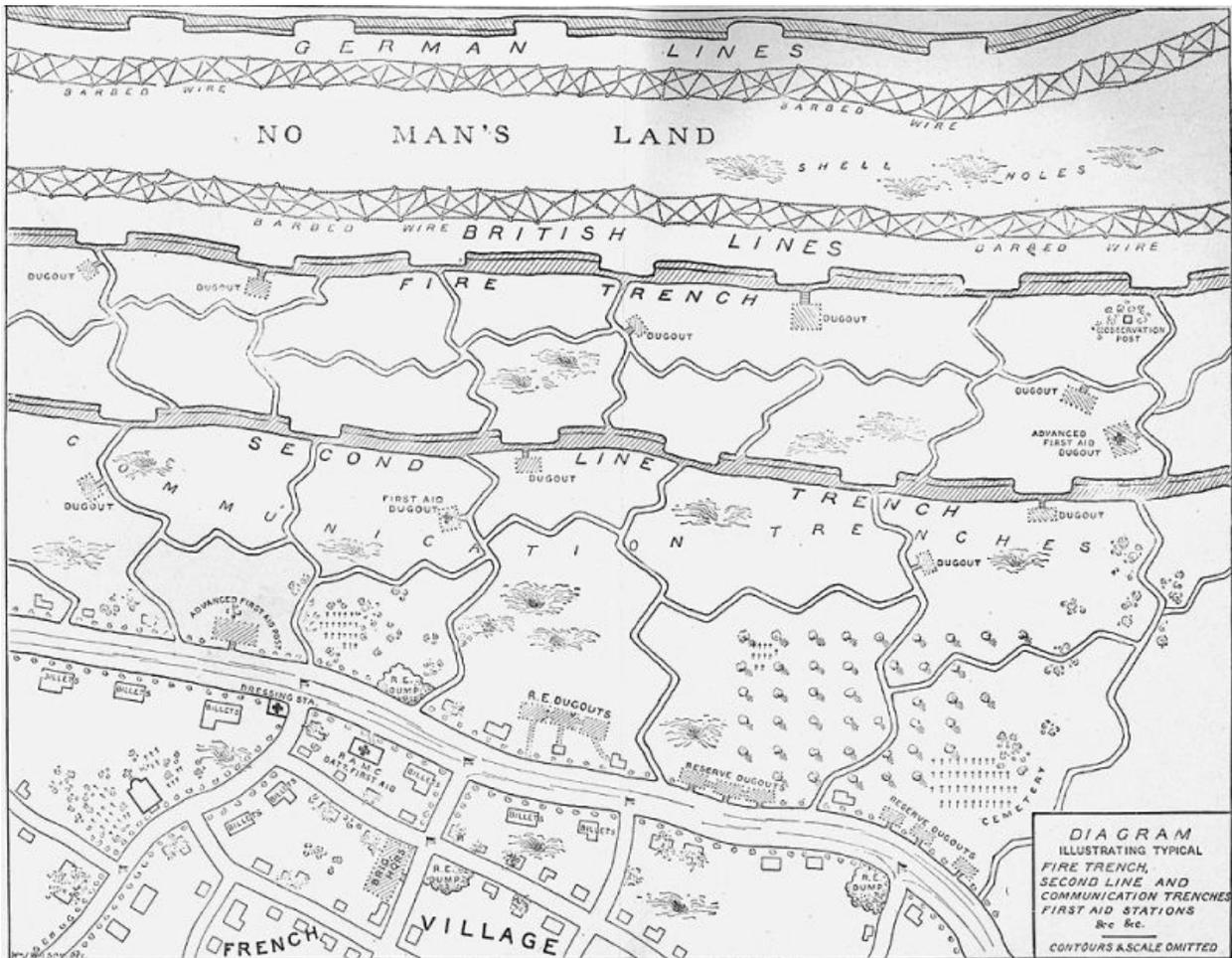


# Trench Warfare Map Analysis With a Geographic Lens

## Doc 1- Trench Diagram



Credit: Aurthur Guy Empey's "Over The Top" (1917)

## Trench Warfare Map Analysis With a Geographic Lens

### Doc 2- Trench Aerial Photo



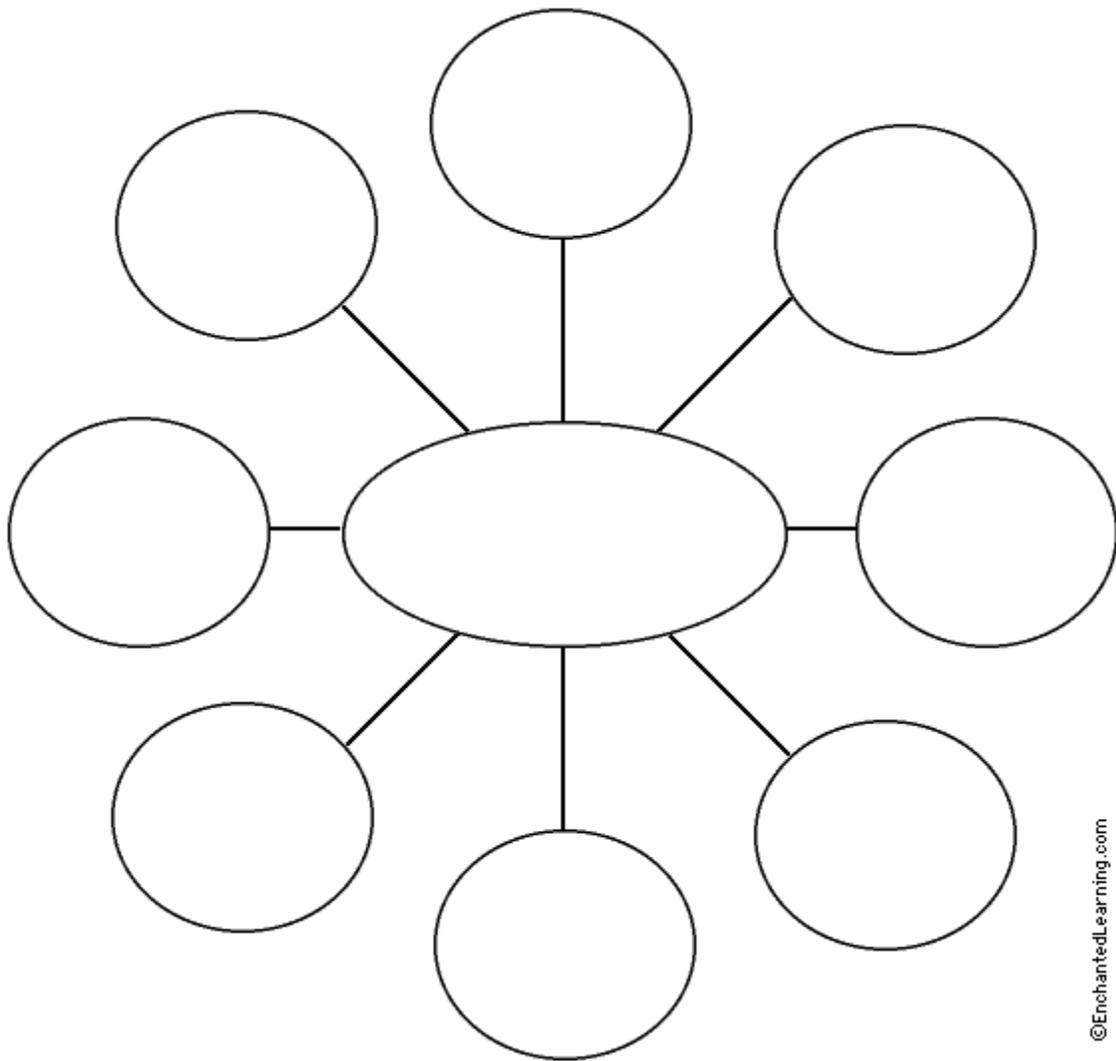
Image Source: <http://www.vox.com/a/world-war-i-maps>

