable of seating 3,000 to 4,000 men. A number of these have been in successful operation at Bordeaux, St-Nazaire and Brest. With the establishing of the barracks at Clingnancourt, Paris, arrangements were made for the erection of a building and here the work of the Salvation Army has been carried out in cooperation with the other Welfare Organizations.

At no time has the personnel of the Salvation Army been large. Up to November 1, 1918 the total was 110 and by March 1919 it had increased to 185. This number takes in only those workers sent from the United States, and does not include the employees or soldier details assisting in the work, which swells the number to between 400 and 500.

The Salvation Army has sought to maintain the high standards of the organization, believing that in this way it could better assist in maintaining the morale of the the American troops. Religious meetings were always regularly held at each hut. The huts were also available for the meetings of the chaplains of all denominations, but there were at least two Salvation Army meetings held each week. These were invariably well attended and productive of good results.

The willingness of Salvation Army workers to undergo personal sacrifice and to share hardships with the men, coupled with the spirit of service, has made the work of the Salvation Army generally acceptable, and has permitted us to perform many small services which, if they have added to the comfort and contentment of the men, have amply rewarded us for the effort that has been made.

In conclusion I wish to thank every branch of service for the cordial sympathy and assistance rendered us. It would be unfair to pick out any one department for special mention, for all were equally helpful, but the officers of G-1, with whom our relations were continuous, call for our unmeasured gratitude, which I am glad to give them.

Respectfully submitted,

WM. S. BARKER,
Colonel, Director Salvation Army.

Paris, April 28, 1919.

KNIGHTS OF COLUMBUS

[Extract]

The work of the Knights of Columbus in Europe is that of giving bodily and spiritual comfort to the soldiers of the American Army. This task it has discharged under the direction of the Catholic War Council.

The pioneer work was done by half a dozen Knights of Columbus chaplains who reached France in October 1917 and combined with their priestly duties the activities of Knights of Columbus secretaries. They were given a sum of money and one of them started the first Knights of Columbus club in France, at St-Nazaire, then the principal debarkation port of the A. E. F.

A survey was made and the first group of secretaries arrived in March 1918. They set up headquarters at 16 Place de la Madeleine, Paris, and from that center the activities of the Knights have radiated all over France, through England and Scotland, touching on Ireland and Italy, and following the Army of Occupation into Germany.

As militarized civilians, the secretaries did their work under the conditions laid down by the American Army, at the same time fulfilling the conditions of domicile required by the French Government.

The situation was fraught with difficulty. The conditions of business were strange; we were ignorant of the railroad system; for a time it seemed as if we would be strangled in a network of officialism. The demands for help were many and secretaries were few.

PERSONNEL: As new bodies of men arrived, a complete individual record was made and put on file; the Director of Operations made application for Red Workers' Cards; movement orders were obtained from the Provost Marshal, and a complete check was kept on all secretaries returning to Paris in connection with Knights of Columbus work.

* * * * * *

The activities of the secretaries were multifarious. Many came to France hoping to be field secretaries and remained in Paris to keep books or work in the warehouse. But, when the wounded were being brought into the city by the thousand, they dropped their clerical work to help the doctors in the hospitals. Others were sent to take charge of clubs, to build huts, to visit the sick. The more robust joined the Army divisions and gave out supplies under conditions closely approximating to the life of the soldier. Some were gassed; one lost a leg; a number were sent home broken in health. Our chaplains were often both priest and secretary. Several were cited for bravery; some were decorated; one was killed at the front.

TRANSPORTATION: The office had to be organized; supplies had to be sent to the front, the training camps, to the ports of debarkation. Huts had to be built and clubs started, and all these things had to be done simultaneously.

At first ninety per cent of the goods dispatched to the front, to the divisional secretaries, clubs and hospitals, was forwarded by rail. The shortage of automobiles left no alternative. But the railroads were frequently blocked with troops and munitions.

Even when the need for cars had been proved to the satisfaction of the American military authorities and an ordre de transport issued by the French Government, cars were not always available and, when provided, they were liable to be requisitioned to meet some emergency.

Moreover, the railroad head was usually between ten and twenty kilometers from the front. In order to get supplies to the fighting men the secretary had to find an auto, or board a passing truck - if one should be available - or, as a last resort, store his goods and go on foot, taking as heavy a load as he could carry on his back.

The need of autos was pressing; but the obtaining of them was a heavy task; for the vast majority of the machines had been requisitioned by the military.

Inquiry was made in England in June, with the result that twenty Fords were secured. But it was October before the machines reached France. Five Hurlberts were purchased in the United States and landed in France in a knockdown condition. Two Buick cars, five Newtons, and two Peugeot cars were bought in France. The French Government let us have twenty Pierce-Arrows and twenty Braziers, which were delivered in twos and threes in a period extending over several months.

The Buicks and Newtons were used by secretaries to enable them rapidly to cover their divisions.

The maintenance and repair of the cars was another problem. Most of the mechanics of France were in the Army. So an appeal was made to the American military authorities, and General Patrick of the American Air Service assigned the Knights of Columbus twelve Army mechanics. So useful did they prove that their work improved the efficiency of our transportation service a hundred per cent. The Army also furnished us with parts for the American cars and gave us gas and supply books.

We bought twenty-five motor cycles from the French Government. They were used by the chaplains, Catholic and Protestant alike, and enabled then to say three services every Sunday.

Theft of goods from railroad cars and autos driven by non-Americans was rife. To check this evil a system of convoys was established

The proportion of freight sent by rail steadily decreased with the growth of the auto service. Thousands of parcels were despatched through the parcels post branch of the A. P. O. Goods were sent as soldiers, civilians and even as prisoners' baggage.

PARIS WAREHOUSE: Supplies were given out from the warehouse on the Boulevard Malesherbes on the basis of the representations made by the secretaries of clubs or divisions, or of the chaplains. Numerous applications were sent in by military units which had no Knights of Columbus secretary to look after them and, so long as the request was vouched for by a letter signed by someone in authority, it was honored. The requirements were as various in character as the stores on which it was sought to draw. The principal articles were creature comforts, such as chocolate candy and smoking materials.

Secretaries of large clubs, like those of Le Mans and Dijon, which minister to a large area, would send in a truck and the driver would return with a load of supplies.

In the early months of 1918, when the tonnage for freight from America was limited to a hundred tons, the shortage of commodities was sometimes very marked. To some extent this lack was made good by purchases in France. Later on the tonnage allowance was raised to 200 tons and more recently, it has been raised to 350. This limitation necessarily restricted the usefulness of the organization.

A few figures are of eloquent significance. Take the month of March - the last completed at the writing of this report. During its thirty-one days the number of cigarettes passed out was 57,033,000; the boxes of matches numbered 781,000, and the pipes 200,797. The cartons of chocolate totalled 37,719, the cartons of chewing gum 25,250. During the same period there were distributed 14,772 baseballs, 2,286 sets of boxing gloves, and 1,687 footballs. The figures for writing paper are 10,111,000 sheets and the envelopes numbered 8,320,000.

CLUBS AND HUTS: The establishment of clubs and the building of huts for the recreation of the soldiers was an attempt to give the boys a home away from home.

Lumber was cut in the Pyrenees, near Aude; it was skidded down the hills to be cut up in the antiquated French sawmills. The framework was made in the Pyrenees, the panelled floors at Montmiraux; the benches came from the Jura, the glass from Chalons-sur-Saone, and the hardware from Paris. Two French firms undertook the work; but their dilatoriness and the lack of facilities for transportation were a sore hindrance.

At Pontenazen a Knights of Columbus secretary built a hut with a cross-cut saw, a hammer and an ax. Later on the military assigned details and the huts grew as if by magic.

The first club established on the front was at Baccarat; it was opened on May 22, 1918.

Many of the clubs are buildings with a history. At Bourges we have an artist's studio; our quarters at Selles-sur-Cher are an old chateau with memories of Richard Coeur de Leon; at Contres the soldiers take their ease in a hunting lodge of Louis Quatorze. The club at Tours would gladden the heart of a New York clubman; at Dijon our soldiers write their letters in the Hotel Marais, scene of the meeting of the revolutionaries, when they met to choose delegates to the National Convention.

Other places are less pretentious. The old courthouse at Verdun had not a single pane of glass unbroken and the secretaries slept in the cellar; the back wall of the club at Montpellier was shot away and most of the roof gone; the hut at Montigny discharged its usefulness only 1,700 yards from the German lines; and old stable served at Gravigny.

The history of the first kitchen wagon and the part it played at Chateau-Thierry and in the Argonne is an epic in miniature. It was in that fighting that the Knights of Columbus won their spurs. From their bases at Toul and St-Menehould they would take supplies to the front. Secretaries conveyed commodities along congested roads - God knows how; they ministered to the men, made their way through the woods to units which had become temporarily cut off from the mess kitchens; they helped with the wounded in the first-aid stations, served hot drinks to the soldiers under fire, acted as stretcher bearers, accompanied and aided the burial details, suffered the privations and hardships of war with a proud goodwill.

However poor the hut on the front might be, the soldiers loved it. It was "a poor thing but mine own." Here they could write letters, smoke cigarettes, chew gum or drink coffee.

