

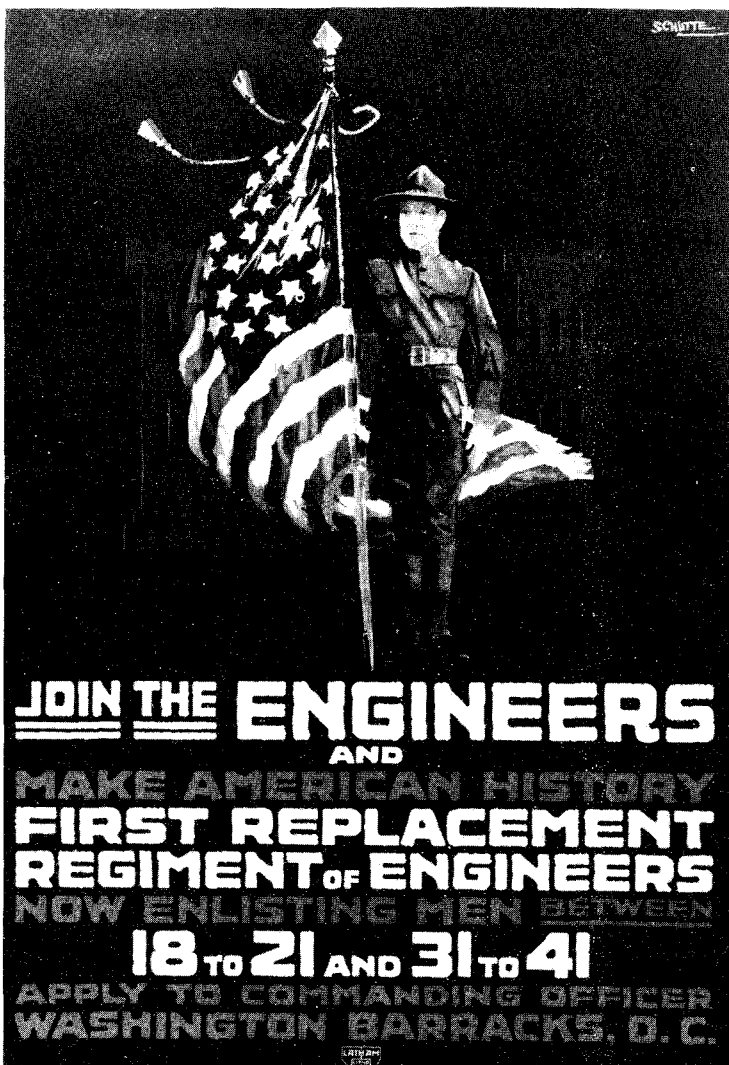


US Army Corps
of Engineers

Combat and Construction *U.S. Army Engineers in World War I*

by Charles Hendricks





U.S. Army engineer recruiting poster.

On the cover:

U.S. Army engineers construct a corduroy road used to carry supplies to the front lines during World War I.

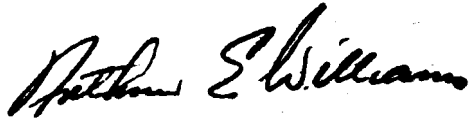
Office of History
U.S. Army Corps of Engineers
Fort Belvoir, Virginia
1993

Foreword

As the United States commemorates the 75th anniversary of the end of World War I, the U.S. Army Corps of Engineers recalls the dedication and sacrifices of its engineer soldiers, officers, and civilians.