Name: \_\_\_\_\_ Period: \_\_\_\_\_ Date: \_\_\_\_\_

**Concept Web: Technology and the Trenches**

**Over the Top Simulation**

Directions- While participating in the online simulation, take notes on what you experience with the concept web below. <http://www.warmuseum.ca/overthetop/>



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## Life in the Trenches Articles

Problem	Link to Research
1. Trench Foot	<a href="http://spartacus-educational.com/FWWfoot.htm">http://spartacus-educational.com/FWWfoot.htm</a>
2. Lice	<a href="http://spartacus-educational.com/FWWlice.htm">http://spartacus-educational.com/FWWlice.htm</a>
3. Trench Rats	<a href="http://spartacus-educational.com/FWWrats.htm">http://spartacus-educational.com/FWWrats.htm</a>
4. Poison Gases	<a href="http://spartacus-educational.com/FWWgas.htm">http://spartacus-educational.com/FWWgas.htm</a>
5. Trench Food	<a href="http://spartacus-educational.com/FWWtrenchfood.htm">http://spartacus-educational.com/FWWtrenchfood.htm</a>
6. Shell Fire	<a href="http://spartacus-educational.com/FWWshellfire.htm">http://spartacus-educational.com/FWWshellfire.htm</a>

## #1 Trench Foot

Many soldiers fighting in the [First World War](#) suffered from trench foot. This was an infection of the feet caused by cold, wet and insanitary conditions. In the trenches men stood for hours on end in [waterlogged trenches](#) without being able to remove wet socks or boots. The feet would gradually go numb and the skin would turn red or blue. If untreated, trench foot could turn gangrenous and result in amputation. Trench foot was a particular problem in the early stages of the war. For example, during the winter of 1914-15 over 20,000 men in the [British Army](#) were treated for trench foot. Brigadier-General [Frank Percy Crozier](#) argued that: " The fight against the condition known as trench-feet had been incessant and an uphill game."

[Arthur Savage](#) pointed out that trench foot had serious consequences: "My memories are of sheer terror and the horror of seeing men sobbing because they had trench foot that had turned gangrenous. They knew they were going to lose a leg." Brigadier-General [Frank Percy Crozier](#) explained how the officers tried to solve the problem: "Socks are changed and dried in the line, thigh boots are worn and are dried every four days when we come out."

The only remedy for trench foot was for the soldiers to dry their feet and change their socks several times a day. By the end of 1915 British soldiers in the trenches had to have three pairs of socks with them and were under orders to change their socks at least twice a day. As well as drying their feet, soldiers were told to cover their feet with a grease made from whale-oil. It has been estimated that a battalion at the front would use ten gallons of whale-oil every day.

### Primary Sources

**(1) After the war, Captain G. H. Impey, 7th Battalion, Royal Sussex Regiment, wrote about his experiences of trench life.**

The trenches were wet and cold and at this time some of them did not have duckboards and dug-outs. The battalion lived in mud and water. Altogether about 200 men were evacuated for trench feet and rheumatism. Gum boots were provided for the troops in the most exposed positions. Trench feet was still a new ailment and the provision of dry socks was vitally important. Part of the trench was reserved for men to go two at a time, at least once a day, and rub each other's feet with grease.

**(2) Sergeant Harry Roberts, Lancashire Fusiliers, interviewed after the war.**

If you have never had trench feet described to you. I will tell you. Your feet swell to two or three times their normal size and go completely dead. You could stick a bayonet into them and not feel a thing. If you are fortunate enough not to lose your feet and the swelling begins to go down. It is then that the intolerable, indescribable agony begins. I have heard men cry and even scream with the pain and many had to have their feet and legs amputated.

**(3) At the age of 92, Arthur Savage was asked about his memories of life on the Western Front.**

My memories are of sheer terror and the horror of seeing men sobbing because they had trench foot that had turned gangrenous. They knew they were going to lose a leg. Memories of lice in your clothing driving you crazy. Filth and lack of privacy. Of huge rats that showed no fear of you as they stole your food rations. And cold deep wet mud everywhere. And of course, corpses. I'd never seen a dead body before I went to war. But in the trenches the dead are lying all around you. You could be talking to the fellow next to you when suddenly he'd be hit by a sniper and fall dead beside you. And there he's stay for days.

**(4) Robert Sherriff, No Leading Lady (1968)**

Some of their feet were horrible to look at: raw skin and bleeding blisters and big, angry sores. Their army boots rarely fitted comfortably. They were made in a few standard sizes, and a man was lucky if he got a pair that was neither too big nor too small. To march all day in them with blistered feet must have been a torment... The men marched like beasts of burden with heavy packs on their backs, rifles and bandoliers of ammunition slung across their shoulders. Sometimes they would break into a marching song to ease the misery, but now and then, as I marched at the head of my platoon, I would hear a clatter behind me and turn to see a man lying prostrate in the road.

The sergeants were instructed to prod them and order them to get up. There was always the possibility that the man had decided that he had taken as much as he could bear and had staged his collapse to get out of it. But most of them were genuine - down and out.