After the signing of the Armistice arrangements were made with the American Army whereby the Knights would purchase huts for which the military had no further use. These buildings were purchased at a cost of 8,000 francs. Seventy of them were taken over.

When the Army of Occupation crossed into Germany, the Knights of Columbus established headquarters at Coblenz and at Trier (Advanced G. H. Q.). Clubs have been founded in most of the important places occupied and 150 secretaries are working in them or with the divisions. In Coblenz there are an officers' club, a club for enlisted men, three bath houses and a gymnasium. Here too is the famous doughnut factory which furnished the 42d with 300,000 doughnuts for the journey across the Atlantic and proposes to do as much for every division which follows after. The daily output of doughnuts is 50,000 and 2,000 go every twenty-four hours to the Red Cross.

Sometimes the huts are moved from one place to another. So rapid is the growth of this work and so many the changes that it is impossible exactly to indicate its proportions. But 150 huts and clubs have been established in different parts of the territory covered by the A. E. F.

PURCHASES IN FRANCE: To meet the ever-growing requirements of the soldiers an immense number of articles had to be purchased in France. These articles included moving picture machines, musical instruments, billard tables, rolling kitchens, cots and blankets, and cards for Christmas and Easter.

It has been the aim of the knights to keep their accounts in as simple a form as possible, having in mind the fact that we shall be expected to show the American people what has been done with the money they gave us to spend. On the 17 months ending March 31, 1919 our disbursements have increased from 6,607 francs in November 1917 to over 2,000,000 in March of the present year. These figures include the amounts sent to England, Germeny, and Italy, and do not include the cost of any of the supplies bought and paid for by the New York office, such as athletic goods, cigars, cigarettes, chocolate candy, etc.

ENTERTAINMENTS: With the signing of the Armistice attention was devoted to the provision of theatrical and musical entertainment for the men. A company was chosen, consisting for the most part of Knights of Columbus secretaries and it toured France with success. A consequence of this success was the formation of a minstrel show. It was conceived on an ambitious scale and involved the expenditure of 30,000 fr. Since the debut at Chaumont the company has travelled through France, Luxembourg, and Germany, performing for over 150,000 soldiers and winning warm praise. At need, the minstrel show was divided into small units and performances were given for the men in the devastated areas. Hospitals have also been visited.

Professional coaches have been sent round to help the soldiers to put on their own shows. The Knights of Columbus also financed performances given by the Argonne Players in Paris and gave monetary backing to "The Buck on Leave". Now they are devoting funds to the exploitation of the A. E. F. Circus and Wild West Show.

ATHLETICS: Athletics have been a special care of the organization. Many of the leading figures in boxing and baseball have crossed the ocean in the service of the Knights to make Europe livable for the doughboy. Athletic trainers have worked in the camps; innumerable boxing bouts have been held; the boxing shows in Paris and elsewhere have attracted the interest of fully 400,000 men in uniform. A boxing ring is a feature of many of the Knights of Columbus Clubs. In Germany the men have been provided with swimming pools. Carloads of athletics goods have been sent to various centers of activity.

CINEMA DEPARTMENT: The cinema has proved a Godsend to the soldiers, expecially to small groups of men located in out of the way districts, where stage accomodation is small and entertainments are few in number. The Knights of Columbus has seventy-five projecting machines in operation and we are giving representations to an average daily attendance of 104,000 men. The machines confiscated from the German Army are being operated in the area of the Army of Occupation.

READING ROOMS: The reading room is an essential feature of every Knights of Columbus club, and through the splendid cooperation of the American Library Association and the generosity of individual donors, here and in America, it has been possible to keep the soldiers supplied with good books, good magazines, and good newspapers. Observation leads to the conclusion that the Knights of Columbus reading room has been an important factor in keeping up the morale of the soldiers.

Financial aid has been contributed in aid of the production of many of the newspapers and publications so cleverly edited by the enlisted men. This aid reached its climax when, in cooperation with the New York Herald, the souvenir and final number of the First Army Entertainment News was published in New York Herald four-page style for the soldiers of the First Army to take back to America with them as a reminder of what was accomplished by the workings of General Order 241 in the First Army. Arrangements were made in the way of circulation, so that all soldiers who participated in First Army entertainment activities might receive a copy, no matter where they might be at the time the souvenir number was issued.

The Knights of Columbus has also helped the soldiers in the production of their divisional histories.

LEGAL DEPARTMENT: Questions of contract, leases, insurance, lawsuits and investigation come within the purview of the Legal Department, and the work of this branch of the organization has been the more onerous because it calls for a knowledge of French as well as of American Law.

INQUIRY BUREAU: Requests for information as to the welfare of soldiers in the A. E. F. lead to the formation of an Inquiry Bureau. Letters have been received from all parts of the United States, from England, Ireland, Porto Rico and Panama, the majority of them from anxious relatives who had failed to receive news from soldiers. The total number of inquiries has been approximately 3,000. A definite report has been transmitted in about 1,400 cases and about a thousand more are awaiting receipt of the first report from the military authorities.

C-in-C Report File: Fldr. 69: Report

Paris, April 5, 1919.

JEWISH WELFARE BOARD

From: Colonel Harry Cutler, Chairman

To: Acting Chief of Staff, G-1

I. ORGANIZATION

Introduction:

[Extract]

The Jewish Welfare Board, as a clearing house coordinating all the national Jewish agencies, is interested in welfare and morale work for all men in the service of the U. S. Army and Navy. These organizations include religious, educational, social and fraternal bodies. The Board was created at the suggestion of its executive officers, and in accordance with the plans submitted by the Chairman to the Secretary of War. It has been recognized in America as an agency cooperating with and under the supervision of the War Department Commission on Training Camp Activities, on the same basis as the Young Men's Christian Association, the Knights of Columbus, the Salvation Army and similar organizations.

History (confined to American Expeditionary Forces solely):

On July 5, 1918, a commission of three, accompanied by a secretary, arrived in France to study conditions and to report upon the initial steps to be taken for activities. General Pershing recognized the value of the work of the Jewish Welfare Board, particularly the fact that there was a psychological reason why it could reach the men of Jewish faith better than other agencies, although functioning to all alike without distinction as to race or creed. However, as the Army was on the move, and men of Jewish faith represented five per cent of the troops, billeted in small groups over very large areas, the Commander-in-Chief asked the Jewish Welfare Board, through Raymond B. Fosdick, Chairman of the Commission on Training Camp Activities, to consider the advisability of functioning through another agency, in order not to clog the the machinery of the War Department in those trying days. The Jewish Welfare Board deemed it a patriotic duty to help the Army in the manner suggested and approved the

idea, by agreeing to function in its business administration through the Young Men's Christian Association, or the Knights of Columbus, while carrying on its distinctive religious and social activities for the troops.

On August 19, 1918, the overseas headquarters of the Jewish Welfare Board were opened at No. 41 Boulevard Hassmann, Paris. Two of the members of the commission returned to the states and Rabbi H. G. Enelow remained in France with Mr. John Goldhaar, for the purpose of inaugurating the work. Subsequently, on October 29, Mr. Alfred S. Heidelbach, of Paris, was appointed overseas treasurer.

Since the signing of the Armistice in November, 1918, conditions have changed. On March 23 the following letter was addressed by the A. C. of S., G-1, General Headquarters to welfare officers of all units:

1. Your attention is invited to paragraph 3, Section II, G. O. No. 46 A. E. F., c. s., which reads: "The Y. M. C. A. and J. W. B. will carry on their own distinctive activities through the administrative organization of the Y. M. C. A." In order that this may be clearly understood by all welfare officers, it is desired to advise you with respect to the reason for it.

2. Many religious and social organizations similar to the welfare societies which have been recognized desired to participate in the welfare work in the A. E. F. In order to avoid multiplying administrative machinery the American Red Cross, the Y. M. C. A., K. of C. and Salvation Army were given official recognition; other societies were requested to arrange to conduct official relations with the military authorities through one of the societies already organized.

3. The Y. M. C. A. and the Jewish Welfare Board made such an arrangement with the Y. M. C. A. However, the work which they have conducted has been entirely their own planned, financed, supplied and executed by their own distinctive organization. They are entitled to full credit for the excellent results which they have achieved in their respective fields. It is obvious that in matters other than those of routine administration the welfare officer at these headquarters, and at all other headquarters of the A. E. F., should deal directly with representatives of these organizations in order to secure the maximum assistance from the welfare work conducted by them.

In November, 1918, the first center was opened at Le Mans and about December 1, 1918, the first two Jewish Welfare Board workers arrived from the states. In December, 1918, Mr. Mortimer L. Schiff, Chairmen of the Finance Committee of the Jewish Welfare Board, arrived in Paris in connection with other work and to advise in the program of the Jewish Welfare Board on this side.

New centers were subsequently opened as rapidly as new workers arrived from the states, and today the Jewish Welfare Board is conducting 44 centers.

* * * * * *

The work is now conducted under the direct supervision of Colonel Harry Cutler, Chairman of the Executive Committee of the Jewish Welfare Board, who arrived in France the beginning of March of this year.

The work in the field is arranged in regions with regional directors in charge.