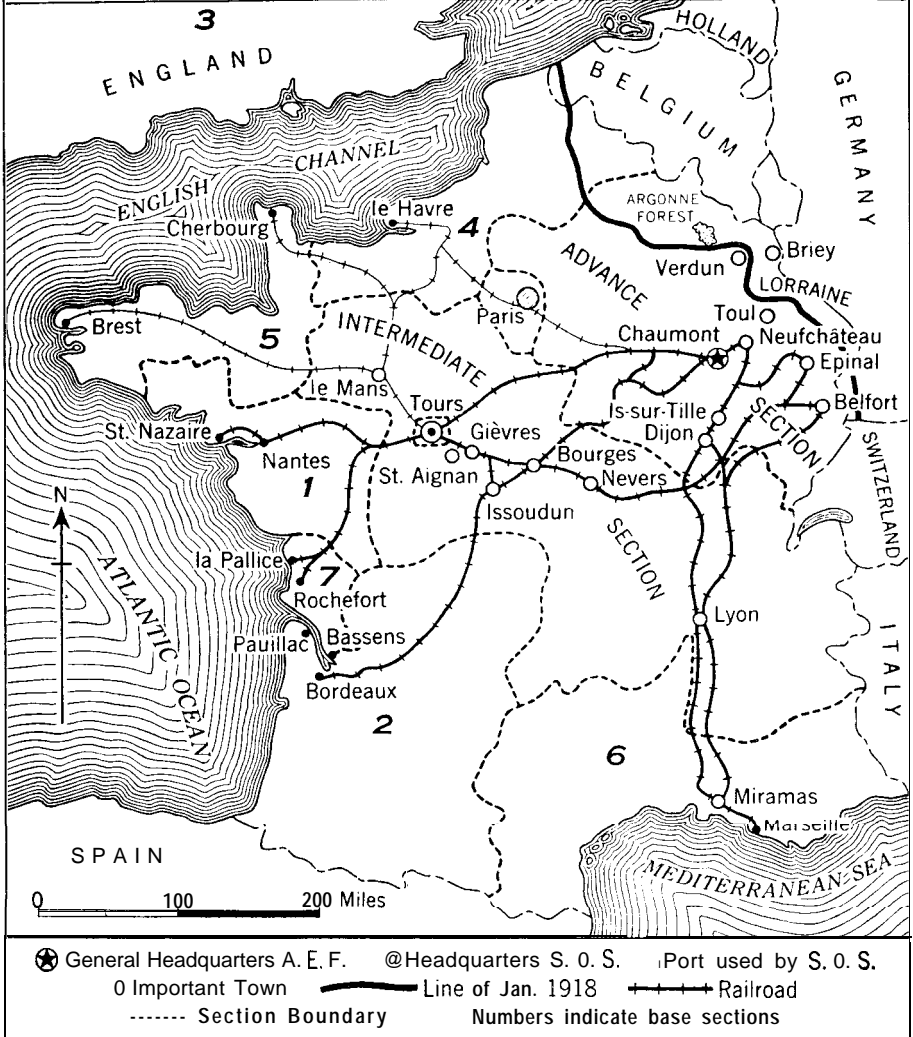
The United States was not involved at first when the great war broke out in Europe in the summer of 1914. Not until 1917 did this country determine that its vital national interests were at stake in the conflict. America then committed its powerful human and technological resources to support the West European democracies engaged in the struggle.

Within two years, American military forces tipped the balance of power in Europe. The U.S. Army Corps of Engineers was essential to this effort—engineers fought on the front lines and constructed facilities needed to transport and supply American troops. *Combat and Construction* honors the contributions of these engineers who fought to protect democracy and restore peace.



ARTHUR E. WILLIAMS
Lieutenant General, USA
Commanding

Services of Supply of the American Expeditionary Forces



Combat and Construction

U.S. Army Engineers in World War I

The U.S. Army Corps of Engineers provided diverse military services during World War I. The Corps formed the large 1,660-man engineer regiments of the American combat divisions. Army engineers built port facilities, roads, and railroads essential to moving war materiel to the battlefield. They also harvested timber for military construction and operated searchlights in anti-aircraft defense.

The engineers organized the first U.S. Army tank units and developed chemical warfare munitions and defensive equipment. Armored units and chemical warfare became so important that the Army in 1918 created a separate Tank Corps and a Chemical Warfare Service. Brigadier General Amos Fries, a career engineer officer, headed the Chemical Warfare Service in France.



New York's Engineer Regiment

For Immediate

SERVICE IN FRANCE

TRAINING CAMP NOW READY

MEN WANTED

<p>TEAMSTERS CONTRACTORS' EMPLOYEES TRACKMEN</p> <p>Engineers Firemen Yardmasters Brakemen Car Repairers Superintendents Powdermen</p>	<p>Foremen Walking Bosses Drill Runners and Helpers Bulldozers Bridge Builders Carpenters</p>	<p>LABORERS EMPLOYEES COOKS</p> <p>Handmen Riggers Track Builders Bridge Carpenters Pile Drivers Chafflers Engineers</p> <p>Gas Engineers Machinists Painters Blacksmiths Horsehoofers Limewen Auto-Repairsmen</p>
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Enlistment for Period of War Only Not Subject to Draft Into Other Forces

