ON THE WIRE

NEWSLETTER OF THE GREAT WAR ASSOCIATION

Spring 2010

Channeling

ONE THING we'd like everyone to try to do is stay engaged with the flow of communications. Over the years this has gone overwhelmingly electronic. No surprise there, the Internet has changed how we do things.

The official communication channel for the GWA is the Great War Association Yahoo group:

http://groups.yahoo.com/group/Great-War-Assoc/

All members should check and/or participate there. Unfortunately, a minority of GWA members do this.

The official communication channel for GWA commanders is the GWA Commanders Group:

http://groups.yahoo.com/group/GWA_Commanders/

Every unit commander should sign up for this. If the unit commander is not a computer guy, we can allow him to designate a POC to act as a go between. But right now many units are not represented there and critical information often goes out that way, as the commanders are the prime conduit from the G-8 to the members.

Of course, we have the official GWA website (http://great-war-assoc.org/). This is where current information on the GWA, G-8, Bylaws, Rules and unit contacts for recruiting are displayed. Hopefully everyone checks that now and again, commanders in particular.

We also have several related websites that are useful in fostering GW & GWA discussions. While not official GWA websites, they are run by GWA members for GWA members, and others. One of our GWA members set up a web site (http://www.great-war.org/) that allows GWA members to upload their own content, pictures, unit info, etc. Unlike our official site, where everything goes through the GWA webmaster, here (within reason) you can have your own say in what goes there. This is a place for members to shape how we are seen on the net.

There is also a message board that many GWA folk use (http://thetrenchline.com/). Run by a GWA member, it will often have the most useful interactive discussion on GW reenacting, both for new folk and old hands.

So how many of these do you use? Or are even aware of? Take a look, and use them; it only helps the organization as a whole.

Jim Kidd
President, GWA

Spring Combat Event Schedule
April 16-18, 2010

Friday, April 16

1:00–5:30pm	Registration shed open
6:00pm	Modern vehicles must be moved from all areas beyond the registration shed gate (including the battlefield, roads, rear areas, camps) before 6:00pm and parked in the parking lots. The registration shed gate will be locked until 6am Sunday.
6:30pm	Safety briefing at the Memorial
7:30pm	Stand To. Combat begins.
11:00pm	Combat ceases.
11:00 pm to ?	Living history as unit appropriate. No combat.

Saturday, April 17

9:00am	Safety briefing at the Memorial (mandatory attendance)
9:00–9:50am	Registration shed open
10:15am	Stand To. Combat begins.
11:00pm	Combat ends.

Sunday, April 18

6:00am	Gate at registration shed opened. Modern vehicles may access roads to battlefield.
7:00–8:30am	Battlefield cleanup
8:00–9:00am	Executive Committee meeting

Site Safety

NEWVILLE, INDIANAPOLIS, LE MANS, Rte 81 and the PA Turnpike. What do they have in common? Absolutely nothing and yet we have members of the GWA who drive on our site roads like they do.

The speed limit on our site as soon as you enter the gate from Middle road is 15 mph…….not 25, 30 or 40….but 15 mph!

We have at least two blind corners when you first drive in and cars going both ways. We have a lot of folks who are walking on our site roads at all times of the day and evening from Tuesday through Sunday afternoon at our events.

We all know the person driving is going to be really, really sorry but if one our members is seriously injured or a period or modern vehicle damaged……do you think anyone is going to care how sorry you are when you still made the deliberate decision to drive too fast on our roads? The ramifications from a serious accident on our site would be devastating to the GWA, the site itself and not to mention, who ever was injured.

When you enter the site, your mind should immediately switch from the modern world to WWI...and it's 1917. Your modes of transportation are now tin Lizzies, horse and wagon and by foot … . Your driving needs to match this time set … slow down, protect all of us and our toys and enjoy the site and all it has to offer before your actions cause a regrettable but avoidable situation.

Bottomline? We still have folks who drive too fast on the site at events and work day days.

Scampi
CP Rep

A Winter Gathering of GWA Members

ON JANUARY 30TH of this year, several members of the GWA gathered at the Smithsonian Museum of American History for the BEF Company Winter Conference. This first time event was intended as a roundtable to discuss the future plans and goals of the BEF (British Expeditionary Force) units within the GWA. The meeting was well attended, with members from the Guards Division, the Buffs, the Border Regiment, the Royal Engineers, the Salvation Army, and even IR 92. It was also attended by some members of the G8 including Allied Representative, Central Powers Representative, and newly appointed Vice President.

The morning began with a private tour of the Museum of American History before it opened to the public, courtesy of Brett McNish, a Smithsonian employee and member of the GWA (Border Regiment). Following the tour, those in attendance gathered in a conference room to discuss our organization. After a general introduction of those in attendance, Jeff Holder and Kevin Brown of the Royal Engineers and Allied Trench Committee, discussed the Allied goals for trench and site development, Tom "Scampi" Galleher discussed the goals and organization of the Central Powers, Stephanie Lloyd presented the role and services provided to the GWA membership by the Salvation Army. Shawn Roberts of the Border Regiment and Neil Hobbins of the Guards Division presented their plans to improve communication among the BEF NCOs and units.

Overall, the gathering was a great success. It provided an opportunity for GWA members to meet face to face and discuss some of their hopes and goals for the GWA, and a chance to meet new people. Everyone left energized for the April event, and based on its success, we hope to organize another conference next year. ■

ON THE WIRE

Newsletter of the Great War Association

Published by the GWA Executive Committee

Mark Graef, *Editor*

Articles are welcome and encouraged. Electronic files should be sent as e-mail attachments to: graefics@phonom.net

Great War Association 2010 Budget

Summary of Projected 2010 Revenues and Expenses

Budgeted Revenues	$28,675	100.0%
Budgeted Expenses		
Administrative	-$2,800	-9.8%
Communication	-$510	-1.8%
Site Purchase	-$12,400	-43.2%
Event Expenses	-$10,983	-38.3%
Site Development	-$9,250	-32.3%
Projected Surplus (Deficit)	-$7,268	-25.3%

Beginning of Year Cash Balance (All Sources)	$14,134
Projected Surplus (Deficit)	-$7,268
Projected Ending Cash Balance	$6,866

Divided as Follows:

Emergency Fund (Kept in Checking Account)	$3,000
Available Balance	$3,866
Projected Ending Cash Balance	$6,866

Notes:

1. I have projected the number of participants (and dues and event fees) relatively conservatively.
2. To state #1 differently: Every 25 members who attend both events generates $1,875 of annual revenues. ($75 per person per year.)
3. Site Development expenditures are quite high, and they include a significant amount of work on the north section of the CP lines. This follows significant spending on the south section of the CP lines in 2009. Much of this has been badly needed for some time; and it is hoped that these improvements will make "the game" more enjoyable for both sides for years to come.
4. As Treasurer, I generally would not support such a large budget deficit. However, I do support it for several reasons: First, I'm projecting revenues conservatively. We'll likely have more revenues than projected. Second, the need to fix the CP side of the line has been present for some time. Third, in February 2011 (less than one year away) the GWA's mortgage will be PAID IN FULL. That means $9,500 of annual costs will disappear.
5. The GWA is not planning on purchasing any sand bags or barbed wire in 2010; as both sides have significant stores of these trench supplies. However, we have budgeted in significant expenditures for pyro and for smoke.