* * * * * *

JEWISH WELFARE BOARD CENTERS:

Location:	No. of Workers: Men	Women
Paris	18	10
Army Educational Commission	2	
American Embarkation Center	12	18
Army of Occupation	2	5
Beaune	1	2
Bordeaux	3	5
Bourges	2	1
Brest	4	2
Chaumont	1	
Dijon	1	5
Gievres	1	2
Marseilles	1	1
Nantes	1	2
St-Aignan	3	2
St-Nazaire	3	5
Tours	1	2
First Army	3	1
Second Army	7	
	66	63

III. SUPPLIES:

The Jewish Welfare Board, in the past, derived its supplies from two sources:

(a) Purchases in Paris, made either from the Young Men's Christian Association, or French dealers,

(b) Shipments received from the National Headquarters of the Jewish Welfare Board in New York.

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Small bowls of loose cigarettes are placed on the tables in the Jewish Welfare Board centers for use by the boys. Cigarettes are also distributed upon visits to hospitals by Jewish Welfare Board representatives. Stationery, consisting of writing paper and envelopes, is liberally distributed in all Jewish Welfare Board centers and sent to men in the American Expeditionary Forces in response to written requests. Literature, consisting of Bibles, Prayer Books, Psalms, fiction, newspapers and periodicals, etc., both Jewish and non-Jewish, are distributed gratis, also souvenir postal cards for special holiday occasions, to be sent to the folks at home.

In view of the difficulty in recruiting workers from the states, and the delay entailed thereby, the War Department has sanctioned the discharge of enlisted men from the Army whose services are desired and required by relief organizations and who can be spared and have no financial or other responsibilities making their retention in the service necessary.

The Jewish Welfare Board has been requested by the Army to send twenty-five additional workers to Coblenz for the Third Army there, and also twenty-five additional workers for the American Embarkation Center in Le Mans.

The Jewish Welfare Board will open additional centers as soon as its personnel increases, and would recommend that discharges be accelerated so that enough men could be released from the army to serve their bunkies, as it is impractical and too late to recruit from the states.

Where it is impossible to establish huts or clubrooms, the Jewish Welfare Board assigns workers to divisions, to remain with them until they leave for the states.

IV. ACTIVITIES

PARIS CENTER:

The Jewish Welfare Board, in Paris, conducts a club house at 3 rue Clement Marot. The house is equipped with a larger hall for entertainment and dancing, a chapel for religious services, billiard room, writing room, library, game room and parlor.

The activities consist of regular entertainments in the club rooms, dances, moving pictures, religious services, etc. In addition, tea and sandwiches are served every afternoon, and on Sundays chocolate cake. Refreshments are also served on Wednesday and Friday evenings. The endeavor is to produce the atmosphere of a home.

In addition to the general activities in the club house, the Jewish Welfare Board attempts to bring men in contact with the community and as a result of this programme a great number of the men are extended home hospitality.

Personal Welfare:

A great deal of help has been extended and advice rendered to men in the service through correspondence, which cannot be tabulated, but is genuine welfare work in the nature of personal service. Hospitals are visited by Jewish Welfare Board workers throughout the American Expeditionary Forces, and every possible aid is extended to the men confined there. Candy is distributed occasionally to men in the hospitals, who are unable to obtain the same.

Many requests have come to us from the folks at home for the location of graves of soldiers who have fallen on the field of battle, in order that they may be suitably marked with a double triangle, in accordance with general orders issued from headquarters, and workers have been assigned to this duty. This work contemplates serving the parents of folks at home, those whom this Board owes a social obligation, equally as important as the duty to their sons and brothers in the service.

Consistent with its policy, the Jewish Welfare Board serves all men in the American Expeditionary Forces without distinction as to race, creed or color. As an illustration, we take at random a report on one of our huts in the Le MANS area, and quote that part referring to attendance: "Attendance daily at Jewish Welfare Board Center 400, average Jewish attendance (daily) 230." This is intended to give concrete evidence that our object to extend hospitality to men, other than those of the Jewish faith, has been happily accomplished.

Dances: Dances are held at stated periods, principally Wednesday and Saturday evenings, and Sunday afternoons and holidays, and in addition to our own women workers, women from other auxiliary organization of the American Expeditionary Forces, as well as army nurses and signal corps women, participate. At times, the WAACS, as well as women from the local community, are invited. In regard to the latter, particular attention is paid as to character and family associations.

Entertainment: In the past, entertainment has, as a rule, been furnished through the cooperation of the Young Men's Christian Association, the Knights of Columbus and the Salvation Army.

Now that the stimulus of the actual fighting is over, and the soldiers are restless and homesick, the importance of providing the maximum of leisure time activities has been recognized by the army authorities, and the Jewish Welfare Board has been

asked to function actively in all educational, social entertainment and athletic activities.

The Jewish Welfare Board was requested to produce and finance, under its auspices, a show for the Second Army, which is being organized in the 88th Division and is to be a distinct Second Army production. This show is to be larger and more elaborate than the usual shows which are being produced for army entertainment, and is the only large show which has been and which will be produced in the Second Army. It is apparent, at this time, that the 88th Division will be one of the last to return to the states, and therefore, this show will be available for entertainment purposes for some time to come. It is also to furnish entertainment throughout the American Expeditionary Forces, at an initial cost of 55,000 francs.

The "S. O. S. Dovetails" a theatrical troupe from St-Aignan, have recently been performing in Paris under the auspices of the Jewish Welfare Board.

Other troupes are now being organized for similar duty.

In the productions under the auspices of this Board, it is insisted that the shows be clean and wholesome, and wherever humorous numbers are presented, they must be devoid of all caricaturing of race or creed. The attempts of some of the players under other agencies, to create a laugh at the expense of nationalities, lead to low grade, questionable wit, which has no place on any public platform or stage, and should be particularly absent in the American Expeditionary Forces, where men of every nationality, religious affiliation, and accident of birth, on the basis of common American citizenship, fought shoulder to shoulder for a common principle. Particularly now, during the period of demobilization and the return home of our troops, no sentiment should be injected, which, though intended to provoke humor and invite laughter, never-the-less engenders racial prejudices, which are contrary to every tradition and principle upon which our great government is based, and which have no room in the national life of our citizenry, either civilian or military.

Educational:

Educational activities have been undertaken in the past on a modest scale. Classes in English and in French were conducted at several of the Jewish Welfare Board Centers, particularly Le Mans and Tours. The need of men to assist and direct American soldiers who are pursuing courses at the University Sorbonne, Paris, was brought to the attention of the Jewish Welfare Board, and Dr. David S. Bkondheim, Associate Professor in Johns Hopkins University, Baltimore, on leave, was assigned as the liaison representative of the Jewish Welfare Board in the development and administration of the educational work in that university.

Rabbi H. G. Enelow has been assigned to represent the Jewish Welfare Board in the American University at Beaune. Rabbi Enelow will render aid and cooperation on the faculty and in the arrangement of the curriculum, with special reference to Jewish history, ancient and modern, literature and ethics. Rabbi Enelow will also act as university rabbi, as there is no chaplain of Jewish faith at that post.

Athletics:

Arrangements are at present under foot by which this Board will cooperate in various athletic activities for the men in the American Expeditionary Forces.

Hospital Work:

In the field, hospital work is carried on extensively by personal visitation, distribution of cigarettes, candy, newspapers, magazines, etc., and as a result of personal contact, comfort and cheer are given to the men of the American Expeditionary Forces regardless of race, creed or color.

Religious Services:

Religious services are held in all Jewish Welfare Board Centers on Friday nights and on special Jewish holidays, and are as a rule conducted by the Jewish Chaplains and rabbis in the Jewish Welfare Board service.

Upon request of the Secretary of War, the Jewish Welfare Board appointed a "Committee on Chaplains" whose duty it was to examine applicants for commissions as chaplains in the United States Army, and, in accordance with Army regulations, decide upon their qualifications, for the purpose of recommending to the War Department such as were qualified for commissions.

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In order to facilitate the work of these chaplains, the Jewish Welfare Board supplies each one with a Ford automobile and a fund of fcs. 500 per month, which is to be used entirely in the discretion of the chaplains, to render aid in emergency cases, where men have been obliged to go without pay for a long period, or where needs of a personal character have arisen, to advance loans if, in the opinion of the chaplains, same is justifiable. This is done in order not to pauperize the soldier, and with no obligation except his promise to pay the amount back at such future time as he may be in a position to do so. No accounting on the part of the chaplains has been asked by this Board in these special cases.

Special Religious Services during high Holy days:

The New Year began on Friday evening, September 6, 1918; the first day of the New Year was Saturday, September 7; the second day was Sunday, September 8; the Day of Atonement began Sunday evening September 15 and continued throughout Monday, September 16.

By official order the following places were designated as leave centers for Jewish men during the Holy days:

PARIS
Synagogue on rue de la Vicotoire, 44,
" rue Buffault, 30 (Sefardi)
" rue Notre-Dame-de-Nazareth, 15
" rue des Tournelles, 21
" Liberale Israelite, 24 rue Copernic

NANTES	Synagogue
BORDEAUX	"
ROUEN	"
BREST	Y. M. C. A.
MARSEILLE	Synagogue
DIJON	"
TOURS	"
TOUL	"
EPINAL	"
BELFORT	"
CHAUMONT	Y. M. C. A.
NEVERS	Y. M. C. A.