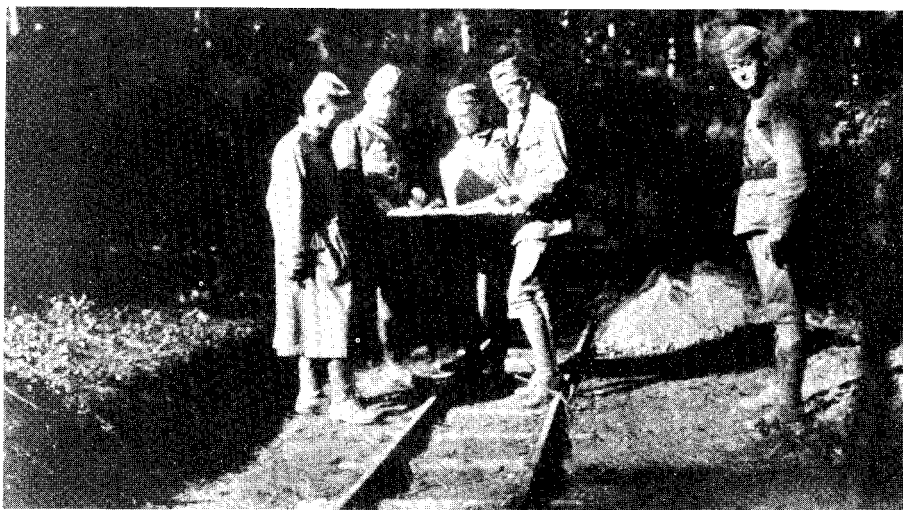
Pay ranges from \$25 to \$75 per month. Equipment, Clothing, Subsistence and Transportation are furnished by the United States.

Recruiting Office: 190 SIXTH AVENUE
(Corner Thirtieth Street)

Open To-day and Every Day From 9 a.m. to 9 p.m.

MILITARY ENGINEERING, COMMITTEE OF NEW YORK

Poster seeks recruits for the 11th Engineers. The U.S. Army recruited many state and regional engineer units.



Engineer officers review plans for a light railway near the battlefield in France

The Engineers

The U.S. Army engineers who served in World War I brought with them varied military experience,

Most senior officers were graduates of the U.S. Military Academy. These Regular Army engineers had devoted most of their careers to supervising domestic river and harbor improvements, although many had also served with U.S. Army units abroad, primarily in Cuba or the Philippines.

Other commanders who had been civilian engineers joined the National Guard or Officers' Reserve Corps shortly before the United States entered the war.

But most of the 240,000 engineers who served in Europe during the war



African-American engineer construction troops.

U.S. ENGINEERS



**SKILLED MECHANICS
TECHNICAL SPECIALISTS
SERVE WITH THE
ENGINEERS OVERSEAS**
APPLY TO
RECRUITING OFFICER



Recruiting poster

had no prior experience with military service. Some 40,000 of them were African-Americans.

ENGINEERS

Blaze the Trail for Education
The ENGINEERS
can place MEN from 18 to 40 where they can LEARN their TRADE in the Army.

What course do you want?

MACHINIST	MIDER	QUALIFIER
ELECTRICIAN	QUARRYMAN	TRUCK REPAIR MAN
BRASS SMITH	BLASTER	TRANSFER
CARPENTER	MASON	TEAM
WOODSMAN	TRACKMAN	STENOGRAPHER

For information apply Recruiting Officer

Recruiting poster



Review of engineer troops at Camp Dix, New Jersey

First Units

After the United States declared war on Germany on April 6, 1917, the British and French governments asked this country to give top priority to deploying American engineers to France. By the end of August, nine newly organized engineer railway regiments and the combat engineer regiment of the 1st Division had crossed the Atlantic. Several of the railway regiments were assigned to British or French military formations pending the arrival of more American combat troops in the summer and autumn of 1918.

First Casualties

Sergeant Matthew Calderwood and Private William Branigan, 11th Engineers, became the war's first, front-line U.S. Army casualties. They were wounded by German artillery fire on September 5, 1917, while serving with the British Third Army near the village of Gouzeaucourt in northern France.

In late November the 11th Engineers abandoned its railway work and helped the British construct new defensive positions, stopping a German effort to regain territory near Cambrai.



Buglers of Company C, 5th Engineers, 7th Division.

Construction

U.S. Army engineers made their most visible contributions in France behind the front lines. Nearly 2 million fresh American troops, who joined a larger Entente force drawn from various nations and territories around the world, could fight successfully only if they had adequate logistical support.

Engineer officers and troops dominated the construction effort in France that was essential to moving and supplying the American Expeditionary Forces (AEF).



Edgar Jadwin.



William Langfitt.

Leadership

Major General William Langfitt served as the AEF's Chief Engineer.

Brigadier General Edgar Jadwin was the AEF's Director of Construction and Forestry. He later became Chief of Engineers.



