

Engineer the Jack o' All Trades To Modern Armies in Tight Places



Time after time since the war stiffened into the zig-zag lines of France and Flanders this knowledge on the part of the sapper has been the decisive factor in a minor engagement. When a detachment has been shot to pieces and reserves have been held up by barrage, the sappers have come in and held the bit of trench until help came.

The main portion of the sapper's four months' training is in field work. For the past two years this has meant trench work, and it will continue to include trench work for some time to come—probably until long after the American army has come over. Strategists are pretty well convinced that the greatest Allied success must be won by pushing the Germans back from one system of trenches to another at a cost which eventually the Germans will not be able to pay.

To the civilian and to the casual soldier the trench is only a very uncomfortable ditch, zig-zagging from point to point. To the sapper a trench system is a work of art. The sapper designs a trench for two purposes, fighting and living. He may build a dugout 25 feet deep for the company commander's office, and that dugout may be smashed to bits in a bombing raid the next night. Or he may build a front-line trench, with fire steps and concealed gas tanks and all the paraphernalia of defense, and that section of trench may remain unscathed for three months. He has to build for safety and he tries to build for comfort. He knows, and every one who has been there knows, that at best the trench is a rotten, dirty, inhuman place. He knows that it is a bitter necessity just now and he tries to make it livable. The result is so intricate that any soldier may get lost in his own trenches and needs signs at every corner to tell him where they are.

Perfect Trench System Based on Three Lines

The perfect trench system of the present time is based on three lines: The firing or front line trench, the communication trench, and the base line. Leap into the front line trench and walk down. You are about five feet underground. You are walking on fairly dry boards (called duckboards), on which your feet get a good purchase with the help of wire netting. As you walk you brush the sides of the trench, and you notice the solidity of the walls. No trench is perfect without "revetting," or wall-support. The walls are held firm by a variety of materials, plain boards, expanded metal, ordinary wire, boughs of trees, matting, anything which will hold loam and sand against the effects of rain and thunderstorm.

Ten feet from your starting point you turn to the right; a moment later you turn sharp to the left and are in a continuation of the trench you started on. You have rounded a traverse, where the earth juts into the trench like an arrowhead. The traverse is also an ideal place for bombing, because if an enemy bomb falls on your side of the traverse you have time to slip round the corner and wait for it to explode.

Continue your walk, twisting and turning as the trench line dictates. There are not many dugouts in the front line, but here and there you see underground lines jutting out toward the enemy trenches. These "saps" are very deep and frequently they are covered over so that you walk in a tunnel. Fifty or a hundred feet out in No Man's Land they come to an end and there you will find a listening post, an observation post, or even an

the arrangement by which warning of a gas attack is given. You will see the gas-cylinders, artfully concealed. Here and there you may see a mound of earth, solidly buttressed, and on it a machine gun so placed that it can fire in either of two directions and controls two approach trenches. Or you will stumble into a little recess and as you grope about in the darkness you will become conscious of a spot of light. Look through the hole and you will see that light in and you will see that it covers a goodly section of No Man's Land. It is a sniper's post.

Travel back now through the communication trench. As you pass to the baseline the work of the Royal Engineers becomes more and more important. Here you have dugouts one, two and three levels underground, with twisting tunnels, double exits, concealed doorways, traps and tricks. Here you have bombing pits and machine gun emplacements, snipers' posts and hidden trench mortars. Here you may have a light railway, adapted for hand power only, and used for bringing up food and munitions. And here you are certain to have a "strong point."

The "strong point" is the concentrated development of the trench system, the sapper's pride. By means of a strong point is a section of trench which can be held against an enemy's attack without reference to the fate of any other section of the same trench system. Generally speaking, a strong point will have:

What "Strong Point" At Front Consists Of

- (1) A centre. This will usually be a circular position, supplied with snipers' posts and machine gun emplacements. The guns are so placed that virtually every foot of ground can be covered by fire.
- (2) Traps. For extra men, waiting to take their turn at the work of holding the strong point, and for men arriving by the communications.
- (3) Communications. Strong points will be dotted over the trench system in a rough circle. At the centre will be the "keep," the whole will be known as a "strong point." The communication trench, with each other and with the centre point, and the whole thing is so arranged that, although each strong point can count on all the others for support, any one can be held when the others have fallen.
- (4) Bombing pits, ammunition dumps, camouflage for deceiving aviators, supplies of flares, signals, etc.
- (5) A telephone system, possibly a field wireless, a supply of explosives for mining and sapping. A first aid post and probably some sort of kitchen. These adjuncts will usually be on the second and third levels down. The first level will be for the dugouts.