In divisions where there were Jewish chaplains, services were arranged within the divisional area, and were conducted by two rabbis affiliated with the Jewish Welfare Board and another by a regular Army chaplain of Jewish faith, and at the other places the Jewish Welfare Board cooperated with the local French rabbis.

The attendance at the above places was approximately as follows:

PARIS	2,000
NANTES	3,000
BORDEAUX	1,000
ROUEN	250
BREST	5,000
MARSEILLE	500

DIJON	350
TOURS	1,000
TOUL	500
EPINAL	250
BELFORT	250
CHAUMONT	500
NEVERS	1,000

In addition to the above mentioned centers services were held by chaplains attached to divisions as follows:

Chaplain Voorsanger	77th Division
" Davidowitz	78th Division
" Tannenbaum	82d Division
" Egelson	91st Division

Services were also organized by the overseas office of the Jewish Welfare Board in a great many parts of France, by utilizing what is known as keymen. Soldiers who, because of their training and experience, were particularly qualified, were selected to conduct services among their units. In a great many cases the regular Army chaplain helped the men to organize services and very often started the services by prayer, and then turned same over to the men. In one particular case a chaplain of Catholic faith organized the Jewish men for service on the Day of Atonement while the regiment was on the move. The services took place in a town destroyed by shell fire, and just as he was about to start the service, the regular Jewish chaplain assigned to the division came along and took charge. Instances can be shown where Jewish chaplains organized services for non-Jewish units in that broad spirit which our American principles evolve.

Chanukah: The beginning of the Chanukah festival, coinciding with Thanksgiving Day, the Jewish Welfare Board combined the two services into one and in every place where there was a Jewish Welfare Board center, appropriate services were held. In Paris, the Jewish Welfare Board joined the Young Men's Christian Association for the regular Thanksgiving service, and later in the evening a special Chanukah service was held in the Temple, where the first candle of the week was lit for the proper ceremonies and customs.

Observance of the Passover:

The traditional significance of this festival is to commemorate the deliverance of the Israelites from Egyptian bondage. Particular significance, however, at this time, will be to commemorate the deliverance from the bondage of Prussian autocracy which the gallantry of the officers and men in the American Expeditionary Forces have effected, planting on this side of the ocean the ideals and traditions of our country, for which our men have fought.

Paragraph V of General Orders 45, issued from General Headquarters on March 9, provides as follows:

> Wherever it will not interfere with the public service, members of the Jewish faith serving with the American Expeditionary Forces, will be excused from all duty from noon, April 14 to midnight, April 16, 1919, and where deemed practicable, granted passes, to enable them to observe the Passover in their customary manner.
>
> By command of General Pershing

In accordance with the spirit of this General Order, the Jewish Welfare Board has undertaken the task of providing centers where men may come for this celebration. It is preparing dinners and services for the evenings of April 14 and 15, 1919, which will include all traditional rites attendant upon this feast.

The endeavor is to so direct the thoughts of the men to their homes that their

morale may be so conserved that they will live in accord with the desires as expressed by the Commander-in-Chief in his various speeches.

In response to a request from the American Red Cross, Commission for Allied Prisoners in Germany, the Jewish Welfare Board supplied unleavened bread to from 5,000 to 6,000 Russian Jewish prisoners of war interned in Germany, for the Passover Festival.

Arrangements for the dinners and services throughout the American Expeditionary Forces have been made by the Jewish Welfare Board at the following points:

FIRST ARMY AREA:	Bourbonne-les-Bains (Haute-Marne), Semur (Cote d'Or), Chatillon-sur-Seine, (Cote d'Or).
SECOND ARMY AREA:	Toul, Chaumont-sur-Aire (Meuse), Bar-le-Duc, Gondrecourt.
THIRD ARMY AREA:	Coblenz, Luxembourg
TROOPS AT G. H. Q.:	Chaumont-en-Bassigny
B. S. No. 1, S. O. S.:	St-Nazaire, Nantes, Camp de Coetquidan (Morbihan)
B. S. No. 2, S. O. S.:	Bordeaux
B. S. No. 5, S. O. S.:	Brest, Camp Pontanezen
B. S. No. 6, S. O. S.:	Marseilles
TROOPS AT HEADQUARTERS, S. O. S.:	Tours
TROOPS IN DUSTRICT OF PARIS:	Paris (For troops in District of Paris only)
ADVANCE SECTION, S. O. S.:	Dijon and towns in A. S., S. O. S. designated above for First and Second Armies.
INTERMEDIATE SECTION, S. O. S.:	St-Aignan, Gievres, Bourges, Beaune (Cote d'Or)
AMERICAN EMBARKATION CENTER:	Le Mans

The celebration will be entirely financed by the Jewish Welfare Board so that the men will be under no expense incident to travel. It is estimated that 75,000, exclusive of the men in the Navy, in European waters, hospitals, etc., will be reached in this way.

Transport Service: The War Department has recommended that Welfare organizations have representatives on board transports, for the purpose of looking after the morale of the troops returning to the States, and the Jewish Welfare Board is providing such workers.

V. STATISTICS

The Jewish Welfare Board, being the youngest organization, and considerably undermanned, has been unable, up to the present, to keep statistical records covering the various activities carried on in PARIS and in the field, as to attendance, supplies distributed, hospital visitation, personal welfare and other cases, but is speedily developing these records.

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VI. RELATIONS WITH OTHER WELFARE ORGANIZATIONS

The Jewish Welfare Board has accorded the fullest cooperation to all the other agencies affiliated with the War Department Commission on Training Camp Activities, both in spirit and letter. The following is quoted from the report of an inspection of welfare activities in the American Embarkation Center, Le MANS, as an illustration of the results secured by a welfare officer through tactful coordination of the activities of welfare societies:

All welfare societies in this area have been united into one general

welfare society with the regional directors sitting as a body under the Welfare Officer as Chairman, at weekly meetings. The spirit of cooperation and the results obtained are excellent, and there is no reason to doubt but that they will continue so.

The Jewish Welfare Board has enjoyed splendid cooperation on the part of the Army, and the Chairman of this Board has experienced best understanding and broadest vision manifested on the part of all officers with whom he has had the privilege of coming in contact.

The Jewish Welfare Board enjoyed close cooperation on the part of the Acting Chief Rabbi, Israel Levy, of France, as well as of the French chaplains, of the Alliance Israelite Universelle, which maintained a *Foyer du Soldat* for the entertainment of American Jewish soldiers for some months.

VII. MORALE AND WELFARE WORK IN ENGLAND: For the purpose of keeping in contact with members of the American Expeditionary Forces in England, arrangements were made with the Chief Rabbi, Reverend Joseph H. Hertz, who has been especially helpful in supplying the Jewish Welfare Board with literature. The Jewish Welfare Board has also enjoyed the cooperation on the part of the Central Council for the Welfare of Jewish soldiers with the Forces, Strand, London, as well as Senior Chaplain Michail Adler, British Expeditionary Forces, and other British Chaplains, and Lieutenant Harold Boas of the Australian Forces.

Respectfully submitted,

Chairman.

C-in-C Report File: Fldr. 70: Report

Paris, May 1919.

YOUNG WOMEN'S CHRISTIAN ASSOCIATION

[Extract]

The Y. W. C. A. being an association of women working for women, with more than fifty years of experience to its credit, was invited to France, as the organization best fitted to meet the needs of women in war work overseas. The invitation came from five sources; four of them appeals from the British and French for work for French women, and one a very definite call from the Y. M. C. A. for work for American women. In France the war had sent thousands of women from their homes to labor in munition factories, often to live in barracks like soldiers with no provision for comfort, home conveniences or diversion. In America the entrance of the United States into the war had meant not only vast movements of men and supplies, but a mobilization of women for work in the welfare societies at home and in France. It was desired that the Y.W.C.A. should come to France to provide entertainment centers for French women munition workers and to furnish living conditions for the American women war workers in France.

In response to the invitation, the War Work Council of the American Y.W.C.A. sent to France in August 1917, three secretaries to study the situation: Miss Henrietta Roelofs as administrative head, Miss Mary A. Dingman to study the industrial situation

of French women, Miss Katy Boyd George to look into the needs of American women. The result has been the establishment of four main lines of work:

Nurses Clubs
Hostess Houses
Signal Corps Houses
French Foyer des Alliees

in addition to these, something has been done for the British women through the W. A. A. C. clubs and through the British-American Club.

The work of the Y. M. C. A. in France has been intensive rather than extensive in character. Its personnel has been chosen in the light of a long experience in serving women, not only from those attached to the Association, but also from other group and experiences. Wherever there has been found a women available whose specialty had fitted her to meet the situation in France, that woman has been secured. Women of national reputation have come for long or short periods of work or study as advisors. The spirit of the work has been cooperation. Where there has been an organization, French or American already in touch with a situation, that organization has been called into play. Individual women who could give assistance have been asked to cooperate. In this spirit the work has grown.