George Goethals.

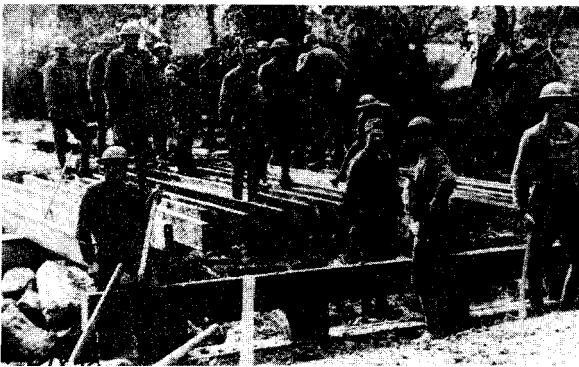
Major General George W. Goethals headed the War Department's logistical efforts in the United States. He was a career engineer officer and chief builder of the Panama Canal.

Lumber

Timber was the engineers' basic raw material in World War I. The 20th Engineers, the U.S. Army's largest regiment, and other American forestry troops in France produced some 200 million board feet of lumber, 4 million railroad ties, and thousands of timber piles. Lieutenant Colonel Henry Graves, on leave as the Chief Forester of the U.S. Forest Service, helped organize the effort. By October 1918 American forestry engineers were operating 107 sawmills, primarily in southern and central France.

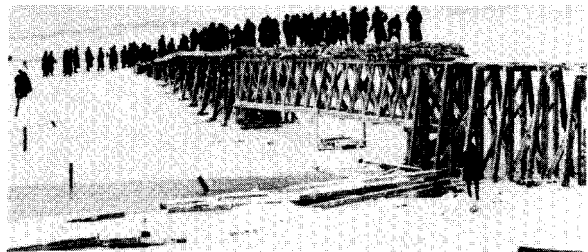


Troops of the 20th Engineers bring in logs from forests in the Vosges, France.



The 107th Engineers, 32d Division, construct a bridge in Cierges (Aisne), France, on August 2, 1918, three days after the division drove the Germans from the town.

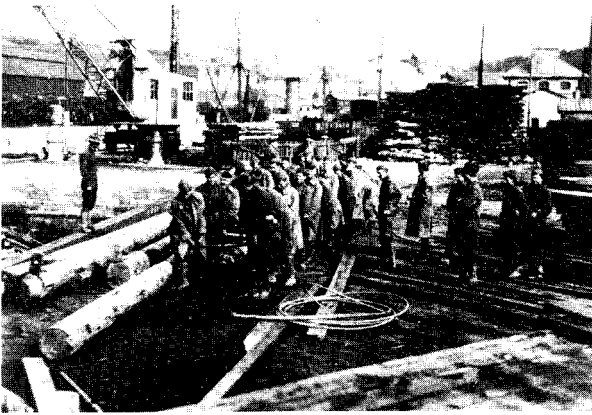
While training at Gondrecourt (Meuse), France, in January 1918, soldiers of the 1st Engineers, 1st Division, use sandbags to test a bridge they have built.



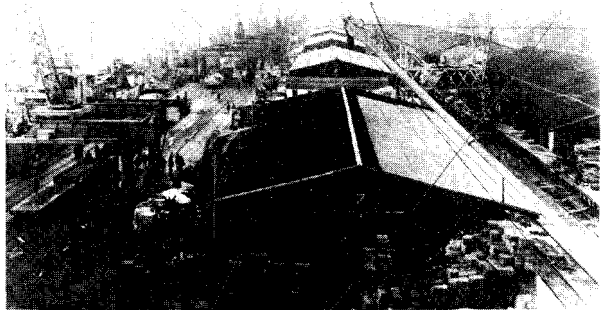
Port Construction

American soldiers, under the technical supervision of engineers, used these timber products to construct new and expanded port facilities for American troop and supply ships. Because British vessels clogged French ports on the English Channel, American ships had to dock at Atlantic ports from Brest to Bordeaux or at the Mediterranean port of Marseilles.

Engineer officers commanded mixed crews of engineer, cavalry, marine, and labor troops; prisoners of war; and Spanish and Chinese civilians, who built a 10-berth pile dock at Bassens below Bordeaux. A 3-berth pier built at Montoir on the Loire River, together with its rail connection to shore, required 6.8 million board feet of lumber. Dredging by French contractors made the docks at Montoir and Brest available to vessels with 25-foot drafts.



The 33d Engineers carry a 30-foot mast for a stevedore derrick at the port of Brest (Finistère), France, in October 1918.