Approved by the G-8 in March 2010.
Randal S. Gaulke, Treasurer

Projected Revenues	Spring 2010		Fall 2010			
Membership Dues @ $25/Person	(275@$25)	$6,875	(125@$25)	$3,125		
Event fees @ $25/Person	(250@$25)	$6,250	(275@$25)	$6,875		
Late fees ($15 at the gate)	(70@$15)	$1,050	(70@$15)	$1,050		
Site Donations		$200		$200		
Subtotals		$14,375		$11,250	$25,625	89.4%
House Rental (Assume 10 per event @ $15 each)					$300	
House Expenses (SWAG)					-$250	
House, Net (Self-sustaining)					$50	0.2%
Unit Sponsored Events / Film Revenues / Etc.					$3,000	10.5%
Total Revenues					**$28,675**	**100.0%**

Budgeted Administrative Expenses				
Misc./Legal Expenses			$300	1.0%
Insurance (Liability, Accident, D&O)			$2,500	8.7%
Total Administrative Expenses			**$2,800**	**9.8%**

Budgeted Communication Expenses	Spring	Fall		
Website (12 months @ $30.00)			$360	1.3%
Newsletter Production (Print about 75. Send about 20 hardcopies.)	$75	$75	$150	0.5%
Total Communication Expenses	**$75**	**$75**	**$510**	**1.8%**

Site Purchase				
Annual Mortgage (paid monthly)			$9,500	33.1%
Taxes (Real Estate and School District)			$2,900	10.1%
Total Site Purchase Expenses			**$12,400**	**43.2%**

Budgeted Event Expenses	Spring	Fall		
Ambulance ($200 + $30/hr for staffing for 18 hours)	$740	$740	$1,480	5.2%
Period Transportation — Not paid by GWA	$0	$0	$0	0.0%
Toilets — 2 on site permanently @ $74.20/month			$1,781	6.2%
Toilets — 5 extra @ $75 each	$375	$375	$750	2.6%
Toilets — Extra cleaning, 7 @ $25 each	$175	$175	$350	1.2%
Dumpster on site permanently @ $72.00/month			$864	3.0%
Dumpster — 4 p/u @ $175	$350	$350	$700	2.4%
Site clean-up (Only if necessary)	$0	$0	$0	0.0%
Printing of Passes/Membership Cards/Etc.	$50	$50	$100	0.3%
Trench Supplies				
Flares (Red & White: 432 (3 gross) @ $3.10 ea + $100 ship)	$1,439	$1,439	$2,878	10.0%
Sandbags — Not ordering in '10. Have a bunch in reserve.	$0	$0	$0	0.0%
Smoke (3 dozen per event @ $80 per dozen)	$240	$240	$480	1.7%
Barbed Wire (Lots on site. Bought 10 rolls in '08.)	$0	$0	$0	1.7%
Pigtails (Have not ordered in quite some time.)	$0	$0	$0	0.0%
Pyro for events	$800	$800	$1,600	0.0%
Total Event & Site Expenses	**$4,169**	**$4,169**	**$10,983**	**38.3%**

Budgeted Site Development Expenses			
Defoliation and Mowing		$1,500	5.2%
Road Maintenance		$800	2.8%
Trench Masters — $300 per side (Unused amounts do NOT carry over.)		$600	2.1%
Combat Commanders — $300 per side (Unused amounts do NOT carry over.)		$600	2.1%
German Trench Fix Project — North		$4,000	13.9%
Other Projects — as of now undesignated		$1,750	6.1%
Total Site Development		**$9,250**	**32.3%**

Quartermaster Activities in World War I

Extracted From:

America's Munitions 1917-1918
Report of Benedict Crowell, The Assistant Secretary of War, Director of Munitions
Government Printing Office, Washington — 1919

Transcribed & submitted for GWA use by Eileen Campos; second of a multipart installment on the AEF Quartermaster Report

CHAPTER II

CLOTHING AND EQUIPAGE.

The Army raised against Germany had to have stout shoes for its feet. It required warm uniforms and overcoats and good socks and underwear. It had to have heavy blankets for its beds. The men needed raincoats and rubber boots for wet and muddy weather. Tentage was required, pup tents for the front and large tents and flies at the camps. Belts and bandoleers of cotton webbing added to the soldier's efficiency as a rifleman or machine gunner.

To procure these and other supplies for an American Army that eventually reached the strength of 3,750,000 men required the best brains in the textile, rubber fabric, and leather goods industries. From the counting rooms, from the laboratories, and from the American factories the needs of the Government called to Washington several hundred men, experts in a thousand lines, and put them into American officers' uniforms. Eventually the various agencies of the War Department purchasing these supplies were centralized in a single division known as the Clothing and Equipage Division of the Office of the Director of Purchase and Storage, which in turn was part of the Division of Purchase, Storage, and Traffic.

The total cost of this necessary equipment of textiles and leather and rubber goods was approximately $2,100,000,000. Of the enormous sum of money appropriated for the so-called quartermaster activities, a full one-quarter went for clothing and equipage of this sort.

The group who handled this enormous manufacturing effort not only conducted one of the biggest undertakings of the war but did it in a way to command the admiration of those who knew the story of what was going on. The division turned scientific attention, and that means the attention of real scientists, to the proper construction of all sorts of articles. It designed new styles of soldiers' clothing adapted in every curve and line to the service in France. It standardized dyes and made studies of protective coloring. It produced highly specialized shoes. It saved millions of dollars by the scientific study of specifications of various articles. It educated manufacturers in the production of articles strange to their experience, and in some cases developed entirely new industries. At one time it constituted the entire wool trade of the United States, since it had optioned every pound of wool in sight and had its agents out gathering up the excess wool of the earth. It was a shipmaster, an employer of men, a reformer in labor conditions, and an inventor and originator of new products.

The organization was important not only for the size of its business but because it dealt more intimately with the individual soldier than perhaps any other production branch of the Government, with the possible exception of the branch which fed him. It might seem to be a fairly easy proposition to buy clothing for a soldier, his tent, and the bed clothing that kept him warm in active service or when he was a patient in a military hospital. But it was not a simple task. None of these articles was standard for civilian use, either in material, color, or pattern. Everything had to be made to order. The ordinary factory could not begin work on contracts for these supplies on a minute's notice, but usually only after special and sometimes costly preparation.

And as the Army grew in size it had to have large quantities of special clothing. Cooks needed cotton aprons, and blacksmiths leather ones. Linemen had to have special gloves; hospital orderlies and waiters at messes required white duck suits; motorcyclists needed hoods; laborers, overalls; and firemen, helmets. There were special garments for aviators. We began capturing prisoners and they had to have special uniforms. Convalescents at hospitals needed special suits. The women nurses of the Army were supplied with uniforms, something entirely outside of previous Army experience.

The Government was something more than the designer and manufacturer of these goods, drawing the specifications, placing the orders, and then teaching the processes of manufacture in the thousands of factories which had virtually become Government plants. The clothing and equipage organization had to go further back and become the actual procurer of the raw materials; and this phase of its work eventually became one of the largest and most spectacular and romantic elements of the whole undertaking. In addition to procuring the raw cotton and the raw wool and the hides, the Government had to go into the manufacture of cloth and the tanning of leather to supply these commodities to the manufacturers of the finished articles. The Government went into a raw materials market which was already glutted with orders from the allied governments and from domestic consumption. It went into this market at first without money, since funds on the scale demanded were not available between March 4, 1917, and June 15 of the same year; and it had to buy on credit and secure the commodities in the face of cash bidding for them.

Nevertheless the whole enormous undertaking was successfully carried through. Except in rare instances, the American soldier never lacked for necessary supplies of this character. The organization which handled the work originally consisted of 6 officers and 25 clerks. When the armistice was signed this great purchasing and manufacturing agency had an enrollment of 1,693 people.

Wool was the most important of the raw materials to be procured, since wool entered into the composition of more items than any other material. Uniforms, overcoats, underwear, socks, breeches, shirts, and many other articles had to be made entirely or partially of wool. The purchases of woolen breeches alone during the war period amounted to 13,176,000 pairs. On September 10, 1918, the wool experts of the army estimated the Nation's total needs for wool up to June 30, 1919. The War Department, it was found, during this time would require 246,000,000 pounds of clean wool; the allotment to civilian needs was but 15,000,000 pounds. In other words, the war demands were to absorb practically the entire supply of wool; civilians were to be forced to do without it almost entirely.