Sapper Also Burrows Under Enemy's Lines

The sapper's work does not end when he has constructed a trench system. He still has on hand the arduous and delicate business of mining and sapping. He has to start from a point in his own lines which cannot be spotted by German aviators, and to run a shaft deep into the ground. Then he must begin to creep forward, foot by foot, shoveling and scraping his way, working in silence, working night and day, working at intervals all the time for the sap which the Germans may be building under him. He has to go on until he has placed his explosive at the fringe of the German trench, and if, at the last moment, his careful watch catches an enemy soldier or a German working beneath him, he has to retreat, dig round and under, and place his explosive charge still lower down, under the German counter mine.

When he has placed a mine and wired it to his listening post, he has to dig and follow the infantry across No Man's Land.

Trenching, barbed wire entanglements, bridge building, railway building, and the like are a special school in England, demolition, mining, sapping—these are the chief features of the sapper's work. But the engineers are not limited to these. The R. E. Signal Service do not receive a sapper's training as regards engineering work. Their training is entirely separate. They have charge of the wonderful system of telephones which cover Northern France.

Also Are Photographers And Printers for Army

The Royal Engineers develop and print photographs for the army and do job printing. They handle signals. They control telegraphs and "A. S. C. mechanical transport"—that is, transport by steam lorries. And in the past the engineers have developed a variety of things which have grown so great that they have separated from their original sponsors. The most noteworthy of these is, of course, aviation. The little aeroplane for the flying England did have at the beginning of the war she owes to the engineers. Were it not for their interest she would have had nothing. Motor transport also began here.

At the beginning of the war the engineers worked out the famous jamming bomb from which the present Mills bomb is descended, and they improvised trench-mortars out of drain pipes until the Stokes gun was perfected. And far off in the dim past the Royal Engineers had the first tank which it is said could be controlled so that if it missed the first time it could turn about and have a second try at the target.

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Army Calls for Bakers

Washington, July 1.—The Quartermaster General's department to-day issued a call for the immediate organization of forty bakery companies to supply bread to the new armies.

The army regulations call for the establishment of one bakery company for each division of troops in time of war, each company to consist of sixty-one men. Each company at war strength is divided into sections of four units each, the company being designed to supply a force the strength of a division; a section, an infantry brigade, and a unit, an infantry regiment. Each company, section or unit is complete in itself and may be moved around at will.

A commissioned officer, who is originally an assistant to the Quartermaster, heads each bakery company. Under him are sixty-one enlisted men, as follows:

Chief baker, either a quartermaster sergeant or a sergeant first class, Quartermaster Corps.

Four assistant chief bakers, sergeants of the Quartermaster Corps who head sections.

Twenty bakers, either sergeants or corporals, twelve of whom are in charge of units.

Thirty-two assistant bakers, ranked as corporals or privates first class.

Two cooks or general police, privates first class, Quartermaster Corps.

Big War Wages Make Workers Demand Luxury

Cheap Pianos and Finery Now Sell Better Than Ever

Even Germans Buy High Prices Cause Complaints, but Do Not Check Consumption

By ELIZABETH BREUER

Modern warfare has made of the workingman, even more than the man in the trenches, the man of the hour. His unprecedented prosperity is causing ever-increasing demand for luxuries in all of the warring countries—even in Germany. They cannot manufacture enough cheap pianos, enough self-playing music devices, enough jewelry and finery to meet the voracious appetite of a workingman for the first time with his full week's wages in his jeans because of war prohibition—and a wage, incidentally, that is much higher than ever he received in the piping times of peace and prosperity.

No spectre of unemployment accompanies modern war. More work than there are hands to do it, more money for the labor, and fewer ways to waste that money.