The derricks at this American-built dock at Bassens could lift cargo from ship holds and place it directly in waiting railroad cars.

Railroads

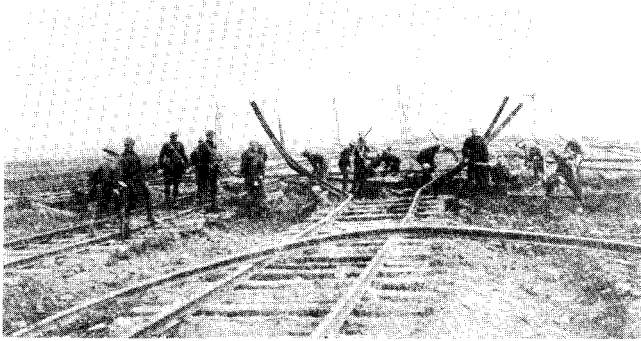
French railroads were largely adequate to transport American military supplies to the battlefield, but the use of American engines and rolling stock and the construction of rail yards and repair facilities was required. Most of the 1.5 million tons of engineer equipment the Americans brought to France related to railway construction or operation.

Before the Armistice, the engineers built 937 miles of standard-gauge railroad tracks in France, primarily at docks and storage facilities. A notable addition to France's rail lines was a 5-mile cutoff the American engineers built to avoid a rail bottleneck in Nevers. The cutoff included a 2,190-foot bridge over the Loire River, the longest bridge built by the Americans in France.



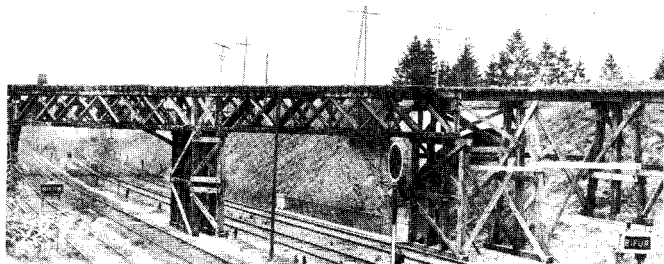
Engineers work on a narrow-gauge railway built to carry supplies to field artillery positions.

Eight engineer regiments built narrow-gauge railroads between the railheads of standard-gauge lines and the battlefield. American-operated light railroads hauled 860,000 tons of materiel and personnel.'



The 316th Engineers, 91st Division, repair railroad tracks damaged in the war at Waregem (West Flanders), Belgium.

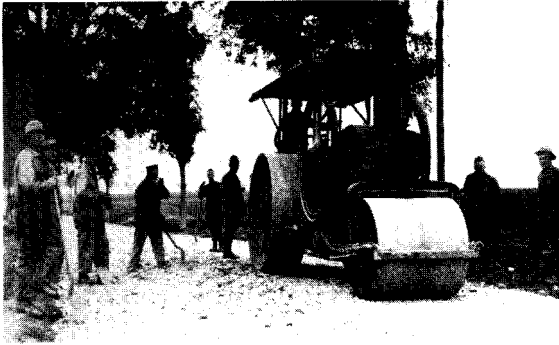
A new narrow-gauge railroad bridge crosses the old standard-gauge tracks at Sorcy (Meuse), south of Saint-Mihiel, France.



Roads

Road construction employed even more forward troops, although pioneer infantry regiments provided more labor than did engineer units. A quarry operated by the

28th Engineers supported the road-building effort, producing more than 10,000 cubic yards of crushed stone in 1918.



The 23d Engineers improve a road near the battlefield in France.

A crew from the 101st Engineers, 26th Division, fills a road-cutting crater made by an American artillery shell before the area was ruptured during the Saint-Mihiel campaign, September 1918.



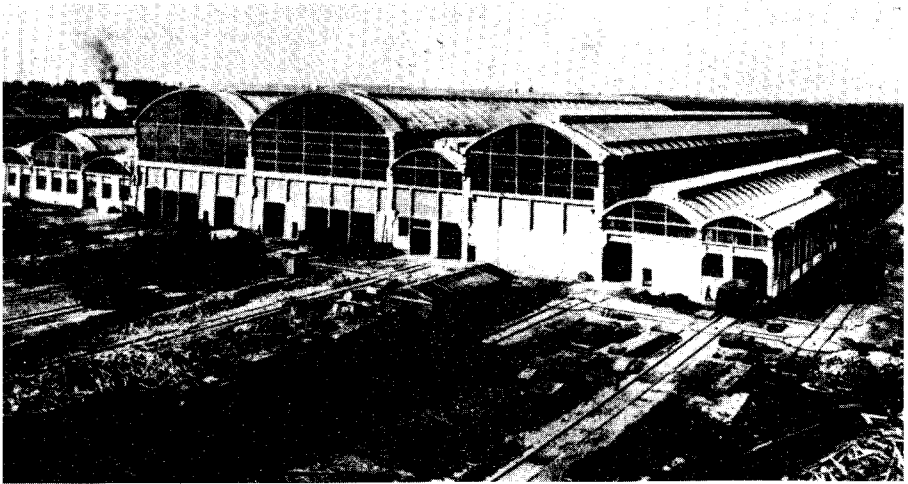
Another view of road constructed by 4th Engrs night before attack. Used 4,000 sand bags in it.