Beginning with the three secretaries who came in August, 1917, the number had grown in August, 1918 to 72. The Armistice made opportunity for greater service in the welfare societies, as, with the cessation of hostilities, the need for providing other activities, recreation, and hospitality grew. Thus the Y. W. C. A. grew in proportion. On March 1, 1919, there were 136 secretaries in France. On May 1, there were 168. The centers of work have likewise grown. In December, 1917, there were 5 centers: 4 nurses' clubs in connection with Base Hospitals, and 1 Hostess House in Paris. On May 1, 1919 there were 56 centers. The total number of centers established including those now closed is 90. These were distributed as follows: there were 41 nurses' clubs in connection with Hospitals at 23 points: there were 14 Hostess Houses in 11 cities; there were 16 Signal Corps Houses in 15 cities; there were 19 French Foyers in 8 cities; 2 W. A. A. C. clubs in 2 cities and 1 British-American Club.

The work is organized, following the four general lines already given, in Departments, each department having a head secretary who travels over the whole field, plans the work as a whole and organizes her forces. In addition to the four departments, there is a headquarters staff to take care of the office work, finances, travel, publicity, educational work and hospitality. The entire work is headed up by one executive secretary, Miss Harriet Taylor of New York. The Headquarters offices are at 8 Place Edouard VII, Paris.

Nurses' Work: The first Nurses' work was started in November, 1917, a club at Base Hospital 101 at St-Nazaire, and one at Base Hospital 17 at Dijon. In December of the same year were begun the work at Angers for Base Hospital 27 and the club in the city of Brest at 38 Rue d'Aiguillon. From these two centers the number grew to 38, 18 of which are now closed. At the time of the Armistice there were running 16 clubs, 1 having been closed before that time. Since the Armistice there have been opened 21. Of the 20 operating at the present date (May 1, 1919) 2 were begun previous to the Armistice.

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The purpose of these clubs has been to provide a cosy spot accessible to the nurses for rest, refreshment, reading, entertaining. The secretary in charge has been the one person in the post whose chief concern and entire time was given to the women

of the post. Her duties, too numerous to mention, have included serving tea every day, shopping for the nurses, arranging for trips, visiting and looking after sick nurses, supplying readung matter from the A. L. A. and from the Red Cross, being hostess at post parties and at many smaller ones, furnishing music, refreshments, decorations.

The clubs have been run in cooperation with the Red Cross who for the most part have built and furnished the hut which the Y. W. C. A. secretary was invited to run. In some cases the Army has supplied the hut or rooms. In all cases the secretary has had full opportunity to work with freedom and initiative.

The reception of the work by the Army has been cordial, as is evidenced by the readiness in granting fuel and commissary privileges, and in many cases no less by written and spoken appreciation from the commanding officer and the other officers.

By the nurses themselves the work has been received universally in the most cordial fashion. The appreciation of even the little things done has been touching. A very small proportion of nurses in any hospital has failed to make use of the club. It is estimated that there were ten thousand nurses in France. It is safe to say that five thousand have made use of the nurses' clubs. The club now opening at Kerhuon where nurses congregate to go home will reach many more than any other single club.

Hostess Houses: In response to the need not only of nurses but of all American women war workers in France, the Y. W. C. A. has established a series of Hostess Houses where transient women might find lodgings, permanently stationed women, a home, and where both men and women in service can procure good meals at reasonable cost and can enjoy the hospitality of an American House. The first Hostess House, Hotel Petrograd, 33 Rue Caumartin, Paris, was opened in December 1917. Even in those dark days of uncertainty the women who came, in uniforms of every war working group, representing every state of the Union, en route to or from the ends of the earth, to find a real American corner in the very heart of Paris, were evidence of the value of the undertaking. The numbers have grown in proportion to the crowds of Paris. The dining room, with a seating capacity of 150, was serving in July 1918 an average of 175 a day. This average grew to 425 by the end of the summer and in January 1919, and 850. The largest single day was President Wilson Day when 1023 people were served.

It was found necessary to open a second Hostess House in Paris, and Hotel Oxford and Cambridge, 13 Rue d'Alger, was taken over, used for two months as a Signal Corps House and opened as a Hostess House in February 1919. But the waiting list was longer than ever and on April 10 a third Paris Hostess House was opened, Hotel Palais Royal, 4 Rue de Valois. The waiting list continued to carry some three hundred names of women hoping for their turn to get into a Hostess House.

In the meantime the string of Hostess Houses has been extending through the provinces. A house with a delightful garden was opened at Tours in January 1918 at Brest, the Hostess House, opened September 1918, proved so useful that a second house was taken April, 1919 and now, with the additional need of extending hospitality to French brides of Americans, a third house is being opened at Brest and one at St-Nazaire. In November, 1918, in Toul, an old saloon and lodging house was metamorphosed into a real American dining room and living room with sleeping quarters above. So deeply was this appreciated by the many Americans who found themselves in Toul on the wintry muddy days that followed the Armistice, that an American women trained in social work who visited the place. expressed her praise in one telling sentence: You meet the situation - The Hostess House in Bordeaux was opened in September 1918 and has served an average number for meals of from sixty to seventy a day, with an increase of from ninety to a hundred a day at special times. The uses of such a place in a port city are many. At Neufchateau a Hostess House has been running since September 1918. At Chaumont, the Chateau La Gloriette, formerly occupied by General Pershing, was opened as a Hostess House in April 1919. When Le Mans became an American center there

was need for a Hostess House, and an attractive place with superb garden was open in Febryary 1919. Nice as a leave area meant a resort full of Americans who wanted a Hostess House and asked for it. One was started in April 1919. At Dijon, a hut is to be used as a Hostess House and social center thus adapting and combining two well tried war activities.

With the movement of the Army into Germany there was a further extension of the Hostess House. A hotel in Coblenz served the purpose and was taken over in February 1919. Its popularity is in proportion to the long line of waiting before the doors at mealtimes. At Neuenahe a Hostess House was opened in May 1919.

The total number of Hostess Houses is 14, with two others in immediate prospect. The number of secretaries in this work is 44.

Signal Corps Houses: Signal Corps work was begun in March 1918 when the first group of Signal Corps girls in France, assigned to duty in the district of Paris, lived at the Hotel Petrograd by the Army's request.

The Army required all the girls in a single unit to live together and requested the Y. W. C. A. to provide a secretary to live with them. Her duties were the general management of the billet, initiating the social program, chaperoning at social functions such as entertainments, dances and receptions, submitting a report covering the general administration of the billet whenever requested by the Signal Officer in charge, supervising the general physical welfare of the operating forces, suggesting plans for improving matters affecting the general welfare of the operating force.

The first Signal Corps House was opened at Chaumont in April 1918. This was followed by Hotel Ferras, Paris, in May 1918. Houses in Tours and Langres were also opened in May. In July, Brest, St-Nazaire and Le Havre were opened, in September, Bordeaux and Neufchateau. At Lignet a House was started in August. Souilly opened in September, was moved to Bar-sur-Aube for a week. Nevers was established in October, Toul on November 3. A second group in Paris needed quarters which were established December 5, 1918, and are now at Hotel Trianon.

With the advance of the Army into Germany, the Signal Corps girls also went forward. A house was opened at Treves, December 11, 1918 and one at Coblenz, January 1, 1919.

Since the Armistice seven places have been closed Lignet, Langres, Nevers, Le Havre, Souilly, Toul, and Treves. At present there are nine houses open, with ten secretaries assigned: Chaumont serving 20 girls, Hotel Ferras, Paris, 36 girls; Hotel Trianon, Paris, 30 Signal Corps girls and 4 Quartermaster girls: Central Hotel, Tours, in addition to housing Signal Corps girls, has 12 Quartermaster girls, 29 Ordnance girls, 13 Y. M. C. A. and Red Cross, and 20 transients a night. This is distinctly an Army Hotel and the Y. W. C. A. provides the two secretaries who manage it and the hospitality fund. At Brest, 11 Signal Corps girls are housed, at St-Nazaire 11, at Bordeaux 13, at Neufchateau 15 and at Coblenz 14.

Concerning the Signal Corps work of the Y. W. C. A., Brigadier General Russel, Chief Signal Officer, has written to Miss Harriet Taylor, Executive Secretary of the Y. W. C. A. in France, a letter of thanks and appreciation of the most efficient service rendered by the young women of the Signal Corps which he says is due in no small parts to the efforts of your Association in arranging living conditions for them as nearly as possible like those to which they are accustomed at home.

W. A. A. C. Clubs: British W. A. A. C.'s working for the American Army have been served in small groups by hotels for their living accomodation, and the large camp at Bourges, where the Central Record Office employs them, by two Y. W. C. A. secretaries who live in their camp organize camp activities such as entertainments, French classes, religious meetings, whatever is desired for hours off duty, and who run a canteen not only to supply commissary goods but to furnish a place for the hospitable cup of tea so conducive to British morale.

At Le Havre, the British American Club of the Y. W. C. A. has ministered to nurses and other war workers both British and American, arriving from steamers to go to their post of duty, or awaiting steamers to take them back after their term of service. The club thus does duty as a Hostess House.