And what is true of the workingman's prosperity is true to the 9th power of his brother of the middle classes. The latter, through the industrial expansion incident to the war, has bloated himself into a growing class of newly wealthy. He has so much money that it has lost its value to him, for he is it that is furnishing the industrial brain and power necessary to carry on the war. And so you see tradesmen glorified into knighthood in England, the "goulash" barons of Scandinavia, the nouveau riche of France and here, too, our own crop of war Wallingfords.

Big Demand for Luxuries

With these classes anxious to live on the magnificent scale commensurate with the bulk of their suddenly acquired money, the war has caused an unprecedented appetite for luxuries. That man was badly advised who, at a business conference in Detroit recently, urged the manufacturers of automobiles to discontinue their manufacture and turn their factories to the production of staples and necessities. It is just here that the pinch will be felt, and not by antique dealers and automobile agents, according to reports from Europe.

"My father's chauffeur stands in line every day for our bag of coal. More you can't get in Paris even if you are the President of France. But for coal cost twice as much as it paid before the war and more people are buying them." So related my friend, who had just returned from visiting her father, who is high in French government circles.

"I thought I would do all my shopping in Paris," she went on, "but I found the prices frightful, and I bought my things here when I came back. My furrier in Paris showed me coats which he himself frankly despised inferior, yet he got enormous prices for them. And from such people! They are really grotesque! A curious class of nouveau riche, which has sprung up from nowhere since the war and is spending money right and left, and making Paris seem more prosperous than ever."

But let us hear those who live on the other side of the Atlantic.

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Prices Go Soaring

Add to that the testimony of Axel G. Lober, American manager of the Royal Copenhagen Porcelain and Danish Arts Company, who recently returned from a journey to his home office in Holland, and there inspected reports from agents of their company in the warring countries. As Mr. Lober explains at once:

"We pride ourselves on the fact that our goods are the highest-priced of their kind—a luxury, if ever one existed. Look at these plates, for instance. They are \$200, this figurine with the vase, \$1,200. Now, people don't need these things. They can buy plates at one dollar a dozen that will serve them as well. Yet we are doing more business in Europe than we ever did—even in Berlin; in fact, the Germans are our best customer."

"We have to send food to our travelling salesmen in Germany, for that no money can buy. But money can buy such luxuries as our ware, and other refinements of the kind, and there seems plenty of it to spend."

"Most of the wartime demand for these goods comes from a class which in Scandinavia is called 'the goulash barons.' The term is applied generally to all who have made enormous profits through the war. Originally it classified those men who bought up old cows and unit condiments, tinned and sold them at enormous prices to both the Allies and to Germany."

"These people speak of spending millions quite calmly. They have made so much money through the war that they must spend some of it, and hence the hungry demand for luxuries—luxuries of all sorts; the higher the price, the more satisfied they seem to be. It is through them that meals are served in ordinary restaurants, for instance, in Scandinavia."

And yet a speaker at a business conference in Detroit, a few weeks ago, told his audience that those of them who manufactured high priced luxuries had better hurry and turn to the manufacture of staples, a business man told me when I repeated these remarks.

Business as Usual in United States

"As a matter of fact, the war will increase the appetite and demand for luxuries in the United States, as it has in other countries," he added. "There will be a greater market for them than ever. That is because it is on luxuries that the population can spend its sudden riches. If you have become more affluent through manufacturing shoes for the government by the millions or making \$6 a day where you formerly made \$2 what will you spend your money on? Not bread and meat and dishes. No. For the supply of those is limited and doled out by government order, and they offer no

Army Behind the Lines

"And this is because the war has shown that no matter how great a genius a general may be, his army will come to nil if he has not behind him million men at the front a second army of ten million laborers to munition him. Which means that the billions of dollars spent for the war 85 to 90 per cent goes to the working class. It is prosperous as it never has been in the history of the world. And with its prosperity will come a knowledge of its power. Should this war last three more years we will see more socialism in practice than in a hundred years of peace would have brought us."

"For it is a different sort of democracy than the one we are fighting for that the war, paradoxically enough, will bring. We see its most dramatic sign in the free Russia of to-day. But significant to me is the espousal of Socialist precepts, as exemplified by the war tax, by men who control corporations, the money power of the country. It would amaze you to hear a man do, on every side, enthusiastic expressions of satisfaction with a scheme of taxation against which they would have arrayed themselves bitterly in ordinary times. They don't want a return to the old system after the war, either, because they feel that this radical cutting down of their money power is more equitable, is fairer to every one concerned in a democracy."