The 4th Engineers rebuilt the heavily shelled road between Esnes and Malancourt northwest of Verdun the night before the Meuse-Argonne offensive began. They operated under the protection of a heavy American artillery barrage. This photo is from the scrapbook of an officer in the 4th Engineers.

Depots

As American military materiel moved to the battlefield, it was stored in 15 million square feet of covered storage space erected by the engineers. Requiring quick results, the engineers constructed most depot buildings with corrugated-iron roofs and walls attached to simple wooden frames. Noteworthy was the Romorantin Air Service Depot, which boasted 1.3 million square feet of shops and 765,000 square feet of storehouses and hangars.



American engineers built the Nevers engine repair shop on a major French rail line in central France.

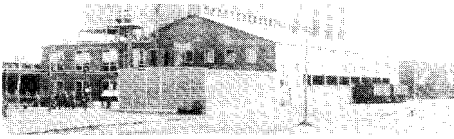
Food

The war had hurt European agriculture, so the U.S. Army imported American food to its troops in France. The engineers assured that the food was well preserved en route. They used 100,000 cubic feet of locally obtained cork to insulate a 4,000-ton-capacity refrigeration plant at the port of Bassens. The beef storage warehouse that Colonel Ernest Graves built at the Gièvres Depot in central France had a

capacity of 5,200 tons. It was cooled by ammonia circulating through 35 miles of two-inch pipe. A nearby ice-making plant produced 500 tons of ice daily.

Closer to the front lines, at the Is-sur-Tille Depot, the engineers built an electrically operated bakery that produced up to 400 tons of bread daily. American troops would not go hungry.

The refrigeration plant built by the Americans at Gièvres (Loir-et-Cher) was the largest in France in 1918.



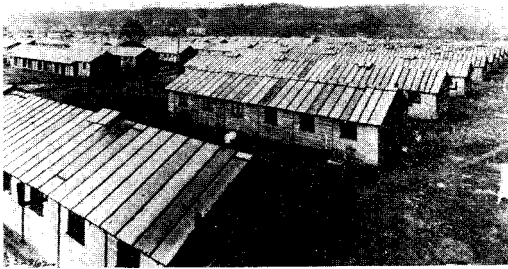
Soldiers line up for a meal. Constructing facilities to bring food to the troops was an important engineer function in France.

Other Support

The engineers sought to provide as much physical support as U.S. troops might need. The Pontanezen Barracks built at Brest could house 55,000 men. Engineers oversaw the construction of hospital facilities for 141,000 men, including the 20,000-bed Mars and Mésves hospitals near Nevers

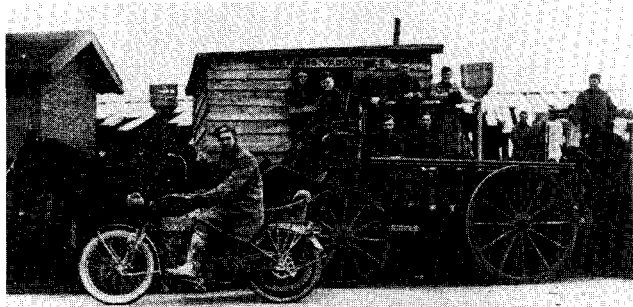
in central France. A switchyard at the Montoir Depot on the Loire River could repair 18 large locomotives simultaneously. Four large storage tanks could hold 2 million gallons of gasoline. Having just completed the Panama Canal, the engineers knew how to think big.

Engineers lay the foundation for a field hospital building at Méné-la-Tour (Meurthe-et-Moselle), France.



Base hospital with masonry walls built by American engineers at Périgueux (Dordogne), France.

Transportation options at a field engineer's office.