Soon after the declaration of war the Quartermaster Corps estimated that it would require about 100,000,000 pounds of scoured wool to meet the initial demands of the Army in 1917. A meeting was called of the principal wool dealers of the United States, most of them from Boston, and a quick inventory was taken of the available wool supplies, not only in the United States, but on order from foreign countries. It was found that there was in sight 78,000,000 pounds of greasy wool, which, after being scoured, would produce 35,000,000 pounds of wool of the quality needed. This was barely one-third of the Army's demand alone. It should be noted, however, that this inventory was taken just before the annual American clip, which would be finished by the end of July.

To insure that the Government would secure every pound of wool in sight, options were promptly obtained on all wool in American warehouses or on the sea, and speculation in the prices of the domestic clip for 1917 was thus headed off by the entry of the Government itself in the raw wool business. The prices were fixed for the 1917 clip as of July 31. A year later the clothing and equipage division had become the entire wool trade of the United States. There was no wool market again and no public sale of wool until after the armistice was signed.

To handle this enormous undertaking the division appointed a wool administrator to buy wool, a wool purchasing quartermaster to pay for it, and a wool distributor to sell it to the Government contractors. The Government's wool headquarters was in Boston, with branches at Philadelphia, Chicago, St. Louis, San Francisco, and Seattle. This organization arranged to procure the whole 1917 clip, if needed, took over all wool destined for the United States under import licenses, and sent its agents to foreign markets.

The largest of the foreign markets practically available from the standpoint of distance was the Argentine in South America. Australia and New Zealand were, of course, enormous markets, but the dearth of shipping made it impossible to spare many bottoms for the long voyage into the Antipodes. As a matter of fact, when the fighting ceased, the whole world was suffering for wool, except Australia and New Zealand. America was short of wool, France had practically none, there was a little in England, but Australia and New Zealand had the staggering surplus of 1,000,000,000 pounds. This was due to the fact that there had been no shipping available to bring this wool to America or Europe.

The Government's wool administrator secured such Australian and New Zealand wool as he could; but he had to rely principally on sailing vessels, which could not, under the most favorable conditions, go to Australia and back again in less than seven months, while nine or ten months were more often required. A quick sailing voyage to Argentina and back required five months.

Nevertheless, and this was particularly true in the early fall of 1918, when preparations were being made for the equipment of the Army in 1919, every effort was made to secure foreign wool. A South American wool-buying commission was formed and sent to Buenos Aires, arriving there October 30, 1918. By that time, however, the end of the war was in sight, and the commission never opened up its Argentine headquarters.

The Government conducted its raw-wool business on the lines of a great department store. Headquarters were established in Boston, where the wool distributors kept samples of almost every kind of wool produced on earth, these samples representing stocks on hand in the various Government warehouses in Boston and elsewhere. Charles J. Nichols, a member of a large Boston wool firm, was the wool administrator and E. W. Brigham was wool distributor. Prices were fixed, and the manufacturers bought from the samples. Carpet wool was sold at an office in Philadelphia. The wool administrator did a business that averaged $2,500,000 per day during his incumbency, his total purchases amounting to about 722,000,000 pounds of wool.

At first the supply of the better grades of wool seemed to be adequate to meet the Army's demands. Later, however, changes were made in the specifications for various cloths, uniform cloth being increased from 16 to 20 ounces in weight, overcoating from 30 to 32 ounces, shirting flannel from 8 1/2 to 9 1/2 ounces, and blankets from 3 to 4 pounds. These increases made it necessary for the Army to use grades of wool previously made only into coarse materials like carpet. The lower grades of wool were blended with the finer grades to provide the necessary weight and warmth, even at the expense of fineness of texture and appearance. This action explains why at the end of the period of hostilities some of the American soldiers' uniforms looked rough and uneven in color. But the necessary cloth was provided, and it was warm.

The Government saved every ounce of wool that it possibly could save. More economical patterns and layouts for the cutting of uniforms were designed in Washington and furnished to the manufacturers. The American soldier's uniform did not meet the approval of officers of the American Expeditionary Forces as to style, after the latter had become used to seeing the smartly dressed troops of Europe. Accordingly, after Gen. Pershing had recommended a better-appearing uniform, a new one was designed, incidentally with an eye to saving cloth. The coat of the uniform-formerly called the blouse, a designation which is now obsolete was cut with new lines, making it slimmer without sacrifice of warmth or comfort. The patch pockets of the original blouse were usually unsightly bulges when the soldiers filled them

with articles. On the new coat the patch pocket was retained only in appearance, the pocket actually being on the inside.

It is not known to most Americans that the breeches, which have been typical of the American service uniform for many years, were abandoned late in the war in favor of long trousers. This change was also due to studies made by the army clothing experts. The soldiers themselves were not enamored of breeches, since they had to be either laced or buttoned below the knee, a process which took time always, but seemed to take more when a man was in a hurry. The laces sometimes chafed the leg under the leggins. Then, too, it was often impossible to remove the breeches from soldiers wounded in their legs without cutting the cloth. Long trousers did away with all these objections and had the added virtue of being warmer than the breeches.

The overcoat, too, was redesigned, following Gen. Pershing's recommendations, the stock overcoat being too long to be worn in the trenches. A knee length garment was provided which was much smarter than the older coat.

The redesigning of the overcoat and the uniform (although the new uniform never appeared in the field) accomplished numerous economies. Merely by the elimination of lacings, eyelets, tape, and stays, the new trousers cost 95.25 cents less than a pair of army breeches. By July 1, 1919, this change in design would have saved the Government $16,988,440 in orders for trousers already placed or in sight. The change in overcoat styles saved 62 cents per garment, or a total saving to--July 1, 1919, estimated at $897,140. The service coat, made by redesigning the blouse, saved the Government $1.598 on each garment, or an estimated saving of $4,977,770 to July 1,1919.

This was not only financial saving, but what was more important, it was saving the consumption of the raw material, wool. The Government could always raise more money; but if the wool supply were exhausted, all the money on earth could not buy any more of it.

A more economical cutting pattern saved twenty-three one hundredths of a yard of cloth in the manufacture of every pair of trousers. This resulted in the total saving of 2,300,000 yards of woolen cloth. Part of the facings of the service coats and overcoats were eliminated without sacrificing warmth or serviceability, and cheaper cotton linings were substituted. Another important cloth economy came when the Army designers cut off the right-hand pocket of the O. D. shirt, on the ground that this pocket was seldom used. The designers also substituted an oblong elbow patch on the Army shirt for the circular patch formerly specified. This substitution was not economy in cloth, but the original circular patch, put on the sleeve to reinforce it at the point of greatest wear, actually resulted in reducing or shortening the life of the garment by tearing loose at the stitches, a fault which the oblong patch overcame.

In the earlier contracts the garment makers were stimulated to save wool by being allowed a percentage of the cost of yardage saved. Each contractor, too, was permitted to sell his own clippings. But as the Government obtained a more scientific grasp of the clothing problem and produced pattern layouts which utilized the maximum percentages of the cloth, the issues of cloth to the garment makers were calculated more closely. Thereafter the contractors received no reimbursement for cloth savings, and the Government itself took all the clippings.

These clippings were shipped to a base sorting plant at New York, where they were baled and shipped out to mills to be used as reworked wool in blankets and other articles. The clippings were sorted at a cost of 1.7 cents per pound and sold at an average price of 23 cents per pound, the total sales bringing in to the Government $5,500,000.

The history of the Government's wool enterprise during the war illustrates how hard it was to check the momentum of the whole production undertaking against Germany once it had attained full speed. A week before the armistice was signed the wool stocks looked small, and shortages plainly existed to cause anxiety for the executives in Washington. That was because we were thinking in terms of consumption made familiar by the terrific destruction of war. A week later the same stocks looked overwhelming in size, and the shortages had become enormous surpluses. It had been a constant worry to procure a sufficient quantity of blankets, yet as soon as the armistice was signed, we had on hand a 47-months' supply of blankets for 1,000,000 men in the United States and 2,400,000 men overseas. As soon as the German plenipotentiaries affixed their signatures to the armistice agreement at Spa an apparently small stock of marching shoes turned into a 4-year supply for 3,400,000 soldiers at home and abroad. On November 1, 1918, the Clothing and Equipage Division had on hand a reserve stock of goods valued at $811,000,000.