"In short, from being the rampant, lawless individualist that he was, the American business man, through the short months of our participation in this war, has got a social sense, has got a passion for cooperation, has had implanted within him a consideration of the good of the mass as a whole, and he is a most potent and surprising factor for Socialism in this country. American Socialism, let us call it, because the American business man is beginning to believe in it because it is good business, because it is just and

France Looks to U. S. For Quick Aid at Front

Her Man Power Is Almost Used Up, and How Long She Will Fight Depends on America. Morale of People and Armies Still Strong

By FRED B. PITNEY

This is the third of a series of articles on conditions in France by Fred B. Pitney, The Tribune's correspondent, who has just returned from the country. He was in France when the war started, has been sending me dispatches to this paper ever since, and is able to report many facts hitherto unpublished by mail or cable.

How long will France fight? What is the morale of the French people? These are the questions asked of me the most frequently since my return to this country. The answer lies with the men who ask the questions. Every American who asks how long France will fight is himself the answer.

The Germans had a famous slur on the English at the beginning of the war. It was a conversation alleged to have taken place in Brussels between the Kaiser and a Belgian statesman.

"How long will Germany fight?" the Belgian asked.

"Germany will fight until she has eaten her last dog and cat," the Kaiser replied.

"And how long will England fight?" the Belgian inquired.

"England will fight until the last Frenchman is dead," said the Kaiser.

No one ever found it necessary to ask how long France would fight. Every one knew without asking that France would fight until her last man was dead. And so she will. What was true of France at the beginning of the war is just as true to-day—always providing that America does her part, and does it promptly and effectively.

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Wounded and Cripples Sent Back to Front

Her population has been combed to the last man, including wounded men and cripples sent back to the front. She has given one in six of her population to the armies. England has given one in ten, Italy one in eleven, Russia one in twenty. France has no more men to give.

The problem resolves itself, therefore, not into how long the men in the trenches will fight, but how long they can fight. What America will do and when she will do it is always the answer.

American soldiers must fill the holes in the French lines. American soldiers must be sent to the front, and American soldiers must fill the sadly depleted reserve camps behind the lines.

In this the question of time is all important. It is of an importance that cannot be exaggerated that the French army should know at once, from the highest to the lowest, that America will send men to the battlefield, Europe and pour them in without stint of numbers until Germany is beaten.

There is only one way to give this knowledge convincingly. It is to send the men. Saying that we will send supplies, or that we will send money, cannot be exaggerated that the French army should know at once, from the highest to the lowest, that America will send men to the battlefield, Europe and pour them in without stint of numbers until Germany is beaten.

Denmark Able to Live on Her Own Supplies

Copenhagen, July 6.—The government commission appointed in April to investigate the problem of the food supply reports that Denmark will be able to feed the population from home supplies, but probably will have to reduce livestock and meat production to a certain extent on the basis of the amount of home grown fodder available after the necessary amount of human consumption is furnished.

The commission, which included agricultural and dietary experts, took as a basis for its calculations the average home production of food products on the acreage planted in recent years, as well as the February census of livestock, and found that, reckoning on the terms of calories and albumen, would be possible to furnish a ration of from 20 to 25 per cent above the average requirements and also provide the additional amounts required for the hard-working classes.

The fodder supplies would suffice to maintain the necessary number of horses, but the commission says that it will be necessary to reduce the number of swine from September 1 to 40 and possibly 50 per cent of the number raised last year.

The crop report shows that in consequence of recent rains the prospect is somewhat improved, and that the yield, particularly of wheat and potatoes, will be only a little below the middle harvest expected.

One of the first results of the studies and of the reports of the commission is a somewhat improved prospect for an order forbidding the export of swine fat suitable for human consumption, the export of which, according to the "National Tidende," was prohibited recently, has been between 20 and 30,000 kilograms weekly. The order was preceded by two earlier restrictive orders, retaining for human consumption first 60 and then 50 per cent of lard produced.