**(5) Frank Percy Crozier, A Brass Hat in No Man's Land (1930)**

The fight against the condition known as "trench-feet" had been incessant and an uphill game. However, science and discipline had conquered, and now we seldom have a case, and if we do there is trouble. Socks are changed and dried in the line, thigh boots are worn and are dried every four days when we come out. Things are better, but the weather gets worse.

## #2 Lice

Men in the trenches suffered from lice. One soldier writing after the war described them as "pale fawn in colour, and they left blotchy red bite marks all over the body." They also created a sour; stale smell. Various methods were used to remove the lice. A lighted candle was fairly effective but the skill of burning the lice without burning your clothes was only learnt with practice. [George Coppard](#) described how this worked: "The things lay in the seams of trousers, in the deep furrows of long thick woolly pants, and seemed impregnable in their deep entrenchments. A lighted candle applied where they were thickest made them pop like Chinese crackers. After a session of this, my face would be covered with small blood spots from extra big fellows which had popped too vigorously."

In his autobiography, [Harry Patch](#) explains the problems he had with lice on the [Western Front](#): "The lice were the size of grains of rice, each with its own bite, each with its own itch. When we could, we would run hot wax from a candle down the seams of our trousers, our vests - whatever you had - to burn the buggers out. It was the only thing to do. Eventually, when we got to Rouen, coming back, they took every stitch off us and gave us a suit of sterilised blue material. And the uniforms they took off, they burned them - to get rid of the lice."

Where possible the army arranged for the men to have baths in huge vats of hot water while their clothes were being put through delousing machines. Unfortunately, this rarely worked. A fair proportion of the eggs remained in the clothes and within two or three hours of the clothes being put on again a man's body heat had hatched them out.

At the [Passchendaele](#) Lieutenant [Robert Sherriff](#) described his men going into battle: "At dawn on the morning of the attack, the battalion assembled in the mud outside the huts. I lined up my platoon and went through the necessary inspection. Some of the men looked terribly ill: grey, worn faces in the dawn, unshaved and dirty because there was no clean water. I saw the characteristic shrugging of their shoulders that I knew so well. They hadn't had their clothes off for weeks, and their shirts were full of lice."

Lieutenant [John Reith](#) was very successful in dealing with lice. According to his diary: "No lice had so far come my way, but I was always in fear of them. On going into trenches I used to spray about a gallon of lysol over my bunk below the parapet and generally about the hut; now, with the receipt from home of a box of mercurial ointment, I took for the first time to wearing my identity disc, drawing the string through the ointment. I had heard that this was a louse deterrent. It made one's neck dirty but there was never a louse found."

As well as causing frenzied scratching, lice also carried disease. This was known as pyrexia or trench fever. The first symptoms were shooting pains in the shins and was followed by a very high fever. Although the disease did not kill, it did stop soldiers from fighting and accounted for about 15% of all cases of sickness in the British Army.

## Primary Sources

### (1) Henry Gregory of 119th Machine Gun company was interviewed after the war about life in the trenches.

When we arrived in the trenches we got a shock when the other soldiers in the hut took their shirts off after tea. They were catching lice. We had never seen a louse before, but they were here in droves. The men were killing them between their nails. When they saw us looking at this performance with astonishment, one of the men remarked, "You will soon be as lousy as we are chum!" They spent the better part of an hour in killing lice and scratching themselves. We soon found out that this took the better part of an hour daily. Each day brought a new batch; as fast as you killed them, others took their place.

One night, as we lay in bed after doing our two hours' sentry - we did two hours on and two hours off - my friend Jock said 'damn this, I cannot stand it any longer!' He took off his tunic - we slept in these - then he took off his jersey, then his shirt. He put his shirt in the middle of the dug-out floor and put his jersey and tunic on again. As we sat up in bed watching the shirt he had taken off and put it on the floor it actually lifted; it was swarming with lice.

### (2) Isaac Rosenberg, *The Immortals* (1918)

I killed them, but they would not die.

Yea! all the day and all the night

For them I could not rest or sleep,

Nor guard from them nor hide in flight.

Then in my agony I turned

And made my hands red in their gore.

In vain - for faster than I slew

They rose more cruel than before.

I killed and killed with slaughter mad;

I killed till all my strength was gone.

And still they rose to torture me,

For Devils only die in fun.

I used to think the Devil hid

In women's smiles and wine's carouse.

I called him Satan, Balzebub.

But now I call him, dirty louse.

**(3) Private Stuart Dolden wrote about his experiences in the trenches after the war.**

We had to sleep fully dressed, of course, this was very uncomfortable with the pressure of ammunition on one's chest restricted breathing; furthermore, when a little warmth was obtained the vermin used to get busy, and for some unexplained reason they always seemed to get lively in the portion of one's back, that lay underneath the belt and was the most inaccessible spot. The only way to obtain relief was to get out of the dugout, put a rifle barrel between the belt and rub up and down like a donkey at a gatepost. This stopped it for a bit, but as soon as one got back into the dugout, and was getting reasonably warm so would the little brutes get going again.

**(4) Private George Coppard, *With A Machine Gun to Cambrai*(1969)**

A full day's rest allowed us to clean up a bit, and to launch a full scale attack on lice. I sat in a quiet corner of a barn for two hours delousing myself as best I could. We were all at it, for none of us escaped their vile attentions. The things lay in the seams of trousers, in the deep furrows of long thick woolly pants, and seemed impregnable in their deep entrenchments. A lighted candle applied where they were thickest made them pop like Chinese crackers. After a session of this, my face would be covered with small blood spots from extra big fellows which had popped too vigorously. Lice hunting was called 'chatting'. In parcels from home it was usual to receive a tin of supposedly death-dealing powder or pomade, but the lice thrived on the stuff.

**(5) Robert Graves, *Goodbye to All That* (1929)**

In the interval between stand-to and breakfast, the men who were not getting in a bit of extra sleep sat about talking and smoking, writing letters home, cleaning their rifles, running their thumb-nails up the seams of their shirts to kill lice, gambling. Lice were a standing joke. Young Bumford handed me one: "We was just having an argument as to whether it's best to kill the old ones or the young ones, sir. Morgan here says that if you kill the old ones, the young ones die of grief; but Parry here, sir, he says that the young ones are easier to kill and you can catch the old ones when they go to the funeral." He appealed to me as an arbiter: "You've been to college, sir, haven't you?"