The entire woolen industry, from the handlers of raw wool to the textile mills, worked splendidly with the Government. At all times there was plenty of available machinery to make all the cloth for which wool could be furnished. Mills which found no Government use for their regular business output went heartily to work to make something else that the Government would need. The Government's uses for carpet, for instance, were practically negligible; so that the carpet mills, many of them, swung their entire production to Army blankets and Army duck.

Blankets, in fact, were one of the largest items. The total purchases brought to the Government warehouses about 22,000,000 blankets, at a total cost of over $145,000,000. Melton cloth for overcoats and uniforms consumed an enormous quantity of wool. The total purchases of melton amounted to more than 100,000,000 yards, or enough to stretch twice around the world at the Equator, with a strip left over long enough to reach from New York across Germany and Russia and into Siberia. The total quantity of raw wool bought by the Government up to December 14, 1918, cost over $504,000,000.

After the Government had secured the wool and various types of cloth, there still remained the task of making this cloth into uniforms. The usual method was for the Government to furnish the materials and to pay the contractor his cost of manufacturing.

All Army clothing was made up according to the so-called tariff sizes. The average coat for a man is a 38 or 40, and

experience shows how many men in a given number will need this average. But there were always exceptions. One camp sent in a special order for 46 overcoats for "fats."

Through a scientific study of the problem, notable reforms in the matter of fitting soldiers were brought about. When the men were coming in greatest numbers from civilian life to the training camps they were often put to great inconvenience in securing proper clothing. Each man would ask for such sizes as he thought were correct, but it often happened that the garments supplied to him did not fit him, and he thereafter spent some hours or even days swapping garments with other recruits until he eventually acquired an outfit somewhere near his size. Then, too, there was confusion in the way the articles were supplied to the men, who sometimes had to stand in line all day long, awaiting their turn at the issue windows.

The matter of fitting was satisfactorily solved by adopting the so-called foolproof size labels. The labels originally used were merely paper tags pinned to the garments, and in the handling of garments by men unfamiliar with the fitting of ready-made clothing mistakes often resulted. As in the case of civilian clothing, all Army clothing was divided into four classes, known as "longs," "shorts," "stouts," and "regulars." A garment of any size would come in these four classes. The labels were marked with diagonal, colored stripes to indicate the general characteristics of the garment to which it was attached. Thus green meant a "short," red indicated a "long," and yellow showed the garment to be a "stout." The soldier was pretty sure to remember the color of the stripe attached to the garment that fitted him. If he were a green striper, he would refuse to accept anything that did not bear a green stripe on its ticket.

Before hostilities ceased a system providing a more scientific issue of clothing to recruits had been introduced. Under this system the recruit would enter the supply building at one end and there, in a special room, strip himself of his civilian clothing. He would thereupon enter the mill as naked as the Lord made him. He would stop first at the underwear counter, where he would procure garments that fitted him, would don them, and then pass on to the hosiery counter. Thus he would progress down the line, eventually emerging from the other end of the building a fully dressed American soldier, the process reminding one of the progress of an automobile through the Ford factory.

It required the services of some 4,000 inspectors to supervise the garment-making in thousands of shops scattered throughout the country. This inspection also looked at the character of the shops taking contracts, and the Government was sometimes hard put to it to prevent child labor and sweat shop production in the work.

At one time there came a rush order from France to supply several hundred thousand mackinaws. An officer who was familiar with mackinaws was sent out from Washington to buy them from goods in stock. He accomplished his mission in 10 days, literally baring the shelves of the United States of these garments, his purchases including the extensive quantities of mackinaws held by mail-order houses in Chicago.

It was always a problem in clothing the Army to find olive-drab dyes that were fast in color. The first dyes used were apt to fade quickly. A certain dye was of the proper color, yet it was found on test to have the peculiar characteristic of being visible at a distance. As the new American synthetic dye industry expanded and processes were perfected, the officers of the Clothing and Equipage Division were able to cooperate with the American dye makers to produce satisfactory dyes.

Yet while the olive-drab dye used in dyeing coats and trousers seemed to withstand the sun and rain, that used in coloring the leggins proved to be fugitive to a remarkable degree. It seemed to be impossible to produce a dye that would hold its shade in leggins.

The experts working on the dye problem had expended a good deal of valuable energy in worry and had grown a few gray hairs in their heads over the failure of leggin dyes when they discovered the true cause of the fading. The men were deliberately bleaching out their leggins, usually by using salt solutions on them, since anything but a faded leggin indicated that the soldier who wore it was a rookie and a greenhorn.

The materials which went into the manufacture of clothing came from various sections of the country, since the several garment industries had grown up around centers. For instance, the melton cloth came generally from the Boston district. Linings were supplied from Atlanta, buttons from Philadelphia, and duck from Chicago. This geographic distribution of supplies simplified the Government's problem of supplying materials to the various contractors. It was possible to supply materials on short notice to any garment making district.

At one time Chicago wired that unless 500,000 yards of flannel shirting were supplied immediately hundreds of shirt factories in Chicago and the Chicago district would have to close down. Accordingly, a special freight train was loaded with shirting in the East and started for Chicago on a special movement in charge of a "live tracer"-that is, an officer who saw that the train was put through to its destination. The train arrived in Chicago on the second day after the order was received, so rapidly had the goods been procured and loaded.

In addition to the regular uniforms for the men, almost half a million articles of clothing for officers were also bought by the Government.

The Quartermaster Department went into an entirely new field when it bought uniforms for the women nurses of the Army. There was a Norfolk suit which cost about $30 and a cotton uniform that cost about $3, an overcoat costing nearly $28, and then there were waists made from navy blue silk and from white cotton, and hats.

Before leaving the subject of clothing, it is interesting to refer again to the clothing furnished for interned prisoners. This was not manufactured for the purpose. Uniforms discarded by our own men were reclaimed and dyed a special shade of green. Over 50,000 of these garments were prepared at an average cost of less than 30 cents per garment. It had been the original intention to make a special prisoner's uniform striped in resemblance to the prison suits worn in American penitentiaries.

Another interesting development in the manufacture of Army clothing was the production of a special uniform for expeditionary troops sent to Russia. The uniforms were so warm that they could well serve as the equipment for an Arctic exploration party. The determination to send an expedition to Russia was made suddenly by the Government, and the decision brought with it the problem of producing in a jiffy an equipment of garments not only expensive in themselves, but of a character unknown to the American garment trade. An agent for the division in New York at once bought on the New York market large quantities of muskrat, wolf, and marmot fur. Other agents were sent into our own Northwest and to Canada to pick up such suitable garments as these markets afforded. The Siberian equipment as specified by the commanders of the expedition called for fur caps, fur mittens and fur overcoats, mucklucks, moccasins, felt shoes, fur parkas, and underwear for 15,000 men or more. The order for the equipment came in the latter part of August, 1918, so that only the fastest kind of work would produce the garments in time to catch the last steamer that could get into the northern Russian and Siberian ports before the ice closed navigation for the season. The result was that whenever the articles specified could not be procured on time, suitable substitutes were provided.

The specifications called for 80 per cent wool underwear. Underwear with that percentage of wool could not be provided, but underwear of equal weight was substituted. Where fur-lined garments were unobtainable, fur-trimmed ones were procured. The specifications called for Buffalo coats. The division sent a man to the north woods country of Minnesota and Wisconsin, and there in the supply cities he bought sheep-lined coats with moleskin or duck shells as a substitute. These coats were the sort used by woodmen and Alaskan miners and explorers. There was no time to procure mucklucks, moccasins, and felt shoes, so an agent of the division was sent into Canada to buy shoe pacs (or lumbermen's boots) and lumbermen's knee length socks. The total cost of the whole outfit was more than $100 per man.