Other Military Specialties

Camouflage

American engineers also provided special military services to the AEF. The engineers' Camouflage Section opened a workshop in an old dance hall in Paris in September 1917 and commissioned several American artists resident in that city. One of the senior camouflage officers was Captain Homer Saint-Gaudens, son of the great American sculptor

Augustus Saint-Gaudens. Employing 900 women garment workers, the section produced more than 3 million square yards of camouflage material including airplane hangar covers, fish nets, painted burlap, and sniper suits. The camouflage products were most helpful in moving artillery forward without drawing the attention of German gunners.

Searchlights

The 56th Engineers operated 36-inch and 60-inch searchlights to help artillery units protect American troops from night air

raids. Engineers also provided searchlight service for the French First and Tenth Armies, since the French did not develop this specialty.



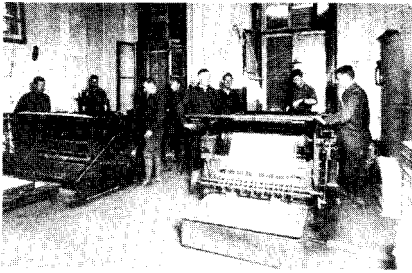
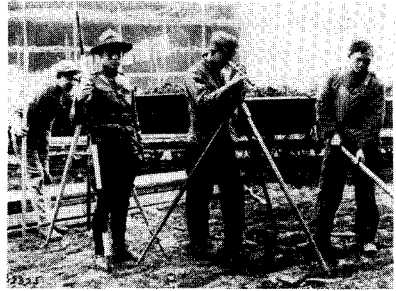
American paraboloid and searchlight in position to track and illuminate attacking enemy aircraft.

Topographic

Engineer Colonel Roger Alexander led the Topographical Division of the Intelligence Section of the AEF General Staff. He coordinated the use of aerial photographs to obtain information on German trenches

and troop dispositions and the production of Army maps. The U.S. Army base printing plant at Langres produced 22 million maps in 1918. Colonel Alexander also oversaw the use of sound and flash ranging to locate enemy artillery positions.

Survey party at an airfield in Sussex, England, October 1918.



Americans print maps in the graining room.



The 29th Engineers produce maps in the lithographic press room of the base printing plant, Langres (Haute-Marne), France.



Trucks of the 29th Engineers' mobile topographic unit, Stenay, France, April 1919

Combat

U.S. Army engineer units engaged in combat from the Vosges Mountains near the Swiss border north to Oudenaarde, Belgium. One battalion of the 310th Engineers even served in the Archangel area of northern Russia after the Russian Revolution.

Amiens

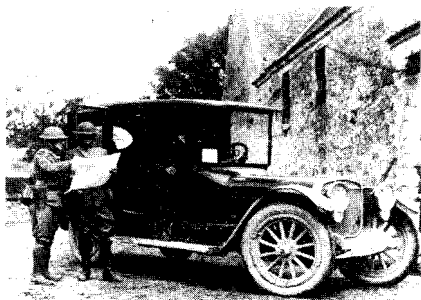
Noteworthy among engineer combat service was the action of two companies of the 6th Engineers. They stopped building heavy steel bridges to join British and Canadian forces in front-line trenches before

Amiens. Together they successfully defended the line before that historic city from a heavy German assault in March and April 1918. These two engineer companies suffered 77 casualties.

Belleau Wood

During June and July 1918, troops of the 2d Engineers fought as infantry in their divisions bitterly contested capture of the Belleau Wood and the hamlet

of Vaux in the Aisne-Marne campaign. This regiment suffered casualties of nearly 13 percent, the highest for an engineer unit of its size.



Brigadier General Benjamin Poore and his adjutant examine a map of the Aisne-Marne battlefield at Chéry-Chartreuve (Aisne), France, August 9, 1918.



Soldiers of the 6th Engineers, 3d Division, build a trestle-crib bridge over the Marne River at Mézy (Aisne), east of Château-Thierry, France,

Hindenburg Line

A battalion of the 1st Engineers, fighting as infantry, joined the American forces assaulting Hill 269 in the Romagne Heights along the Hindenburg Line on October 8, 1918. Engineer Sergeant Wilbur E. Colyer of South Ozone, New York, volunteered to locate a group of German machine-gun nests that

blocked the American advance. He used a captured German grenade to kill one enemy machine-gunner. Colyer then turned that German machine *gun* against the other enemy nests and silenced them. Colyer received the medal of honor for his actions.

The 11th Engineers build a road around the town of Boureuilles (Meuse), destroyed by German shelling during the war, at the start of the Meuse-Argonne offensive, September 26, 1918.