**(6) John Reith, *Wearing Spurs* (1966)**

No lice had so far come my way, but I was always in fear of them. On going into trenches I used to spray about a gallon of lysol over my bunk below the parapet and generally about the

hut; now, with the receipt from home of a box of mercurial ointment, I took for the first time to wearing my identity disc, drawing the string through the ointment. I had heard that this was a louse deterrent. It made one's neck dirty but there was never a louse found.

**(7) Robert Sherriff , No Leading Lady (1968)**

At dawn on the morning of the attack, the battalion assembled in the mud outside the huts. I lined up my platoon and went through the necessary inspection. Some of the men looked terribly ill: grey, worn faces in the dawn, unshaved and dirty because there was no clean water. I saw the characteristic shrugging of their shoulders that I knew so well. They hadn't had their clothes off for weeks, and their shirts were full of lice.

**(8) Harry Patch, Last Post (2005)**

Lice. We were lousy. The lice were the size of grains of rice, each with its own bite, each with its own itch. When we could, we would run hot wax from a candle down the seams of our trousers, our vests - whatever you had - to burn the buggers out. It was the only thing to do. Eventually, when we got to Rouen, coming back, they took every stitch off us and gave us a suit of sterilised blue material. And the uniforms they took off, they burned them - to get rid of the lice. For the four months I was in France I never had a bath, and I never had any clean clothes to put on. Nothing.

**(9) Henry Allingham, Last Post (2005)**

We all got lice in our clothes. We used to run the seam of the shirt over a candle flame to get rid of them. Of course, you'd wash your shirt if you could - and when you did wash it, you'd hang it on a bit of line. Next thing you'd see was the lice crawling along the line.

**(10) Harriet Hyman Alonso, Robert E. Sherwood The Playwright in Peace and War (2007)**

Robert Sherwood's main trench annoyance was lice, another constant among soldiers. Filthy, wet clothing welcomed these pests, where they lodged in seams and caused constant itching. Many men also had head lice, which drove them to shave their heads, for no matter how often they washed and deloused their clothing and hair with creosote and carbolic soap, as Bobby did, they could not remove the louse eggs, which quickly hatched, starting the cycle all over again. Other trench annoyances included frogs, horned beetles, and slugs, which proliferated in the hospitable muddy environment.

## #3 Trench Rats

Many men killed in the trenches were buried almost where they fell. If a trench subsided, or new trenches or dugouts were needed, large numbers of decomposing bodies would be found just below the surface. These corpses, as well as the food scraps that littered the trenches, attracted rats. One pair of rats can produce 880 offspring in a year and so the trenches were soon swarming with them.

[Robert Graves](#) remarked in his book, *Goodbye to All That*: "Rats came up from the canal, fed on the plentiful corpses, and multiplied exceedingly. While I stayed here with the Welch, a new officer joined the company and, in token of welcome, was given a dug-out containing a spring-bed. When he turned in that night he heard a scuffling, shone his torch on the bed, and found two rats on his blanket tussling for the possession of a severed hand."

[George Coppard](#) gave another reason why the rats were so large: "There was no proper system of waste disposal in trench life. Empty tins of all kinds were flung away over the top on both sides of the trench. Millions of tins were thus available for all the rats in France and Belgium in hundreds of miles of trenches. During brief moments of quiet at night, one could hear a continuous rattle of tins moving against each other. The rats were turning them over." Some of these rats grew extremely large. [Harry Patch](#) claimed that "there were rats as big as cats". Another soldier wrote: "The rats were huge. They were so big they would eat a wounded man if he couldn't defend himself." These rats became very bold and would attempt to take food from the pockets of sleeping men. Two or three rats would always be found on a dead body. They usually went for the eyes first and then they burrowed their way right into the corpse.

One soldier described finding a group of dead bodies while on patrol: "I saw some rats running from under the dead men's greatcoats, enormous rats, fat with human flesh. My heart pounded as we edged towards one of the bodies. His helmet had rolled off. The man displayed a grimacing face, stripped of flesh; the skull bare, the eyes devoured and from the yawning mouth leapt a rat."

### Primary Sources

#### (1) **Sergeant A. Vine, diary entry (8th August, 1915)**

The stench of the dead bodies now is awful as they have been exposed to the sun for several days, many have swollen and burst. The trench is full of other occupants, things with lots of legs, also swarms of rats.

**(2) Richard Beasley, interviewed in 1993.**

If you left your food the rats would soon grab it. Those rats were fearless. Sometimes we would shoot the filthy swines. But you would be put on a charge for wasting ammo, if the sergeant caught you.

**(3) James Lovegrave, interviewed in 1993.**

Life in the trenches was hell on earth. Lice, rats, trench foot, trench mouth, where the gums rot and you lose your teeth. And of course dead bodies everywhere.

**(4) Frank Laird writing after the war.**

Sometimes the men amused themselves by baiting the ends of their rifles with pieces of bacon in order to have a shot at them at close quarters.

**(5) Captain Lionel Crouch wrote to his wife about life in the trenches in 1917.**

I can't sleep in my dugout, as it is over-run with rats. Pullman slept here one morning and woke up to find one sitting on his face. I can't face that, so I share Newbery's dug-out.

**(6) After the war Stuart Dolden wrote an account of life in the trenches.**

The outstanding feature of the trenches was the extraordinary number of rats. The area was infested with them. It was impossible to keep them out of the dugouts. They grew fat on the food that they pilfered from us, and anything they could pick up in or around the trenches; they were bloated and loathsome to look at. Some were nearly as big as cats. We were filled with an instinctive hatred of them, because however one tried to put the thought of one's mind, one could not help feeling that they fed on the dead.

**(7) Soon after arriving at the Western Front, the journalist, C. E. Montague wrote to his friend Francis Dodd (30th December, 1915)**

The one thing of which no description given in England any true measure is the universal, ubiquitous muckiness of the whole front. One could hardly have imagined anybody as muddy as everybody is. The rats are pretty well unimaginable too, and, wherever you are, if you have any grub about you that they like, they eat straight through your clothes or haversack to get at it as soon as you are asleep. I had some crumbs of army biscuit in a little calico bag in a greatcoat pocket, and when I awoke they had eaten a big hole through the coat from outside and pulled the bag through it, as if they thought the bag would be useful to carry away the stuff in. But they don't actually try to eat live humans.