It was impossible to find any substitute for the Alaskan parka. A parka is a sort of overshirt, wind proof and waterproof and hooded, to be worn over the overcoat and cap of the uniform. Consequently it was necessary to produce the parkas in this country, although our garment makers were entirely unfamiliar with such manufacture. The work was undertaken by the International Duplex Coat Co., at 114 Fifth Avenue, New York. It was necessary from the start in turning out this order for the employees of this plant to work over-time. In order to speed the production the principal member of this firm himself took his place at the bench and worked almost day and night in cutting out garments.

The day approached closer and closer when the shipment would have to start across the country if it were to catch the last boat from San Francisco. On the home stretch of the race the entire working force of the plant went 36 hours, stopping only for meals. The last stitch was taken at 1.30 o'clock in the morning. The garments were then piled upon auto trucks to be rushed to the baling plant in Brooklyn. One of the loaded trucks developed engine trouble and stopped in the middle of a bridge across the East River. The officer in charge thereupon commandeered every automobile that came along, piled them all full of parkas and sent them to the baling plant. The entire shipment was aboard the train less than one hour before its starting.

It was not only necessary for the Government to furnish cloth for the uniforms, shirts, and other articles, but it had to supply the fittings and findings as well, such needs as linings, tape, buttons, and hooks and eyes. In the calendar year 1918 the purchases amounted to over 46,000,000 yards of cotton lining and 2,500,000 yards of felt lining, worth over $18,000,000. The Government spent over $100,000 for hooks and eyes, $150,000 for tape, $1,250,000 for thread, and practically $3,000,000 for buttons.

When it was found that the standard specifications for Army uniform buttons favored a certain class of manufacturers and excluded many others, new specifications were drawn so as to make it possible for every button manufacturer in the country to compete for contracts. An exclusive study was made of new materials for buttons. They had been made of brass or bronze, but due to other war necessities for metals an effort was made to provide a substitute. It was found, too, that metal buttons sometimes resulted in infection of wounds received on the battlefield.

Substitution of vegetable ivory for metal in buttons was attempted. The Bureau of Standards in Washington tested the taqua, or ivory, nuts from which buttons are made and found them suitable. A vegetable ivory button with a shank was developed, although no such ivory button had been known before, and the Government's insignia was stamped on this button. Gen. Pershing approved the use of ivory buttons, and thereafter many manufacturers produced millions of gross of them. Every manufacturer who took button contracts agreed to turn over the ivory nut waste to the Chemical Warfare Service to be used in making charcoal for the gas -absorbing canisters of the gas masks. Most of the buttons were produced by firms in Rochester and Philadelphia. Many concerns made them who had never made buttons before. Manufacturers of electric goods, hardware, billiard balls, celluloid, pearl buttons, and phonograph records turned their plants into ivory-button factories. Enormous quantities of buttons were required. For the Army shirts alone the Government needed 216,000,000 buttons in 1918.

Flags constituted another class of goods requiring wool. In all, the division produced 40,000 flags during the war period, most of these being made at the Government's own shop at Philadelphia. It is a grim fact that many of these flags were used to wrap around the bodies of soldiers who died at sea. Thirty million chevrons for non-commissioned officers were also turned out by the Government.

The production of overseas caps for the American Expeditionary Forces was likewise an extensive undertaking. When the requisition for overseas caps came from France, it was not possible to design one here because of lack of knowledge of what was required. Later a courier bearing a sample cap came to the United States from Gen. Pershing. As soon as this sample was received a meeting of cap makers was called in New York, and 100 manufacturers attended.

One and all agreed to turn over their factories to the exclusive production of overseas caps until the requirements were met. It took those cap makers only two weeks to turn out the first order. In all 4,972,000 caps were delivered.

Our experts on this side of the water were not satisfied with the overseas cap. It shrank after being wet, it quickly lost shape, it absorbed much water and did not dry out quickly, and it was unattractive in appearance. Also it did not shade the eyes, and the experience in France showed that the soldiers usually improvised peaks to their caps by sticking their girls' letters between their caps and their foreheads. Then, moreover, the standard cap was made of 20-ounce melton, which was a fabric hard to get. But there was plenty of rabbit fur available to make felt caps for an army of 6,000,000 or 7,000,000 men. Accordingly a new cap was designed, made of felt and doing away with the bad features of the melton cap; but this cap improvement came at the end of the war and was never used.

Wool was required not only for the outer clothing of the Army-for the uniforms, overcoats, and caps-but there was also a tremendous war demand for it for the manufacture of such knit goods as undershirts, drawers, stockings, gloves, and puttees. The matter of providing the Army with these necessary articles offered a problem of peculiar difficulty, since, in addition to the ever-threatening shortage of raw wool, there was an actual shortage of machinery in the knitting industry. When it was found that the regular mills could not turn out all the woolen knit goods the Army required, numerous mills which had been turning out specialties exclusively, such as women's underwear or men's union suits, were converted into factories to knit garments according to the Army specifications. Some idea of the extent of the Army's demand for this class of goods may be read in the fact that toward the close of hostilities every machine in the United States that could make hosiery at all was knitting socks for the Government.

At one time there was an acute shortage of needles. Germany had previously supplied America with knitting needles. When this source was cut off, we turned to Japan. The Japanese needles proved disappointing; they were not correctly tempered and frequent breakage caused great loss. At one time it was rumored that there were 10,000,000 knitting needles in Sweden, and the need here was so urgent that several buyers were sent to that country. Their effort was well worth while, for they actually secured a million needles to help relieve the situation here. Meanwhile, American needles were improved and American needle makers were pushed to the limit; but until the close of the war there was always an acute shortage of needles for the knitting industry.

It was soon discovered that there was not enough machinery in America to knit one tenth of the seamless woolen gloves that the soldiers required. Consequently it was necessary to adopt a substitute-a glove of knit fabric cut to pattern and sewed up with seams. In actual service this glove did not stand up to the hard usage required of it. Consequently there was designed an overglove of canton flannel with the palm cased in leather, this to be worn outside the seamed woolen glove. In the effort to produce gloves which would give longer wear the so-called ambidextrous glove was designed so cut that it could be worn comfortably upon either hand.

Puttees, the spirally wound leggins that had long been used by the British Army, were unknown articles to American manufacture when the American Expeditionary Forces adopted them as standard articles of equipment. A puttee of knitted wool was designed and 6,000,000 of them were ordered in the spring of 1918, these to be preliminary to future orders for 8,000,000. The work required the installation of much new machinery in the textile plants. On November 1, 1918, we had produced all the puttees required by the troops then in France and had a surplus of 1,500,000 of them.

In the production of knit goods, economies in the use of material were constantly effected. An original article of equipment for the overseas troops had been a knitted woolen toque, which was a sort of stocking-cap. The toques had cost the Government $1 apiece, and some 1,500,000 of them had been piled up in the quartermaster warehouses before the toque was abandoned as a piece of standard equipment. Later a requisition was received for 400,000 woolen mufflers to be used by drivers of automobiles and motor trucks. According to the specifications these would cost about $3 apiece. Then it was discovered here that the abandoned toques might be sewed together to make mufflers. With this stock in hand it cost the Government only 20 cents each for the mufflers instead of $3, a clear saving of over $1,000,000.

The Quartermaster Department was the Mecca of inventors during the war period, who came bringing real or fancied improvements in many lines of apparel and personal equipment. One brought in a trench shower bath, consisting of a hot-water bag and a hose. He was much chagrined when informed that if this apparatus were set up in the trench there would be no room for soldiers to pass it. In no respect did the inventors have more novel ideas than they had in the manufacture of underwear. One of them brought in a patented vacuum suit of underwear which acted on the principle of a fireless cooker or thermos bottle to exclude the cold from the wearer's body. However, he had failed to take into consideration the fact that not only must cold be kept out, but perspiration must be given a chance to escape. The vacuum underwear would never dry out, after a man had become sweaty in it. For that reason it was not adopted.