Foyers-des-Alliees: The Y. W. C. A. has been expected to provide recreation not only for British and Americans but for French women. In October, 1917, the first Foyer-des-Alliees was opened at Feysin, a hopeless little factory suburb near Lyon. It was followed by a larger Foyer, the Y. W. C. A. putting up its own building for the women working at the Eclairage Electrique of Lyon. 6000 women have been tributary to this Foyer, and 1200 a day have been served in the canteen there provided. Designed originally to meet the needs for recreation and club rooms for women working in munition factories, the Foyers have grown until they are used by women in many other forms of industry and even by the women of leisure who come both to help in volunteer work or get the benefit of study classes and entertainments. Some of the Foyers established for particular groups which have been demobilized - such as most of the munitions workers' group, the French girls working with the American Army at Romorantin and Is-sur-Tille have been discontinued. But for the most part the Foyers have grown continuously to larger proportion. There have been 18 Foyers in all, including those now closed: 5 in Paris, 3 in Lyon, 3 in Bourges, 2 at Roanne, and 1 each at Tours, St-Etienne, Romorantin Montlucon and Is-sur-Tille. Plans are under way for the establishment of a Foyer at Reims where French girls returning to their homes in the devastated districts may find help and encouragement in their hard task of reconstruction.

This work which the Y. W. C. A., with at least half its energies has conducted for French women, is unique in that it was not being done, nor likely to have been done, by any other organization, nor by the French themselves, who at first lacked confidence in it. There were, therefore, no precedents. In six months is so demonstrated itself that the French officials not only gave it their cordial cooperation but invited its extension. The Prefet at Tours and the Mayor of Lyon have made gifts of money. The Mayor of Lyon, Monsieur Herriot, one of the most distinguished and advanced publicists in France, and Madame Herriot, have greatly aided the work in many ways. Monsieur Lallemand, when Prefet of the Loire, recognized the work of the Y. W. C. A. at St-Etienne and on becoming President of the Civil Council, with the approval of Monsieur Clemenceau and Monsieur Loucheur Ministre de l'Armement, asked for a Foyer for the women employed at the Ministry of War. The result was the establishment of the Foyer at 6 Rue de Solferino, Paris.

Monsieur Loucheur has written Miss Dingman, Director of the French work of the Y. M. C. A. expressing the thanks of the French Government for the services rendered munitions workers during the war, and the hope that the work may not be terminated with the termination of war. To that end, a Provisional Council of French and American women has been formed to study the conditions and the needs of French women, and how the Y. W. C. A. work may be made a permanent factor in meeting those needs. The War Work Council of the Y. W. C. A. which supplied American leadership for the war emergency work, has continued since the Armistice with a leadership both French and American, hoping soon to be able to carry on the work under French leadership with American cooperation until such time as it is wise for Americans to withdraw.

OVERSEAS WAR SERVICE OF THE AMERICAN LIBRARY ASSOCIATION

April 1, 1919.

BASIS OF THE A. L. A. OVERSEAS SERVICE

[Extract]

The work of the American Library Association with the American Expeditionary Forces is the natural extension and development of the service which began in the training camps in the United States in the summer of 1917. The importance of welfare work among the men of our National Army was early recognized, and on June 28, 1917, the War Department's Commission on Training Camp Activities asked the American Library Association to assume the task of providing them with adequate and suitable reading matter. This invitation was promptly accepted, and the Association was thereby placed in direct official relation with the Government. An additional intimacy was ensured by the acceptance by the Librarian of Congress of the General Directorship of the A.L.A. War Service, with headquarters at the Library of Congress itself.

No one at that time foresaw how vast this task was to become, nor how important a part it was to play in the camp and field life of our Armies, but it developed rapidly as the great opportunity for service, and the range and diversity of the possible service, became apparent. It was soon seen to be a service not only indispensable to the efficiency and morale of the men as soldiers, but of far reaching consequences to them as men.

To finance the work, a campaign for a million dollars was undertaken in September 1917, and largely over subscribed in spite of the unfamiliar nature of the appeal; a campaign for gift books in February 1918, resulted in donations aggregating more than three million volumes; and from the United Financial Campaign of November 1918, the A. L. A. will receive about three million dollars. The campaign for books has been a continuing one, the total donations approaching the five million mark, of which two-thirds have proved useful and available.

The books first collected, and the collection began in the summer of 1917, were at once sent to the Y. M. C. A. and other welfare agencies in the various cantonments and national guard camps, to be served by those agencies. With the first receipts from the first financial campaign, trained librarians, direct representatives of the A. L. A., were assigned to the camps as rapidly as possible, library buildings were erected, and an increasing supply of books, secured by purchase as well as by gift, was steadily poured into the service.

Utilizing thus the resources contributed by the American public, the A. L. A. has, within the United States, erected, equipped and maintained forty one camp library buildings, has placed librarians in sixty large hospitals and furnished book collections for 134 other hospitals, has provided books, periodicals and library supervision for 487 small military camps, posts and fields, 232 naval stations, 52 marine camp stations, and 835 vessels, and has established 1547 branches and stations in Y.M.C.A. and K. of C. huts, barracks and messhalls. This service, which has been steadily developed and improved, will continue without slackening of any sort through the period of demobilization.

It was, of course, understood from the beginning that the service which the A.L.A. was rendering at home must follow our men overseas, but there was some uncertainty as

to the extent to which library service would be possible with an army actually in the field. The first step was the natural one of giving books personally to the men either when they left the training camps or at the ports of embarkation; special collections were also placed directly in charge of individual military organizations; and a supply of books, packed in specially designed cases, was placed on all transports, in care of Y. M. C. A. secretaries, not only to be used on board, but to be repacked and forwarded into the field when the transport arrived in France.

It was felt, however, that the work should be placed upon a broader and more highly organized basis, and in January, 1918, a special representative, Dr. M. L. Raney, whose proposal (plan of operation) submitted to General Pershing, is appended, was sent to France to determine how far this was possible, to arrange the necessary liaison with the other welfare organizations operating in France, and to secure the requisite co-operation on the part of the military authorities. On February 20, 1918, a plan of operation was laid before General John J. Pershing which stipulated that the books sent to France should be administered, so far as possible, by the American Red Cross, the Y. M. C. A., and such other welfare agencies as might be set up, and a definite tonnage allowance to be devoted to book shipments was asked for. On February 22, General Pershing approved this request, cabled the War Department at Washington to make a monthly cargo allowance of fifty tons, and further stipulated that no other allotment of tonnage for a similar purpose should be made, the intent of this recommendation being that there should not be any competition in the supplying this matter to the troops, but that the work should be centralized in the American Library Association.

It was upon this basis that the service started, and a permanent representative was sent to France in March, 1918, to organize and develop it. The monthly cargo allotment of fifty tons made provision for about 75,000 volumes, far less than were actually needed; but fortunately by increasing deck transport shipments, by utilizing a small portion of American Red Cross tonnage, and by buying liberally in the Paris and London markets, it was found possible to reach a monthly maximum in excess of 250,000 volumes. During the month of April, 1918, 55,000 books were shipped to France; during May, over 100,000 books were shipped; and these shipments were increased very rapidly until by the first of April, 1919, a total of more than 2,500,000 books had been dispatched from America for the use of the American Expeditionary Forces.

This service was at the same time extended to the naval bases in England, France, and the Mediterranean, and to U. S. ships operating in European waters, 128,000 books were sent to England to be distributed through the Y. M. C. A., for the use of our men; 7,500 books were sent to Russia for our men stationed there; 1,100 volumes were purchased in Switzerland and 1,400 more dispatched thither for the use of American prisoners in Germany; and a special representative, with adequate book supply, was sent to Siberia, by way of California, to serve American troops operating there.

At the time the plans for thr work in France were being developed, the A. L. A. had under consideration its duty with respect to furnishing magazines as well as books for the overseas service, but it was informed by the postal authorities that, as regarded the A. E. F. especially, the magazine needs would be taken care of by the gift magazines provided by the public, and which the postal authorities proposed to ship directly to France in adequate quantity. Relying upon this assurance, and with thought also of the pressure upon its funds from other necessities of its service, the A. L. A. abstained from endeavoring to furnish a systematic supply of magazines.

It was later understood that the supply of gift magazines, perhaps because of other demands upon cargo space, had been materially diminished. On the other hand, the other welfare organizations, notably the A. R. C., the Y. M. C. A., and K. of C., had placed independent subscriptions for large numbers of magazines to be placed directly

in huts and hospitals, so that the service seemed fairly adequate. The A. L. A. has, however, subscribed for a long list of magazines and newspapers for its central libraries, has distributed such gift magazines as it was possible to get to France, and has arranged for monthly shipments of about ten tons to be distributed direct to military organizations not otherwise served.

DEVELOPMENT OF THE SERVICE

From the first, it was the hope of the American Library Association to do far more than merely to dump a miscellaneous lot of books in France for the use of our men. Library service consists not so much in giving a man a book as in giving him the book he wants, and it is toward this ideal that the work has been directed from the beginning, though, of course, it has been actually realized only in partial degree. But at least the books were so equipped that an organized library service could instantly be set up wherever they were placed. This equipment consisted of a charging card and pocket, so that a record could be made each time the book was issued. Furthermore, all books were packed in specially designed cases, with a central shelf, forming in effect a sectional bookcase, and capable of indefinite expansion by merely stacking together. Suitable placards and circulars of instruction were prepared to assist in the proper handling of the books. Examples of all these will be found attached as exhibits to this report.