**(8) Private George Coppard, *With A Machine Gun to Cambrai*(1969)**

Rats bred by the tens of thousands and lived on the fat of the land. When we were sleeping in funk holes the things ran over us, played about, copulated and fouled our scraps of food, their young squeaking incessantly. There was no proper system of waste disposal in trench life. Empty tins of all kinds were flung away over the top on both sides of the trench. Millions of tins were thus available for all the rats in France and Belgium in hundreds of miles of trenches. During brief moments of quiet at night, one could hear a continuous rattle of tins moving against each other. The rats were turning them over. What happened to the rats under heavy shell-fire was a mystery, but their powers of survival kept place with each new weapon, including poison gas.

**(9) Major Walter Vignoles, Lancashire Fusiliers, interviewed after the war.**

Rats. There are millions!! Some are huge fellows, nearly as big as cats. Several of our men were awakened to find a rat snuggling down under the blanket alongside them!

**(10) Private Frank Bass, letter (1916)**

In one of the dug-outs the other night, two men were smoking by the light of the candle, very quiet. All at once the candle moved and flickered. Looking up they saw a rat was dragging it away. Another day I saw a rat washing itself like a cat behind the candle. Some as big as rabbits. I was in the trench the other night and one jumped over the parapet.

**(11) Robert Graves, *Goodbye to All That* (1929)**

Rats came up from the canal, fed on the plentiful corpses, and multiplied exceedingly. While I stayed here with the Welch. a new officer joined the company and, in token of welcome, was given a dug-out containing a spring-bed. When he turned in that night he heard a scuffling, shone his torch on the bed, and found two rats on his blanket tussling for the possession of a severed hand.

**(12) Captain Alexander Stewart, diary entry (2nd June, 1916)**

The dugouts in this part of the line were infested with rats. They would frequently walk over one when asleep. I was much troubled by them coming and licking the brilliantine off my hair; for this reason, I had to give up using grease on my head... flies were an absolute plague. Great big, fat, sodden, overfed, bloated brutes, bluebottles and large house flies. Most of them must have come from and lived on the dead.

**(13) George Mallory, letter to his wife, Ruth Mallory (15th July, 1916)**

The two mice which were building a nest of paper which they used to tear noisily each night were victimised in the first hour, and there were two more victims, mere visitors I suspect, last night. Rats, happily, don't infest my dugout but as they swarm in the neighbourhood I thought it

wise to guard the entrance. A more useful purpose, however, seemed to be served by lending it to the officers' cookhouse - six rats were caught in an hour - we shall have to dig a special grave for the numerous corpses.

**(14) Harry Patch, Last Post (2005)**

We were soon back in the trenches after that action. Our living conditions there were lousy, dirty and unsanitary - no matter what the weather was, whether it was hot or cold, rain or fine, you were in there for four days, and three nights. There were rats as big as cats, and if you had any leather equipment the damn things would gnaw at it. We had leather equipment - and they'd chew it. If you stood still long enough they'd chew your bootlaces.

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## #4- Poison Gases

Poisonous gases were known about for a long time before the [First World War](#) but military officers were reluctant to use them as they considered it to be a uncivilized weapon.

The [French Army](#) were the first to employ it as a weapon when in the first month of the war they fired tear-gas grenades at the Germans.

In October 1914 the [German Army](#) began firing shrapnel shells in which the steel balls had been treated with a chemical irritant. The Germans first used [chlorine](#) gas cylinders in April 1915 when it was employed against the [French Army](#) at [Ypres](#). Chlorine gas destroyed the respiratory organs of its victims and this led to a slow death by asphyxiation.

General [William Robertson](#) recommended Brigadier General [Charles Howard Foulkes](#) to General [John French](#) as the best man to organise the retaliation. Foulkes accepted the post he eventually received the title of General Officer Commanding the Special Brigade responsible for Chemical Warfare and Director of Gas Services. He worked closely with scientists working at the governmental laboratories at [Porton Down](#) near [Salisbury](#). His biographer, [John Bourne](#), has argued: "Despite Foulkes' energy, the ingenuity of his men and the consumption of expensive resources, gas was ultimately disappointing as a weapon, despite its terrifying reputation."

It was important to have the right weather conditions before a gas attack could be made. When the [British Army](#) launched a gas attack on 25th September in 1915, the wind blew it back into the faces of the advancing troops. This problem was solved in 1916 when gas shells were produced for use with [heavy artillery](#). This increased the army's range of attack and helped to protect their own troops when weather conditions were not completely ideal.

After the first German [chlorine](#) gas attacks, Allied troops were supplied with masks of cotton pads that had been soaked in urine. It was found that the ammonia in the pad neutralized the poison. Other soldiers preferred to use handkerchiefs, a sock, a flannel body-belt, dampened with a solution of bicarbonate of soda, and tied across the mouth and nose until the gas passed over. It was not until July 1915 that soldiers were given efficient gas masks and anti-asphyxiation respirators.

One disadvantage for the side that launched [chlorine](#) gas attacks was that it made the victim cough and therefore limited his intake of the poison. Both sides found that [phosgene](#) was more effective poison to use. Only a small amount was needed to make it impossible for the soldier to keep fighting. It also killed its victim within 48 hours of the attack. Advancing armies also used a mixture of chlorine and phosgene called 'white star'.

[Mustard Gas](#) (Yperite) was first used by the [German Army](#) in September 1917. The most lethal of all the poisonous chemicals used during the war, it was almost odourless and took twelve hours to take effect. Yperite was so powerful that only small amounts had to be added to high

explosive shells to be effective. Once in the soil, mustard gas remained active for several weeks. The Germans also used bromine and chloropicrin.

In July 1917, [David Lloyd George](#) appointed [Winston Churchill](#) as Minister of Munitions and for the rest of the war, he was in charge of the production of tanks, aeroplanes, guns and shells. [Clive Ponting](#), the author of [Churchill](#) (1994) has argued: "The technology in which Churchill placed greatest faith though was chemical warfare, which had first been used by the Germans in 1915. It was at this time that Churchill developed what was to prove a life-long enthusiasm for the widespread use of this form of warfare."

Churchill developed a close relationship with Brigadier General [Charles Howard Foulkes](#). Churchill urged Foulkes to provide him with effective ways of using chemical weapons against the [German Army](#). In November 1917 Churchill advocated the production of gas bombs to be dropped by aircraft. However, this idea was rejected "because it would involve the deaths of many French and Belgian civilians behind German lines and take too many scarce servicemen to operate and maintain the aircraft and bombs."