American Tradesmen Must Learn to Do Many New Tricks While Under Fire

By GILBERT SELDES

London, July 2.—This is an article about "those d—d sappers." Their official name is "Royal Engineers." They claim to date from William the Conqueror, and to be very dignified, but whenever a job has to be done at the front and no one else can handle it the word is always, "Leave it to those d—d sappers."

Next time you see a war film pay particular attention to the machinery, the transport columns, the wagons, trench tools, barbed wire, telephones, water tanks, huts, plumbing (if you get a chance to see any plumbing), signalling—everything connected with physics and manual training and electricity and chemistry.

Perhaps you will see a mine exploded. There may be a raid, and you may see a trench blown in, or perhaps a group of men converting a captured trench, so that it faces toward the Rhine instead of toward Paris. Stop to think of the men who are doing this work. They are the sappers.

Job Not So Dull As It Would Appear

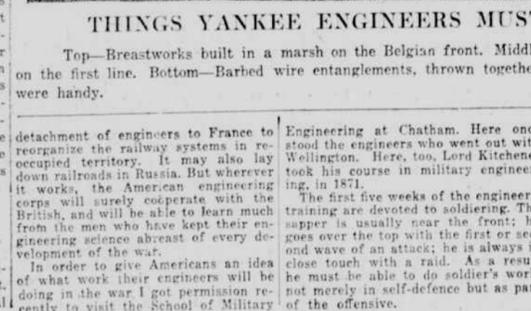
Dull job, you think. Perhaps. But Captain Timmy Wright probably did not think so. He won the Victoria Cross for connecting up the lead which demolished a bridge at Mons and for getting a pontoon bridge in shape for the 5th Cavalry Brigade at Vailly. He did both these things under fire, and so had the V. C. before the war was four months old.

Lance Corporal C. A. Jarvis, 57th Field Company, Royal Engineers, is another sapper who justifiably thinks his work is not dull. In the great retreat Jarvis was at Jemappes when the Germans tried to cross the canal under cover of their heaviest fire. For an hour and a half Lance Corporal Jarvis worked in the open, exposed to a hurricane of machine gun and snipers' bullets, until he had fired every charge and demolished the only bridge the Germans could have used. That was not specifically inglorious.

Americans Will Learn Sapping from British

The American army will not only engage in this work on the Western front. In all probability it will send a special detachment of engineers to France to reorganize the railway systems in re-occupied territory. It may also lay down railroads in Russia. But wherever it works, the American engineering corps will surely cooperate with the British, and will be able to learn much from the men who have kept their engineering science abreast of every development of the war.

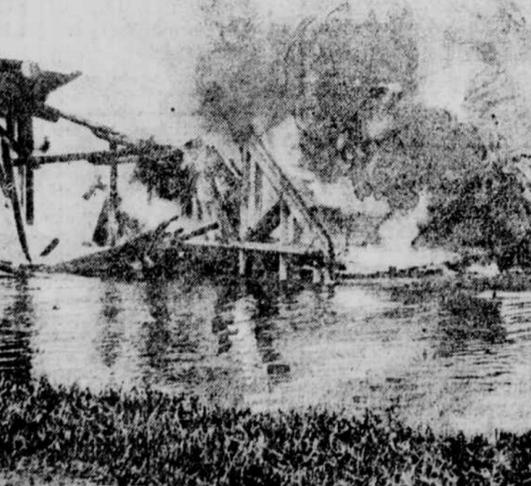
In order to give Americans an idea of what work their engineers will be doing in the war, I got permission recently to visit the School of Military



THINGS YANKEE ENGINEERS MUST LEARN TO DO

Top—Breastworks built in a marsh on the Belgian front. Middle—Officers' dugout, safe and shellproof, on the first line. Bottom—Barbed wire entanglements, thrown together under fire from whatever materials were handy.

ENGINEERS BLOCK FOES' PURSUIT



A bridge blown up just after the last troops had crossed and while the enemy's guns were trying to prevent the engineers from destroying it.

Advanced Firing Line

As you return you will see the places where the Royal Engineers have worked out their drainage system, carrying off all the water of the wet earth into No Man's Land.

Machine Guns and Gas Tanks at Front

When you get used to the twistings of the front line trench you will have time to notice details. You will see

Forty Companies of 61 Men Each Are Required

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