The first aim of the administration in France, in availing itself of the cooperation of the American Red Cross and the Y. M. C. A., was to place suitable collections of books in every hospital under A. R. C. administration and in every Y. M. C. A. hut under Y. M. C. A. administration. Upon the official recognition of the Knights of Columbus and the Salvation Army, similar service was extended to their recreational centers, and this has subsequently been given to the Y. W. C. A., to the Jewish Welfare Board, and to a large number of independent recreational organizations, such as the Soldiers' and Sailors' Club, the Royal Order of Moose, and the Masons. Such Foyers du Soldat as served American troops were also equipped with books. The wide diversity of organizations served, as well as the system of distribution, can be seen from the summaries for the months of December, 1918, and January and February, 1919, attached hereto.

Very early in this work it was apparent that difficulties of transport and of distribution were such that it was highly advisable that central libraries be set up in important places, not only to serve the troops immediately stationed there but also to act as distributing centers for the adjoining areas. This plan was laid before the Y. M. C. A. Educational Department and an agreement reached whereby such trained librarians as came to France with the Y. M. C. A. were detailed to the A. L. A. for library work and were put in charge of these central or regional libraries. At the present time, such libraries, under trained supervision, are in operation at Gondrecourt, Nevers, Chaumont, Neufchateau, Dijon, Marseille, Chatillon-sur-Seine, Tours, Bordeaux, Nantes, and Issoudun, as well as a number of smaller centers.

Even this service was in some instances not wholly satisfactory, and with the beginning of the present year an increased personnel was brought to France to aid directly the service in the field. But this did not suffice. At certain points, buildings exclusively devoted to library service became an obvious necessity, and the military authorities have cooperated in providing them. At the present time, there are two such library buildings in operation at Le Mans, one at Brest, one at St-Aignan, and one at Gievres, all of them built by the Army engineers, without whose assistance their prompt completion would have been impossible. In addition, there are well organi-

ized central libraries in rented quarters at Paris and Coblenz. At Treves there is also a central library, in the A. R. C. recreational hut and under supervision of a trained librarian in Red Cross uniform. This service seems to be most highly appreciated in all centers where it has been established, and is proving most useful in many ways. In fact, so great has been the demand upon these buildings that three of them have already been doubled in size.

For the large hospital centers, a similar central service was set up with the cooperation of the Red Cross, and a trained librarian was assigned to Mars, Allerey, Mesves, Nantes, Remiremont, and Savenay, working under A. L. A. supervision and reporting book needs directly to these headquarters. This service is still being maintained, the books being salvaged from the smaller hospitals as they are evacuated and turned in for redistribution. One shipment of 25,000 books was brought from America by the Red Cross on its own tonnage and distributed to the various hospitals, under A. L. A. direction.

A special field representative, sent out by the American Library Association, has visited all of these centers as well as many smaller hospitals, has assisted in organizing thd service and has reported special needs.

It soon became evident, however, that the service outlined above, however complete it might be made, would not reach all our men. There were scattered over France a very large number of small isolated units, which no other welfare organization reached directly, the forestry units, for example, and the cement sections. Authorization was therefore asked from G. H. Q. to serve these units directly, and was immediately granted. As soon as the books arrived in sufficient quantity to make the service possible, a standing offer was made to any military organization whose commanding officer requested the service and where a man could be detailed to administer the books, to place with it a suitable collection, which should remain in its charge as long as the organization was in France, and which could be exchanged from time to time, in whole or in part. This service has been very rapidly extended until today a total of 618 such organizations have been directly supplied with their own libraries.

There remained the final and very important service of supplying special books to men desirous of reading along certain lines or of keeping up the studies which had been interrupted by their entrance into the Army. In order to render this service possible, the Commander-in-Chief was asked to give the American Library Association the franking privilege for its books through the Army Post Office. This request was instantly granted, and this service has developed enormously, until at the present time the number of letters received at Paris headquarters asking for special books runs as high as two thousand a day.

These letters form a most striking testimonial to the character of the nen in the American E. F. Nine out of ten of them are for serious books, books dealing with such subjects as accounting, banking, agriculture in all its branches, law, medicine, special and mechanical trades, advertising, salesmanship, in fact, there is scarcely any trade or profession not represented. They prove that the majority of our men are anxious further to equip themselves for reentrance into civil life, and to make them. selves better men and better citizens.

The supply of such special books has been constantly augmented, the total purchases of these alone aggregating over half a million of volumes, until it is now possible to fill about 90% of these book requests. The system is really that of a vast lending library, two books at a time being issued to a man for a period of one month. The fact is impressed upon all the borrowers that if the service is to be successful, each of them must play the game and return the books on time. It is gratifying to be able to add that they do play the game, the books come back with commendable promptness, with only such losses as are inseparable from war conditions, and with most

moving testimony of how much the books have meant to the men who have had the use of them. The A. L. A. feels that this direct book service is one of the most valuable features of its work in France.

WORK WITH THE ARMY EDUCATIONAL COMMISSION

The plans which were formulated by the Army Educational Commission for the setting up of educational courses throughout the American Expeditionary Forces, besides involving textbooks to be supplied directly by the military authorities, called for the establishment of a large number of so-called reference libraries, that is, libraries containing collateral reading, dealing with the subjects which were to be taught in the post schools, the divisional schools, and the A. E. F. Universities. It was naturally the duty of the American Library Association to supply these libraries, and plans were at once formulated to furnish these promptly and in adequate volume. Libraries of special titles were selected, constituting unit collections ranging from 500 to 1,000 volumes, and shipments were made so promptly that by the first of March a large proportion of this special educational material had been received and by the first of April it was practically all in hand, a total of 322,000 volumes having been purchased, prepared, and shipped to France for this purpose.

The distribution of these special educational libraries was promptly begun and was greatly facilitated by the Army Post Office, which gave space in its mail cars for the cases containing these special educational books. By the first of March, 186 sets had been sent into the field; during March this number was increased to 392, and innumerable smaller collections had been placed directly with chaplains, post school officers and others in charge of instruction at various smaller centers. A special effort is being made to get all of these books distributed by the middle of April.

So far as possible, this work was done directly in cooperation with the divisional school officers, and, at the suggestion of the A. L. A., a librarian from the army personnel was appointed in each division to have charge of the distribution of these special books, under direction of the school officer, and to see that the book needs of the division were brought promptly to the attention of A. L. A. headquarters in Paris. Regimental and company librarians were also appointed where needed, and the entire plan has worked admirably. Attached will be found a report from one of these regimental librarians, which demonstrates the working of the system.

SPECIAL SERVICE AT BEAUNE

As soon as the plans for the A. E. F. University at Beaune were definitely decided upon, the American Library Association purchased supplementary titles for the library proposed there, and detailed, for the conduct of the library itself, one of its best men, with suitable assistants. In securing these titles, the cable was used freely, and a special representative was sent to London to purchase in the English market everything available there that would be of use. Special architectural libraries were purchased in Paris for both Beaune and Bellevue, and everything possible was done to make this service of the highest possible efficiency. One of the largest buildings at Beaune was set aside for library use; but this was soon found to be inadequate, and an addition 40 by 160 feet was promptly added.

Similar service on a smaller scale was established at the Sorbonne in Paris and the Universities at Toulouse, Dijon, Bordeaux, and Marseille, where A. E. F. men were studying.

A printed list of available educational books was widely distributed, asd a special department set up at headquarters to give prompt and expert attention to this

service throughout the field. A copy of this printed list, together with other material relating to the educational work, is attached to this report.

SERVICE WITH THE ARMY OF OCCUPATION

As soon as it was announced that an American Army of Occupation was to be sent into Germany, with headquarters at Coblenz, plans were made to give it an adequate library service. A representative was dispatched to Coblenz, who secured suitable quarters in the Festhalle there, as well as warehouse accommodations to facilitate the distribution of the books shipped him, and he was later joined by a staff adequate to carry on the work. The shipment of books for the use of the Third Army was at once begun, and by April 1, a total of 75,125 books had been sent into that area. Attached hereto will be found a statement of the distribution of these books to March 21, showing the organizations served and the amount of service to each.

It is the purpose of the American Library Association to continue and to develop this service as long as the army of occupation continued to exist. In fact, it may be said of the whole service that it will be continued in France as long as any American troops remain.