On 6th April, 1918, Churchill told [Louis Loucheur](#), the French Minister of Armaments: "I am... in favour of the greatest possible development of gas-warfare." In a paper he produced for the War Cabinet he argued for the widespread deployment of tanks, large-scale bombing attacks on German civilians and the mass use of chemical warfare. Foulkes told Churchill that his scientists were working on a very powerful new [chemical weapon](#) codenamed "M Device".

According to [Giles Milton](#), the author of [Russian Roulette: How British Spies Thwarted Lenin's Global Plot](#) (2013): "Trials at Porton suggested that the M Device was indeed a terrible new weapon. The active ingredient in the M Device was diphenylaminechloroarsine, a highly toxic chemical. A thermogenerator was used to convert this chemical into a dense smoke that would incapacitate any soldier unfortunate enough to inhale it... The symptoms were violent and deeply unpleasant. Uncontrollable vomiting, coughing up blood and instant and crippling fatigue were the most common features.... Victims who were not killed outright were struck down by lassitude and left depressed for long periods."

Churchill hoped that he would be able to use the top secret "M Device", an exploding shell that released a highly toxic gas derived from arsenic. Foulkes called it "the most effective chemical weapon ever devised". The scientist, [John Haldane](#), later described the impact of this new weapon: "The pain in the head is described as like that caused when fresh water gets into the nose when bathing, but infinitely more severe... accompanied by the most appalling mental distress and misery." Foulkes argued that the strategy should be "the discharge of gas on a stupendous scale". This was to be followed by "a British attack, bypassing the trenches filled with suffocating and dying men". However, the war came to an end in November, 1918, before this strategy could be deployed.

It has been estimated that the Germans used 68,000 tons of gas against Allied soldiers. This was more than the [French Army](#) (36,000) and the [British Army](#) (25,000). An estimated 91,198 soldiers died as a result of poison gas attacks and another 1.2 million were hospitalized. The [Russian Army](#), with 56,000 deaths, suffered more than any other armed force.

Brigadier General [Charles Howard Foulkes](#) published [Gas: The True Story of the Special Brigade](#) in 1934. In the book Foulkes claims that the total British casualties due to gas amounted to 181,053 of which 6,109 were fatal. However, he admitted that this did not include the men who died after the war due to the effects of gas poisoning. He added that the [German Army](#) had not published details of their gas casualties.

**Poison Gas Deaths: 1914-1918**

Country	Non-Fatal	Deaths	Total
British Empire	180,597	8,109	188,706
France	182,000	8,000	190,000
United States	71,345	1,462	72,807
Italy	55,373	4,627	60,000
Russia	419,340	56,000	475,340
Germany	191,000	9,000	200,000
Austria-Hungary	97,000	3,000	100,000
Others	9,000	1,000	10,000
<b>Total</b>	<b>1,205,655</b>	<b>91,198</b>	<b>1,296,853</b>

<b>British Gas Casualties: 1914-18</b>	<b>Deaths</b>	<b>Non-Fatal</b>
Chlorine	1,976	164,457
Mustard Gas	4,086	16,526

## #5 Trench Food

A total of 3,240,948 tons of food was sent from Britain to the soldiers fighting in France and Belgium during the [First World War](#). The [British Army](#) employed 300,000 field workers to cook and supply the food. At the beginning of the war British soldiers were given 10 ounces of meat and 8 ounces of vegetables a day. As the size of the army grew and the German blockade became more effective, the army could not maintain these rations and by 1916 this had been cut to 6 ounces of meat a day. Later troops not in the front-line only received meat on nine out of every thirty days. The daily bread ration was also cut in April 1917. The British Army attempted to give the soldiers the 3,574 calories a day that dieticians said they needed. However, others argued that soldiers during wartime need much more than this.

Soldiers in the [Western Front](#) were very critical of the quantity and the quality of food they received. The bulk of their diet in the trenches was bully beef (canned corned beef), bread and biscuits. By the winter of 1916 flour was in such short supply that bread was being made with dried ground turnips. The main food was now a pea-soup with a few lumps of horsemeat. Kitchen staff became more and more dependent on local vegetables and also had to use weeds such as nettles in soups and stews.

The battalion's kitchen staff had just two large vats, in which everything was prepared. As a result, everything the men ate tasted of something else. For example, soldiers often complained that their tea tasted of vegetables. Providing fresh food was also very difficult. It has been estimated that it took up to eight days before bread reached the [front-line](#) and so it was invariably stale. So also were the biscuits and the soldiers attempted to solve this problem by breaking them up, adding potatoes, onions, sultanas or whatever was available, and boiling the mixture up in a sandbag.

The catering staff put the food in dixies (cooking pots), petrol cans or old jam jars and carried it up the communication trenches in straw-lined boxes. By the time the food reached the front-line it was always cold. Eventually the army moved the field kitchens closer to the front-line but they were never able to get close enough to provide regular hot food for the men. Sometimes a small group of soldiers managed to buy a small primus stove between them. When they could obtain the fuel, which was always in short supply, they could heat their food and brew some tea.

General [John Monash](#) pointed out: "It takes a couple of thousand men and horses with hundreds of wagons, and 118 huge motor lorries, to supply the daily wants of my population of 20,000. With reference to food we also have to see that all the men in the front lines regularly get hot food - coffee, oxa, porridge, stews."

On 18th March 1915 [Harold Chapin](#) wrote to his mother: "We are fed on Bully Beef (ordinary Fray Bentos, you know the brand) and lovely hard biscuits which I adore. Last night I added to my menu a bloater and some bread and marmalade, duff and coffee".

Gilbert Rogers painted this picture of two stretcher-bearers trying to prepare hot food.

Food was often supplied in cans. Maconochie contained sliced turnips and carrots in a thin soup. As one soldier said: "Warmed in the tin, Maconochie was edible; cold it was a mankiller." The [British Army](#) tried to hide this food shortage from the enemy. However, when they announced that British soldiers were being supplied with two hot meals a day, they received

over 200,000 letters from angry soldiers pointing out the truth of the situation. Men claimed that although the officers were well-fed the men in the trenches were treated appallingly. (If you find this article useful, please feel free to share. You can follow John Simkin on [Twitter](#), [Google+](#) & [Facebook](#) or subscribe to our monthly [newsletter](#).) [Harry Patch](#) later reported: "Our rations - you were lucky if you got some bully beef and a biscuit. You couldn't get your teeth into it. Sometimes if they shelled the supply lines you didn't get anything for days on end. There were five in a machine-gun team, and everything we had was shared amongst us. I used to get a parcel from home. My mother knew the grocer pretty well."