A woman of Iowa invented cootie proof underclothing by impregnating underwear with vermin-destroying chemicals. The State of Iowa was so interested in her invention that there was a public movement to clothe all Iowa troops in this underwear, should the Government fail to adopt it. The underwear was submitted to the experts of the Bureau of Entomology (the Government agency that deals with bugs), whose experts tested the invention. They found that the underwear was indeed death to the cootie. However, if the chemicals were applied in weak strength they soon evaporated and left the underwear harmless to the insect; if applied in great strength, the poisonous chemicals irritated the skin of the wearer.

During the first winter the men were in camp, the winter of 1917-18, there was no time to provide the troops with standard Army underwear. Consequently Government agents

went into the underwear market and bought outright whatever was in sight. As a result, the soldiers that first winter wore underwear of almost every description and grade of merit. This gave the Army's underwear experts a fine opportunity to study the qualities of underwear of various types as proved by actual use. These studies contained hints of use to the civilian. For instance, the warning is plainly given to wear no fleece-lined underwear. A study was made of the causes of colds, and it was discovered that soldiers wearing fleece lined underwear caught cold more easily than those wearing any other sort. The fleece of the lining absorbed perspiration and retained it, staying damp. Since many of the soldiers slept in their underclothing, they were thus encased in damp clothes 24 hours a day. Sick reports plainly showed the result of it.

When it comes to the production of cotton cloth for the Army's uses, the figures are so large as to appear almost fantastic. In all we procured over 800,000,000 square yards of cotton textiles. This was enough to carpet an area nearly four times as large as the District of Columbia. In a strip 3 feet wide there was enough of it to wrap 18 layers of cloth around the equator. Spread this strip out on some cosmic floor, and. you could place upon it side by side 55 globes as large as the earth.

In addition to the cotton khaki required for uniforms and other purposes, the principal other cotton items were duck, denim, webbing, gauze, venetian, sheets, pillowcases, and towels.

The purchases made by the Army were beyond anything that had been known in the textile industry. In March,1918, the supplies of cotton khaki on hand seemed to indicate a surplus of 21,000,000 yards beyond the needs of the immediate future. Then came the start of the German drive, and by the middle of April this great surplus of khaki cloth was not sufficient to the need. In other words, there was a shortage of khaki, since the Army needed at once 25,000,000 yards and thereafter would require a monthly supply of 10,000,000 yards. This was looking toward the great increase in the number of men soon to be called to the colors. It was planned to draft 300,000 in June alone, and subsequent drafts would be on a like scale.

In order to supply summer uniforms for these men it was necessary for Army officers to get every yard of khaki goods in the country. All stocks of goods in the hands of dealers and manufacturers were inventoried, and the positive order went out of Washington forbidding the use of khaki in articles for civilians. In spite of the Government's tremendous demand upon a limited supply, these stocks of khaki were acquired at a price 20 per cent lower than the prevailing market.

The requirements for cotton duck and cotton webbing also leaped upward as soon as the United States began to avalanche soldiers upon France. The demands were greater than could be supplied by the output of mills regularly producing these materials, and consequently the Clothing and Equipage Division called upon manufacturers of similar materials to adapt their plants to the production of duck and webbing. This they did, in many cases at considerable inconvenience and expense. Among the concerns which assisted in supplying these materials were manufacturers of carpets, automobile tire fabric, and even lace.

Owing to the scarcity and the high cost of leather a great deal of cotton webbing was substituted in the manufacture of such equipment as cartridge belts, suspenders, gun slings, and horse bridles. there was additional demand, and to meet it factories which had been making such things as asbestos brake linings, hose, lamp wicks, suspenders, garters, cotton belting, and other similar fabrics, became webbing mills. All these plants thus adapted to the emergency manufacture of webbing were dependent on purchased yarns, which they had to secure in the open market from yarn manufacturers.

In the South particularly, where most of this yarn was purchased, the securing of power was a serious question. Many of the mills depended upon electricity generated by water power. These power plants did not always have good railway connections and many of them had no steam power equipment even if fuel could have been furnished. In the late summer of 1918 the rivers of the South ran nearly dry, and in order to operate many of the southern mills it was necessary for the Government to allocate according to most pressing needs the available power among the mills working on contracts. Also, for a long time when transportation facilities were seriously overtaxed, it was hard to secure a steady flow of materials from the South to the northern mills.

With regard to labor, employees in the cotton and webbing mills had to be educated in the manufacture of the new types of work to which these plants had been shifted. In the South, more especially, there was a question of child labor and of hours of labor for women and minors; for the Government inserted clauses in the later contracts requiring certain standards for the benefit and protection of labor. In some instances contracts were returned because of the child-labor clause. In such cases compulsory orders were often issued, practically compelling the mills to produce the goods called for.

Considerable burlap used for packing as well as burlap bags, silk for flags, hat bands, and badges were also purchased in quantity.

The United States was never forced to turn to the use of paper in the manufacture of clothing, as the central powers were compelled to do; nevertheless preparation was made for the time when the cotton supply of the United States might become unequal to the demand. Garments made of paper cloth captured from the Germans were shipped to the United States and carefully studied by the Clothing and Equipage Division to learn the possibilities of paper fabrics should the need for them develop.

Over 100,000,000 yards of denim were bought. Denim was used particularly in making working clothes for the soldiers. At one time the factories were consuming denim at the rate of 13,000,000 yards a month. Brown denim which was required by regulations was a material hard to get, blue denim being the standard fabric for American overalls, and consequently heavy gray goods and drills were dyed olive-drab and put into use.

As to gauze, about 140,000,000 yards of it were purchased. Sheets and pillowcases were required in such quantities that at one time every mill in the country whose normal business was the production of sheeting was working for the

Government. There were over 120,000,000 yards of webbing purchased, and nearly 300,000,000 yards of the various kinds of duck.

The duck and webbing just mentioned went into the manufacture of a numerous class of articles, known as textile equipment, including such articles as belts, tool bags, tool kits, flasks, canteen covers, and the like. The procurement of the webbing for these articles was in itself a manufacturing achievement. Before the war there were only a half dozen plants in the United States which could make webbing of the grade demanded by the Army. When the armistice came there there were 150 such plants. At the beginning of the war an order for 5,000,000 yards of webbing fairly staggered the industry, but that industry was to witness the day when an order for 50,000,000 yards would be absorbed as a matter of course.

But even after the webbing was secured there were practically no factories in the United States that had machinery heavy enough to make the Army's textile equipment. This work for the standing Army had been done exclusively by the Rock Island Arsenal. In order to increase the manufacturing capacity of the country it was necessary to get the Singer Sewing Machine Co. to build special machines adapted to this heavy work; and we also had to send experts from the Rock Island Arsenal to teach all new contractors how to make the articles. Many of the factory workers were women.

In spite of all difficulties production was wonderfully increased. Along in January, 1918, about 100,000 pistol belts a month were being made; while at the time of the signing of the armistice 560,000 were being manufactured monthly. Of cartridge belts in the same period the production was increased from 85,000 to about 410,000 monthly, and of haversacks from 290,000 to about 850,000 monthly.

No soldier could be sent overseas without a haversack, a cartridge belt, and a canteen cover; yet during the period of active hostilities no movement of troops was delayed one day on account of the lack of textile equipment. Up to December 1, 1918, the production of haversacks was over 2,500,000 in number, costing over $8,000,000; of canteen covers, about 3,750,000, costing $2,250,000; of cartridge belts, about 1,500,000, costing over $4,000,000. Another large item was bandoleers, which were procured to the number of over 31,000,000 at a cost of $5,500,000. These are only a few of the major items, but they serve to illustrate the extent of the purchases of textile equipment.

At the end of hostilities the Government was buying textile equipment at the rate of $22,000,000 a month, and was working toward the goal of being able to supply 750,000 men a month with all articles of textile equipment.

When the Army began to expand in size at an unexpected rate in the spring of 1918, it created a great shortage in cotton underwear. Government agents went out over the country and bought all cotton underwear stocks. In order to provide a sufficient manufacturing capacity for cotton underwear, women's underwear factories were enlisted for war work, and so were even corset factories.