SERVICE WITH THE FIRST AND SECOND ARMIES

Immediately after the signing of the Armistice, when the First and second Armies had been moved into the areas which they at present occupy, it was felt that every effort must be made to serve these men, who were living under unusually trying conditions. A representative was therefore sent to the respective headquarters at Bar-sur-Aube and Toul, and all available book shipments were sent forward. An especial effort was also made to send forward promptly special collections to the individual organizations in these two Armies. The 88th Division may be taken as an example of the sort of service rendered, and a statement of the shipments made to this division follows:

MISCELLANEOUS BOOKS

1918		Vols.	
Aug. 28	(Flavigny)	700	
Nov. 30	- Y. M. C. A.	840	
Dec. 5	- 352d Inf.	100	
1919			
Jan. 15	- 349th Inf.	125	
22	- 359th Inf., 2d Bn.	50	
25	- 350th Inf.	125	
28	- 147th F. A.	150	
31	- Y. M. C. A., Gondrecourt	1400	
Mar. 1	- 349th Inf., 3d Bn.	100	
17	- Commanding Officer	1820	5410

(for 349th, 351st, 352d Inf. and 308th Clothing Unit)

EDUCATIONAL LIBRARIES

1919		Cases (70 vol. each)	
Feb. 20	- Chaplain Boyd	24	
Mar. 18	- Capt. Layton	3	
27	- Capt. Layton	3	
		30	cases -
		2100	volumes
	Miscellaneous	5410	
	Total	7510	volumes

It is the intention to maintain this service for the S. O. S. troops which will remain in these areas when the Armies themselves, as such, have been moved out.

SERVICE AT THE PORTS

The American Library Association has been fortunate from the first in the hearty cooperation it has had from the military authorities, but to no one is its obligation greater than to the Chief Quartermaster. Under stipulation of the War Department, all books which have been shipped to France in cargo have been addressed:

Chief Quartermaster
American Expeditionary Forces
For Distribution

BOOKS

In April 1918, a representative of the American Library Association arranged with the Chief Quartermaster for the forwarding of these books from the various ports to Gievres, which was at that time the principal distributing station of the A. E. F., and to accommodate these books at that point the Engineering Department erected a warehouse to provide the necessary housing facilities.

Owing to the extreme difficulty which soon developed in getting transportation out of Gievres, it was afterwards deemed best to have all books sent to the Paris warehouse for distribution. In this the Quartermaster's Department cheerfully acquiesced, and it is a testimonial to the efficiency of the service that the books of the American Library Association have come through most promptly and in excellent condition.

With the beginning of the work in connection with the Army Educational Program, however, it was felt that the American Library Association should have a special representative at each port in order to prevent any possible delay or confusion in these shipments and also to have general supervision over the increasingly important work in the port areas. Representatives were, therefore, sent to Brest, St-Nazaire, and Bordeaux. At Brest there was found to be great need for a more adequate library service, and a building was therefore erected by the Army engineers at the Pontanezen Camp and the necessary staff established there to handle the work. At St-Nazaire, it was found that the existing facilities could, under competent supervision, be made adequate, and the work in the BORDEAUX area has also up to this time been handled on this basis, though plans are under consideration for the erection of a small building near the water front in the PLACE des QUINCONCES. It will also be a part of the duty of these port representatives to supervise the salvaging of such books as reach the port areas, and to arrange for their redistribution.

SERVICE IN THE LE MANS AREA

The peculiar importance of the Le MANS area was realized from the first, and in the Summer of 1918 a central library was established there in a room assigned for the purpose by the commanding general of the area.

Its increasing importance, however, as the Army Educational Commission demanded that this service be extended. A special representative was placed there, with the necessary staff, and two buildings have been erected, one in Le MANS itself and one in the Fowarding Camp. Every effort has been made to furnish an adequate book supply, and the following statement of shipments to the area since its inception will show that this has been:

1918			Miscellaneous	Vols.		
Sept.	10	-	Polish Army	210		
Oct.	23	-	K. of C.	350		
Nov.	12	-	K. of C.	70		
	8	-	Chaplain Howell	420		
	8	-	Y. M. C. A.	2,100		
	12	-	83d Div.	2,100		
	27	-	83d Div.	3,500		
Dec.	2	-	83d Div.	2,800		
	17	-	Y. M. C. A.	210		
Jan.	7	-	105th Wng. Y. M. C. A.	210		
	9	-	Y. M. C. A.	280		
	16	-	83d Div.	2,800		15,050
1919			Forward	15,050		
Feb.	7	-	A. L. A. Rep.	2,100		
	21	-	A. L. A. Rep.	2,100		
	27	-	A. L. A. Rep.	3,500		
Mar.	5	-	A. L. A. Rep.	3,500		
	11	-	A. L. A. Rep.	3,500		
	11	-	J. W. B.	840		
	12	-	A. L. A. Rep.	100		
	14	-	Chap. Phelps	50		
	14	-	Chap. Phelps	50		
	15	-	A. L. A. Rep.	3,500		
	25	-	A. L. A. Rep.	70		
	25	-	A. L. A. Rep.	3,500		37,860
1919			Educational Libraries Reference	Cases		
Feb.	18	-	A. L. A.	6		
	18	-	A. L. A.	15		
	7	-	A. L. A.	30		
Mar.	13	-	A. L. A.	30		
	15	-	A. L. A.	15		
	22	-	A. L. A.	1		
	21	-	A. L. A.	3		
	27	-	A. L. A.	90		190 cases - about 13,300 vols.
					TOTAL	51,160

WORK ON TRANSPORTS

As has already been mentioned, a large part of the supply of books which have been shipped to France, came through as deck shipments on Army transports. When the homeward movement of troops began, it was evident that the men on the boats should have a similar library service, but it was also evident that every effort must be made to prevent the draining out of France of the books which have been received here. G. H. Q. also recognized the importance of this, and assisted greatly by issuing promptly a

bulletin instructing commanding officers to see that their organizations took no books with them when they boarded the boats.

It was realized, however, that book service must be furnished these returning men, and instructions were cabled to A. L. A. Washington Headquarters to provide for each transport a permanent library, which was to remain on the boat as long as it was in the transport service. This work was begun at once, and by March 1, a total of 104 transports had been equipped with adequate libraries, which were renewed and freshened each time the boat docked in America. It is the intention to place a similar equipment on each boat which carries a morale unit and on the more important transports a transport librarian will be assigned to see that the books are given the widest possible use.

CENTRAL LIBRARY AT PARIS

In order to centralize and focus the library work with the various welfare organizations throughout the Paris area, as well as to provide adequate service for the members of the A. E. F., stationed in Paris, it was deemed advisable early in the summer of 1918 to open a central library in Paris. The necessary authorization to do this was secured from G. H. Q. and after long and discouraging search for a suitable location, a portion of the property at 10 rue de l'Elysee was subleased from the Y. M. C. A., and on August 29, 1918, the central library was opened.

It was from the first a real American Public Library, open all day, every day (from nine in the morning until ten at night), well-lighted, well-heated, with all books on open shelves and freely accessible. Its privileges were extended to all American soldiers, sailors, and war workers, and books were issued for use outside the library as freely and with as little formality as in the libraries at home.

The work of this library has been of increasing importance, as the attached reports of attendance and circulation show. There has been built up here a collection of about 15,000 books, which is being refreshed and added to constantly and which has at all times the large warehouse stock to draw upon. Collections placed in other welfare centers in the Paris area are managed as branches, or deposit stations, and to April 1, 1919, a total of 104 of these had been established.

Meetings have been held at this central library of the *Association des Bibliothecaires Francaises*, and of *La Renaissance des Cites*, and it has been inspected by many others interested in the development of public libraries in France. It has served, therefore, not only to provide library facilities for our men in Paris but to demonstrate to the French something of the real workings of an American Public Library. It is hoped that after the war this latter feature of the work may be developed and perfected, as a permanent testimonial of the library war service in France.

PERSONNEL BUDGET EXPENDITURES

The original plan of operation through the other welfare organizations rendered it unnecessary and inadvisable for the A. L. A. to build up a large personnel in France, and it was therefore kept at the lowest point consistent with proper administration. The enlargement and intensification of the work which followed the signing of the Armistice, the necessity of equipping A. L. A. buildings with competent staffs, and the special work in connection with the Army Educational Program, has resulted in a considerable enlargement of personnel, and the total number of persons now (March 31, 1919) in A. L. A. employ overseas is as follows:

A. L. A. staff brought from America -	men	11
	women	17
Released from A. R. C. for A. L. A. service		5
Detailed from A. R. C. for A. L. A. service		5
Detailed from Y. M. C. A. for A. L. A. service		4
Detailed to central libraries under A. L. A. supervision - Y. M. C. A.		21
A. R. C.		6
Civilian employees - Mailing Dept.		20
Hq. Offices		7
Shipping		3
Warehouse		18

A monthly summary of expeditures in France has been submitted to G. H. Q., showing a total to April 1, 1919, of 410,490.10 francs. It should be understood, however, that only a comparatively small portion of the expenditures for the overseas service are actually made in France. By far the largest single item of expenditure is for books, most of which are, of course, purchased in America. The expenditures for this purpose alone to April 1, 1919, amounted to more than a million dollars. Other large single items were for the construction of the special cases in which all books were shipped overseas (approximately $75,000), and for the maintenance of the dispatch offices which have been in operation from the first at Hoboken, New York, Newport News, Boston, and Philadelphia.

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This report cannot be closed without expressing the deep appreciation of these headquarters of the hearty and unhesitating cooperation which has been afforded the A. L. A. service at all times by the military authorities. Their attitude has been from the very first most friendly and helpful, and it is to this that such measure of success as has been attained is very largely due.

Respectfully submitted:

BURTON E. STEVENSON,
European Representative,
American Library Assn.