Food supply was a major problem when soldiers advanced into enemy territory. All men carried emergency food called iron rations. This was a can of bully beef, a few biscuits and a sealed tin of tea and sugar. These iron rations could only be opened with the permission of an officer. This food did not last very long and if the kitchen staff were unable to provide food to the soldiers they might be forced to retreat from land they had won from the enemy.

### Primary Sources

**(1) In a letter to his parents, Private Pressey of the Royal Artillery described the quality of the food men were receiving on the Western Front.**

The biscuits are so hard that you had to put them on a firm surface and smash them with a stone or something. I've held one in my hand and hit the sharp corner of a brick wall and only hurt my hand. Sometimes we soaked the smashed fragments in water for several days. Then we would heat and drain, pour condensed milk over a dishful of the stuff and get it down.

**(2) Richard Beasley was interviewed in 1993 about his experiences during the First World War.**

In training the food was just about eatable but in France we were starving. All we lived on was tea and dog biscuits. If we got meat once a week we were lucky, but imagine trying to eat standing in a trench full of water with the smell of dead bodies nearby.

**(3) [Harold Chapin](#), [letter](#) to Calypso Chapin (29th November 1914)**

We are getting if possible busier and busier. A Brigade Order arriving last night fairly late involved getting breakfast for all troops at 7.30 instead of 7.45 and 8 (two batches) which meant up before 5 and out in the rain (it was pouring) by 5.30 all the wood sopping: the fire trench half full of water and the carts and waggons being loaded and got out all over the shop.

We are being sorted into jobs. I fancy I shall stay on cooking. This is good because it is as useful a job as is going and one that demands conscientious hard work still it does not involve going into the actual firing line - a thing I have no ambition to do. Stray shell fire and epidemics are all I want to face thank you, let those who like the firing line have all the bullets they want.

**(4) Major Graham wrote a letter to his family about the food supplied to soldiers on the Western Front.**

I am sorry you should have the wrong impression about the food; we always had more than enough, both to eat and drink. I give you a day's menu at random: Breakfast - bacon and tomatoes, bread, jam, and cocoa. Lunch - shepherd's pie, potted meat, potatoes, bread and jam. Tea - bread and jam. Supper - ox-tail soup, roast beef, whisky and soda, leeks, rice pudding, coffee. We have provided stores of groceries and Harrods have been ordered to send us out a weekly parcel. However, if you like to send us an occasional luxury it would be very welcome.

**(5) Robert Graves wrote about his experiences of the First World War in his autobiography, *Goodbye to all That*. This passage refers to an attack where the battalion suffered very heavy casualties. Only three junior officers, Choate, Henry and Hill survived.**

Hill told me the story. The Colonel and Adjutant were sitting down to a meat pie when Hill arrived. Henry said: "Come to report, sir. Ourselves and about ninety men of all companies."

They looked up. "So you have survived, have you?" the Colonel said. "Well all the rest are dead. I suppose Mr. Choate had better command what's left of 'A'. The bombing officer (he had not gone over, but remained at headquarters) will command what's left of 'B'. Mr. Henry goes to 'C' Company. Mr. Hill to 'D'. Let me know where to find you if you are needed. Good night."

Not having being offered a piece of meat pie or a drink of whisky, they saluted and went miserably out. The Adjutant called them back, Mr. Hill, Mr. Henry."

Hill said he expected a change of mind of mind as to the propriety with which hospitality could be offered by a regular Colonel and Adjutant to a temporary second lieutenant in distress. But it was only: "Mr. Hill, Mr. Henry, I saw some men in the trench just now with their shoulder-straps unbuttoned. See that this does not occur in future."

**(6) Private Harold Horne, Northumberland Fusiliers, interviewed 1978.**

Ration parties from each company in the line went to carry back the rations which were tied in sandbags and consisted, usually, of bread, hard biscuits, tinned meat (bully) in 12 oz. tins, tinned jam, tinned butter, sugar and tea, pork and beans (baked beans with a piece of pork fat on top), cigarettes and tobacco. Sometimes we got Manconochie Rations. This was a sort of Irish stew in tins which could be quickly heated over a charcoal brazier. When it was possible to have a cookhouse within easy reach of trenches, fresh meat, bacon, vegetables, flour, etc. would be sent up and the cooks could produce reasonably good meals. Food and tea was sent along in 'dixies' (large iron containers the lid of which could be used as a frying pan).

**(7) General John Monash, letter (11th January 1917)**

The big question is, of course, the food and ammunition supply, the former term covering meat, bread, groceries, hay, straw, oats, wood, coal, paraffin and candles, the latter comprising cartridges, shells, shrapnel, bombs, grenades, flares, and rockets. It takes a couple of thousand men and horses with hundreds of wagons, and 118 huge motor lorries, to supply the daily wants of my population of 20,000.

With reference to food we also have to see that all the men in the front lines regularly get hot food - coffee, oxo, porridge, stews. They cannot cook it themselves, for at the least sign of the smoke of a fire the spot is instantly shelled. And they must get it regularly or they would perish of cold or frostbite, or get 'trench feet,' which occasionally means amputation.

**(8) General Sixt von Armin, report published by the German Army during the First World War.**

It is necessary that fresh troops going into the line, when the precise state of the battle is uncertain, should be supplied with the 3rd iron ration. All troops were unanimous in their request for increased supplies of bread, rusks, sausage, tinned sausages, tinned fat, bacon, tinned and smoked meat, and tobacco, in addition. There was also urgent need for solidified alcohol for the preparation of hot meals.

In various quarters, the necessity for a plentiful supply of liquid refreshments of all kinds, such as coffee, tea, cocoa, mineral waters, etc., is emphasized still more. On the other hand, the supply of salt herrings, which increase the thirst, was found to be, as a general rule, very undesirable. There is no necessity for an issue of alcoholic drink in warm and dry weather.

**(9) Harold Chapin, letter to Calypso Chapin (18th March 1915)**

We are fed on Bully Beef (ordinary Fray Bentos, you know the brand) and lovely hard biscuits which I adore. Last night I added to my menu a bloater and some bread and marmalade, "duff" and coffee - having scraped an acquaintance with some of the engine room artificers who invited me to sup in the fo'castle. It was very hot in there but we supped in low neck. Great fun!