The Army experts in cotton textiles also effected many economies. A standard pattern layout was drawn for the overall makers with consequent large savings of cloth in the manufacture of brown denim fatigue clothing, or soldiers' working clothes. At one time practically every overall factory in the United States was making fatigue clothing for the Army, after Gen. Pershing had cabled an order for 3,000,000 garments to be delivered in 90 days.

In making the soldiers' barrack bags, in which they pack their clothing and personal effects, the manufacturers in cutting out the pattern left a 3-inch strip of cloth. Army officers discovered these 3-inch strips and also noted the fact that every barrack bag must be provided with a draw-string. The specifications were thereupon changed so that these 3-inch strips could be used as draw-strings in the barrack bags, a trifling economy apparently, yet amounting to a saving of 6 cents in the cost of each one of millions of these bags.

A vast amount of tentage was required, not only for tents themselves, but also for such articles as paulins, tent covers, bed rolls and clothing rolls, canvas basins and buckets, bags for stakes, tool bags, coal bags, and mail bags, cargo covers, wagon covers, horse covers, and many similar articles.

Valuable work was done in substituting cotton thread for linen. Linen thread became so scarce that the Ordnance Department commandeered the whole supply. This worked havoc in the shoe industry, and as a result the Council of National Defense secured from the Ordnance Department enough linen thread to take care of the Army shoe contracts. Nevertheless it was discovered that cotton thread might be substituted for linen in many industries. In fact, it often proved to be better than linen.

Valuable standard tests for waterproof cloth were also worked out. These tests were developed at the Bureau of Chemistry, a branch of the Department of Agriculture in Washington. In these tests cloth was required to withstand a deluge of water equivalent in intensity to a tropical rain, and also to undergo a dry temperature of 120° Fahrenheit. There were also tests to determine under what conditions the cloth would mildew. These tests are expected to have a use in the waterproof-goods industry in normal times.

Another important contribution of the Army to peacetime industry was the design of the oversuit for the use of truck drivers. This was a waterproof garment, air-tight and cold-proof. It is expected that this new garment will continue in commercial use.

The principal items of rubber goods bought by the Army were rubber boots and overshoes, raincoats, and slickers. The production of rubber boots for the Army took practically the entire capacity of all mills in the United States, the rubber boot manufacturers having pledged themselves to discontinue their civilian business until the needs of the Government were taken care of. Of different types of rubber boots, the purchases were considerably over 4,000,000 pairs, at the cost of $20,500,000.

Incidentally there was worked out an improvement in rubber boots to prevent them from blistering the heels of wearers. It was discovered that a rubber boot blisters the heel because it rubs slightly as the wearer walks, no matter how well fitted to the foot the boot may be. To the specifications for the Army's rubber boots was added the requirement that

straps be incorporated in the article to be buckled both around the ankle and around the instep, thus holding the boot so that it can not slip.

Raincoats caused a good deal of trouble, as there was not a sufficient manufacturing capacity in this country to meet the requirements. Practically all stocks of commercial raincoats were purchased, on the theory that even a poor cover was better than none. As these garments were made for civilian use, they were not built according to Army specifications, and considerable criticism was made as to their quality.

When the manufacture of raincoats commenced on a large scale, many new concerns went into the business, and some of them, either through lack of experience or through carelessness or intent, made garments that were not properly cemented. This led to investigations and indictments. The total purchases of ponchos, raincoats, and slickers amounted to about 10,000,000 garments, costing over $46,000,000.

In all 7,000,000 service hats of felt were manufactured on orders placed by the War Department. The felt for these hats was made of rabbit fur imported from Australia, New Zealand, and Russia and produced in the United States. Hats were made principally at Danbury, Conn., and Fall River, Mass., with smaller sources of supply at Yonkers and Peekskill, N. Y., and Reading, Pa.

The numerous requirements of the Army for pillows created a shortage in feathers. In all there were manufactured on Government order 500,000 pillows weighing 2 ? pounds each. It had been the original intention to fill these pillows with duck feathers; but when the American duck-feather supply was exhausted and thousands of the ducks of China had given up their plumage for the comfort of the American soldiers, and still there were not enough feathers for the pillows, adulterations with goose feathers and other light plumage were permitted.

The procurement of leather for the Army, both the raw material and the finished products of leather, was one of the most important undertakings, the principal war uses for leather being in shoes for the soldiers and in harness for the horses and mules.

When the Government entered the leather market it found a high level of prices, due to the large quantities of leather and leather equipment which America had been exporting to the European nations at war. The tanners were called together, and they came to an agreement with the Government as to the prices of all grades of equipment which the Army expected to buy. The packers next agreed on a maximum price for hides suitable for Army leathers. The Government took an option on 750,000 hides then in the hands of the packers.

By consulting with the industry at all times the Government officers were able to stabilize prices of leather. The price of harness leather, which was originally fixed at 66 cents per pound, was advanced only 4 cents during the 18 months of the war period, while russet leather never advanced more than 4 cents per pound above the $1.03 fixed at the beginning of the war.

As the stocks of leather on hand diminished it became necessary to stimulate the production of leather goods, and there was formed a hide and leather control board, with a representative on it from each branch of the trade, one for harness, one for sole leather, one for upper leather, and one for the sheepskin trade. This board also inspected leather at all the tanneries and the finished leather in the various factories, a course of action which resulted in great improvement in the quality of leather, particularly in leather used in shoemaking.

At the outset the Quartermaster Corps, the Ordnance Department, the Signal Corps, the Engineering Department, the Medical Department, the Navy, and the Marine Corps were all buying leather or leather equipment, and the Y. M. C. A. and the Red Cross were also in the market for large amounts of leather materials. These activities, except those of the Navy and Marine Corps, were all eventually brought under the administration of the Clothing and Equipage Division, thus virtually eliminating competition in the leather market.

At the signing of the armistice it is safe to say there was enough leather equipment, either in the United States or in France, or in process of manufacture here, to meet the needs of 5,000,000 men. Leather equipment was available at all times. The principal items of leather were harnesses, shoes, jerkins, gloves, and mittens.

In all, $75,000,000 was spent for harness and leather equipment. The procurement of saddles in itself was a hard problem, since there were only three or four makers of saddletrees in the United States, and only one of these could get the ash or basswood required. The division induced various furniture factories to install the special lathes required for turning saddletrees, and in this way built up eight factories, which gave us sufficient capacity. Belting manufacturers and manufacturers of shoes were educated in the art of producing the leather for the saddles. The Army harness is of russet leather, a product for which there is no commercial demand. The result is that surpluses of Army harness can not be disposed of to advantage.

The former American Army shoe built on the Munson last and known as the russet marching shoe was machine sewed, had an upper of calfskin with the rough side turned in, and was lined with duck. This shoe proved to be short lived when subjected to the severe service in France. At the beginning of the war a new shoe was designed for trench service. This was a much heavier shoe and the calfskin of the upper was turned rough side out. There was no lining in the shoe. The shoe had two heavy soles, the outer one being hobnailed. Yet this shoe, too, proved to be unsatisfactory for the service. The uppers wore fairly well, but the soles could not stand the constant submerging in mud and water. The demands of trench service eventually led to the design of what was called the Pershing shoe. This was a shoe with three heavy soles, stitched, screwed, and nailed together. It had steel reinforcements on toe and heel. The outer sole was studded with hobnails.

The original requisitions from France for this shoe called for leather tanned with bark. As bark tanning is practically obsolete in the United States today, it was necessary to go into the tanneries and build up what was virtually a new industry. It may be mentioned that the design for the Pershing shoe was completed in 30 days.

The culmination of the shoe development was the model known as the Victory shoe. This model corrected certain defects in the Pershing shoe. The Pershing shoe was prone to rip along the back stays, and the upper did not fit snugly. In the Victory shoe the entire back of the upper was one piece.

At one time 52 shoe factories in 13 States were working on Army shoe contracts. A scheme of packing shoes for overseas shipment in burlap bags instead of in boxes was worked out, and it resulted in saving a great deal of space on board ship.