Engineers "reading their shirts" or a "cootie hunt"



Men of the 4th Engineers, 4th Division, attempt to delouse their clothing. This photo is from the scrapbook of an officer in the 4th Engineers.

Men of the 101st Engineers work on a road in the Argonne Forest, October 1918.



31283

Meuse River

Soldiers from the 7th Engineers, 5th Division, won recognition for bridging the Meuse River.

Major William Hoge, Jr., earned a distinguished service cross for his heroism in reconnoitering a site for a ponton bridge across that well-defended waterway north of Brioules, France. While under enemy observation and artillery fire, Hoge selected the bridge site during the daylight hours of November 4, 1918, and directed construction of the bridge that night.

After German artillerists destroyed three ponton boats supporting the bridge, Sergeant Eugene Walker; Corporal Robert Crawford; and Privates Noah Gump, John Hoggle, and Stanley Murnane jumped into the icy river and held up the deck of the bridge until replacement pontoons were launched and installed. These enlisted men also received the distinguished service cross.

This bridge was one of 38 constructed by U.S. Army engineers during the critical Meuse-Argonne offensive, which ended with Germany's surrender.



Engineer troops build a ponton bridge in France

A bridge built by U.S. Army engineers at Stenay, France. This town on the Meuse River was taken by the Americans on the morning of November 11, 1918.



Mission Accomplished

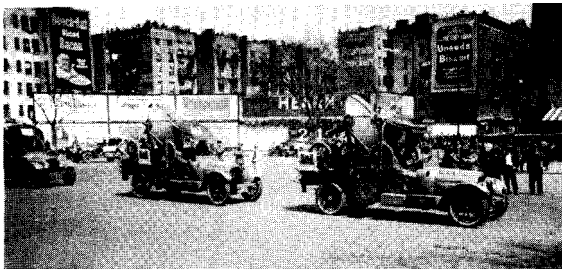
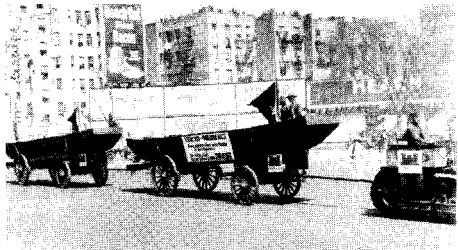
During World War I the U.S. Army Corps of Engineers redirected its efforts from improving rivers and harbors in the United States to providing structures and services needed to transport, supply, and assist over a million American combat troops on the battlefield in France. Engineer officers quickly developed a diverse group of troop units that provided a broad range of support services to the American Expeditionary Forces.

The engineers combined courage under fire with critically needed technical skills. Their contribution was essential to the success of the U.S. Army in World War I.



Recruiting poster.

Engineer ponton boats participate in the New York City victory parade, May 3, 1919.



Mobile engineer searchlight equipment in the New York City victory parade.

Suggestions for Further Reading

- Boughton, Van Tuyl. *History of the Eleventh Engineers, United States Army, February 3, 1917, to May 8, 1919*. New York, J. J. Little and Ives Company, 1926.
- Columbia to the Rhine, Being a Brief History of the Fourth Engineers, and Their Trip from the Columbia Riven in the State of Washington, U.S.A., to the Rhine River in Germany*. Wald, Germany, Westdeutsche Grossdruckerei G.M.B.H., 1919.
- Graves, Ernest. *Construction in War: Lessons Taught by the World War, 1917-1919*. Occasional Paper No. 64, The Engineer School, U.S. Army. Washington, Government Printing Office, 1921.
- Parsons, William B. *The American Engineers in France* New York, Appleton, 1920.
- U.S. Army. American Expeditionary Forces, 1917-1920. Engineer Department. *Historical Report of the Chief Engineer, Including all Operations of the Engineer Department, American Expeditionary Forces, 1917-1919*. Washington, Government Printing Office, 1919.
- U.S. Army. First Army. Engineer Section. *Report of the Chief Engineer, First Army, American Expeditionary Forces, on the Engineer Operations in the St. Mihiel and Meuse-Argonne Offensives, 1918*. Occasional Papers No. 69, The Engineer School, U.S. Army. Washington, Government Printing Office, 1929.

About the Author

Charles Hendricks obtained a Ph.D. in history from Cornell University in 1976. He has been a historian with the U.S. Army Corps of Engineers since 1981.

Marilyn Hunter, editor, supervised production of this publication.

All photographs were drawn from the National Archives and the collections of the Office of History, Headquarters, U.S. Army Corps of Engineers

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