**(10) Harry Patch, Last Post (2005)**

Our rations - you were lucky if you got some bully beef and a biscuit. You couldn't get your teeth into it. Sometimes if they shelled the supply lines you didn't get anything for days on end. There were five in a machine-gun team, and everything we had was shared amongst us. I used to get a parcel from home. My mother knew the grocer pretty well. There was always an ounce of tobacco and two packets of twenty cigarettes. That was handed to Number One to share out. That ounce of tobacco - Number Three was a pipe-smoker, same as I was - was cut in half. He had half and I had half. The cigarettes - thirteen each for the others and they took it in turns to have the odd one. And if you got a pair of socks, and somebody else had a pair with holes in, they'd chuck them away and they'd have the new ones. That was the life we lived

because we never knew from one moment to the next when something would come over with our number on...

Drink was either weak tea or water drunk from old petrol cans. As for food, we had Crosse & Blackwell's plum and apple jam and dog biscuits. The biscuits were so hard we used to throw them away. One day I looked through the metal aperture that we used to fire through, and two dogs were out there fighting over one of our biscuits. They were fighting over which one should have it. Their owners had probably been killed by shell fire. They were simply strays. They were fighting over a biscuit to keep alive. I thought to myself, "Well, I don't know, there's two animals out there fighting for their lives, and here we are, two highly civilised nations, and what are we fighting over?"

## #6 Shellfire in the First World War

During the first two weeks of the [Battle of Passchendaele](#) the British, Australian and Canadian guns fired 4,283,550 shells at the German defences. It is estimated that throughout the [First World War](#) the [Allies](#) used 5,000,000 tons of [artillery](#) shells against enemy positions.

The [Central Powers](#) used a similar amount of shells in their effort to win the war.

Soldiers subjected to continual exposure to shell-fire were in danger of developing [shell-shock](#). Early symptoms included tiredness, irritability, giddiness, lack of concentration and headaches. Eventually the men suffered mental breakdowns making it impossible for them to remain in the [front-line](#). Between 1914 and 1918 the [British Army](#) identified 80,000 men (2% of those who saw active service) as suffering from shell-shock.

### (1) [Private Edgar Foreman](#), London Regiment, letter to parents (September, 1915)

The Germans can now throw a bomb 200 lbs in weight and 5ft long a distance of 1000 yards, it explodes like a mine and kills by concussion. They sent several over every day and killed a good many. One of the four men of our Battalion who were killed that way I knew quite well, he was the last of five brothers all of whom have been killed in the war.

### (2) [Guy Chapman](#), *A Passionate Prodigality: Fragments of Autobiography* (1933)

One morning, while I was inspecting the rifles of the sentries on duty, I was startled, not to say alarmed, by three whizz-bangs bursting as it seemed all round my head. I heard one coming very close, caught a glimpse of it out of the tail of my eye, and at that moment slipped. I picked myself up, but before I could reach my full height, the minnie burst. A furious hot whirlwind rushed down, seized me and flung me violently back against the earth. I lay half-stunned while a rain of earth and offal pattered down on me, followed by something which whizzed viciously and stuck quivering in the trench wall; it was a piece of jagged steel eighteen inches long.

### (3) [Harold Chapin](#), letter to [Alice Chapin](#) (1st June 1915)

Things have quieted down now - only aeroplanes and anti-aircraft guns with occasional, very occasional, five minutes of shelling disturb the town. After the inferno which raged "out there" for the last two weeks the result of which you have seen by the papers, (it looks little enough but has cost both sides the most enormous efforts and really signifies much), the comparative calm is almost uncanny. Men of this or that battalion are wandering aimlessly about the streets, getting arrears of food into them, and losing slowly the strained and distraught manner that their experiences have engendered...

These things almost please one by their very perfection of eeriness and horror. Do you understand? They are like the works of some gigantic supernatural artist in the grotesque and horrible. I shall never fear the picturesque in stage grouping again. Never have I seen such perfect grouping as when, after a shell had fallen round the corner from here a fortnight ago, three of us rushed round and the light of an electric torch lit up a little interior ten feet square,

with one man sitting against the far wall, another lying across his feet and a dog prone in the foreground, all dead and covered evenly with the dust of powdered plaster and masonry brought down by the explosion! They might have been grouped so for forty years - not a particle of dust hung in the air, the white light showed them, pale whitey brown, like a terracotta group. That they were dead seemed right and proper - but that they had ever been alive - beyond all credence.

**(4) Private Henry Russell was badly wounded by shell-fire on 1st July, 1916, at the Battle of the Somme.**

I crawled into a shell-hole into which another colleague of mine had also crawled. He told me that he had been shot through the middle of the back and that the bullet had emerged through his left ear. We had not long to wait before a shell burst on the edge of our hole; it killed my colleague and injured me in such a way that I was virtually emasculated. I considered the situation hopeless and that even if a miracle happened and I did, in fact, get away, I would not be fit for anything in this world. I, therefore, decided to kill myself.

I managed to get hold of the bottle of rum which I had put in my haversack and I drank the lot hoping that it would result in my death. In fact it did me no harm at all. It also probably made me slightly merry and bright and rather stupefied. It also probably caused me to drop off to sleep, though I am not aware of this. However, I came to the conclusion, when I had recovered my senses, that, in spite of my condition (my left arm being torn, my left thigh damaged, my right leg wounded and strips of flesh hanging down from my abdomen) it was still worth making a serious effort to save myself.

**(5) Charles Hudson, journal entry, quoted in Soldier, Poet, Rebel(2007)**

No man's land in the salient varied from a few yards, incredible as this sounds, to about a hundred yards. Shelling was not as common in the front line itself as further back owing to the proximity of the enemy. Trench mortar fire and rifle grenades were our bugbears in the front line. I preferred, of the two, shelling. A shell came quickly, a trench mortar rose high into the air and then on reaching the apex of its flight came down, turning over and over like an old boot, landing with a thud before it burst. From the apex downwards it always appeared to be making straight for you if you watched it, much as the eyes of a portrait seem to follow the viewer round a room. I learned not to look.

# Trench Problem Presentations Chart

Directions- As each group presents, take good notes on their topic.

Problem	Notes
1. Trench Foot	
2. Lice	
3. Trench Rats	
4. Poison Gases	
5. Trench Food	
6. Shell Fire	

Presentation Scoring Guide

Group Members \_\_\_\_\_

Requirement	Points Possible	Points Earned	Comments
5 important facts about life in the trenches in relation to your assigned challenge	10		
A warning sign with a symbol that relates to your assigned challenge	5		
A direct quote from a provided primary source	5		
All group members must have a speaking role	5		
Presentation should be less than 3 minutes	5		
<b>Total</b>	<b>30</b>		

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Group Members \_\_\_\_\_

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