Machinery and tools for the shoe repair shops of the salvage division were purchased by the Clothing and Equipage Division. This was the first time that Uncle Sam had ever acted as cobbler for his soldiers. About 2,000 machines for repairing shoes were bought, besides some 28,000 repair kits, each one of which cost $135. Among the items of supplies for the Army shoe repair shops may be noted 20,000,000 pairs of half soles.

A shoe waterproofing grease, or dubbin, as it is called, which had no odor and which would not turn rancid, was developed. The experts worked closely with officers in the field in training soldiers in the care of shoes to make them last as long as possible. Every man who received a new pair of shoes was required to break the pair in by standing in them in water for a certain period and then walking for an hour until the shoes dried on his feet. The men were cautioned not to dry their shoes by placing them too closely to any heating apparatus, as this shortens the life of the leather. Good care of the soldier's feet has long been standard Army practice with us. No soldier in 1917 and 1918 was permitted to wear darned socks, unless he wore two pairs at once. At regular intervals officers inspected their men's feet, treated any blisters or sores that might exist, and dusted the feet with powder.

Bad shoe fitting means foot troubles, leg troubles, and sometimes even spinal and mental troubles. E. J. Bliss, a Boston manufacturer of shoes, developed a shoe fitting system which was adopted as being unexcelled. The fitter was an implement about like a roller skate, with movable wings on the sides and a movable plunger in front of the toes. The soldier to be fitted equipped himself with rifle and loaded pack. With this weight on his shoulders he stepped both feet upon the skate-like devices and then raised on the balls of his feet, until the weight and movement pressed out the wings as far as they would go and advanced the front plungers. With the size thus automatically determined, the next step was to check the accuracy of it. This was done by inserting a pair of implements with knob-like ends in the toes of the shoes, the implements just filling the space in front of the soldier's toes. Wearing shoes and implements, the soldier then walked about the room, stepped upon a platform, climbed a cleated ramp, and otherwise simulated actual service demanded of shoes in the field. If the checking implements in the shoes did not hurt his toes the fit was regarded as correct. ■

Look for Part III in a future OTW edition. — Ed.

Clothing and equipage produced and shipped to the American Expeditionary Forces

Apr. 6, 1917, to Nov.11, 1918.

	Produced.	Shipped overseas.
Blankets	19,419,000	3,127,000
Coats, denim	10,238,000	3,423,000
Coats, wool	12,365,000	3,871,000
Drawers, summer	38, 118,000	3,889,000
Drawers, winter	33,766,000	10,812,000
Overcoats	7,748,000	1,780,000
Shirts, flannel	22,198,000	6,401,000
Shoes marching and field	26,423,000	9,136,000
Stockings, wool, light and heavy	89,871,000	29,733,000
Trousers and breeches, wool	17,342,000	6,191,000
Undershirts, summer	40,895,000	4,567,000
Undershirts, winter	28,869,000	11,126,000

NOTE: PAPER COPIES OF *OTW* WILL BE MAILED ONLY TO THOSE INDIVIDUALS WHO REQUEST THEM. GWA members are requested to download the newsletter from the website, www.great-war-assoc.org. **This will help reduce unnecessary costs and administrative burdens. Send requests for hard copies to the GWA Registrar.**

☐ Check this box if you have changed your address since the last event or this is your first event

☐ Check this box if you are a unit commander

Print first letter of your last name in this box ☐

GWA Membership and Registration Form for the Spring/Fall (*circle one*) Combat Event
Caesar Krauss Great War Memorial Site, Newville, PA

Part I — Member Information — Please Print Legibly

Last Name:_____ First Name:_____

Address:_____

City:_____ State:_____ Postal Code:_____

Country:_____ Phone:_____ e-mail:_____

Unit Commander:_____

Emergency Contact: _____

I certify that I am 18 years of age or older _____
You must be at least 18 to register. You may be asked for proof of age. *(sign here)*

Part II — Unit Affiliation

This box must be filled out, using the units and abbreviations on the back of this form. If you do not belong to one of these units, you are an independent. ☐

Part III — Dues and Event Fees

A. Annual dues (Annual dues are due at the Spring Event each year)	**$25.00**
B. Event fee if pre-registered (see below)	**$25.00**
C. Optional site development donation	**$** ☐
D. Pre-registration subtotal (A+B+C as applicable)	**$** ☐
E. Gate registration fee (PAY ONLY IF NOT PRE-REGISTERING)	**$15.00**
F. Gate registration total (D+E)	**$** ☐

Pre-registration: Members are encouraged to pre-register to save the gate fee. *If you pre-register but are unable to attend, your event fee (only) will be returned within two weeks. All pre-registrations must be received by the Registrar 5 days before the event. If your pre-registration is not received by this date, you must pay at the event — including the $15 gate fee. Your original mail pre-registration will be returned unopened.*

*Make checks to "***Great War Association.***" Send form and check to:*

Chris Garcia, GWA Registrar
418 Chinaberry Court
Virginia Beach, VA 23454

(757) 631-0661 e-mail: criostalmiceal@aol.com

Register Online with PayPal

You can now register and pay online by using PayPal (www.paypal.com). Dues and the event fee are $26 each ($52 if paying both) to cover the costs of this service. Payments should be sent to the GWA Treasurer at GWAtreas@comcast.net. Please include all information normally entered in Part I & II of this form in the notes box of the PayPal form. Registration payments without this information included will not be accepted.

GWA Unit List (use abbreviations only when filling out registration form)

American

26AEF	26th Div. (Yankee Div.), AEF
27AEF	27th Div., 107th Inf. AEF
109AEF	28 Div., 109th Inf. Co. L., AEF
116AEF	29th Div., 116th Inf., Hdqtrs. Co., AEF
33AEF	33rd Div. (Prairie Div.), AEF
80AEF	80th Div., 318th Inf. AEF
372AEF	93rd Div., 372nd Inf. AEF
49CO	5th Marines, 49th Co., AEF
67CO	5th Marines, 67th Co., AEF

British

2SRFC	No. 2 Squadron, Royal Flying Corps
6BWBEF	6th Btn., Black Watch, BEF
BRBEF	The Border Regiment, BEF
BUFF	6th Buffs Rgt., BEF
ROYENG	Royal Engineers

Commonwealth

5AIF	5th Btn. Australia/New Zealand Army Corps
PPCLI	Princess Pat's Canadian Light Infantry
42BNCEF	42nd BN, Black Watch, CEF

French

8BCP	8 Btn. Chasseurs à Pied
18RL	18ème Régiment d'Infanterie (Régiment de Gâtinais)
151RL	151ème Régiment d'Infanterie de Ligne

Russian

RL	Légion Russe

Non-Military

DRK	Deutsches Rotes Kreuz
INDP	Independent (non-combat only)
SA	Salvation Army

Austrian

63KUK	63rd KuK

German

1LR	Königliche Bayerische Leib Regiment
5SB	5. Sturm-Pionier-Bataillon "Rohr"
8KUR	3. Feldesk., Kürassier Regt. Nr. 8 (Rheinisches)
12MWK	12. Minenwerfer Komp. 12 Division
13PB	13. Pionierbataillon
20MG	20. Maschinengewehr-Scharfschützen-Bataillon
23JR	Infanterie-Regt. Nr. 23 (2. Oberschlesisches)(*probationary*)
63JR	3. Komp., Infanterie-Regt. Nr. 63 (4. Oberschlesisches)
73FR	Füsilier-Regiment Nr. 73 (Hanoversches)
90FR	10. Komp., Füsilier-Regiment Nr. 90 (Mecklenburgisches)
92JR	Infanterie-Regiment Nr. 92 (1. Braunschweigisches)
120JR	5. Komp., Infanterie-Regt. Nr. 120 (2. Württembergisches)
124JR	3. Komp., Infanterie-Regt. Nr. 124 (6. Württembergisches)
129JR	Infanterie-Regt. Nr. 129 (*probationary*)
459JR	8. Komp., Infanterie-Regiment Nr. 459 (Rhein. Westf.)
236RIR	5. Komp., Reserve Infanterie-Regt. Nr. 236 (*probationary*)

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