THE NATURE OF TRENCH WARFARE

**MAIN ISSUES**

- the trenches
- no man’s land
- fighting along the Western Front
- weaponry
- the increasing use of technology

**KEY TERMS AND CONCEPTS**

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tr>
<td>machine gun</td>
<td>an extremely powerful and rapid-firing gun capable of killing large numbers of soldiers in a very short time</td>
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<tr>
<td>trench warfare</td>
<td>a method of fighting in which troops fight from fixed positions and seek to capture enemy trenches</td>
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<tr>
<td>front-line trench</td>
<td>the trench closest to enemy trenches</td>
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<tr>
<td>no-man’s land</td>
<td>the area of land between two enemies’ front lines</td>
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<td>‘over the top’</td>
<td>describes soldiers’ actions when they leave their trenches to attack enemy trenches</td>
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<td>sniper</td>
<td>an individual soldier using a rifle</td>
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<td>pill boxes</td>
<td>concrete structures occupied by a few men and positioned to control a section of the front</td>
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<tr>
<td>artillery</td>
<td>heavy guns used to destroy enemy positions</td>
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<tr>
<td>dogfight</td>
<td>an aerial battle between two opposing pilots</td>
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<td>aces</td>
<td>World War I fighter pilots</td>
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**KEY PERSONALITIES**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
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<tr>
<td>Manfred von Richthofen</td>
<td>highly successful German fighter pilot</td>
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<tr>
<td>Captain Albert Ball</td>
<td>highly successful British fighter pilot</td>
</tr>
<tr>
<td>Wilfred Owen</td>
<td>British soldier-poet</td>
</tr>
<tr>
<td>General Ludendorff</td>
<td>German commander from 1916</td>
</tr>
<tr>
<td>General Haig</td>
<td>commander of the British forces</td>
</tr>
<tr>
<td>Lord Kitchener</td>
<td>British Minister of War until his death in 1916</td>
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**KEY EVENTS**

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tr>
<td>November 1917</td>
<td>Battle of Cambrai (battle that saw the first successful use of tanks)</td>
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INTRODUCTION

Few military leaders of the time had any understanding of the true nature of the war upon which they had embarked in August 1914. Feelings of elation and excitement and hopes for glory dominated both popular and official feeling.

Ignorance of what was to come was probably one of the main reasons why so many men eagerly lined up to volunteer for service. Military strategists believed that the conflict would be a war of movement and that, following a knockout blow, it would all be over by Christmas 1914. By the time the Western Front had been created and rival armies had dug themselves in at the end of 1914, military leaders were at a loss to find a suitable strategy. Source 2.1 (page 12) sums up these feelings well.

Yet Europe's military leaders should not have been so surprised at the way the conflict developed. The use of trenches had been seen as early as the American Civil War (1861-65). The use of the Gatling gun in that conflict must have indicated what impact the machine gun might have. As recently as the Russo-Japanese War (1904-05), fighting from well-prepared defensive positions had already been witnessed.

It was not only the style of trench that was to shock the world after 1914 but also the conditions on the front. The filth and degradation to which soldiers on all sides were subjected was unprecedented. Thousands of men died not only from enemy fire but also from the conditions in which they had to live and fight. The men were stretched to the limit of not only their physical endurance but also their mental endurance.

THE TRENCHES

As the front stabilised at the end of 1914 and into 1915, trenches were seen as temporary expedients. They were dug to house the men before the big offensive that would achieve the decisive knockout blow. However, as the weeks turned into months, the trenches took on an air of permanency. They were strengthened. German trenches eventually used concrete and were built to a depth of up to 12 metres. British trenches were never as solid as their German counterparts because the British maintained a firm belief in the cult of the offensive. If the men were going to break through the German lines at any time, why waste time building long-lasting trenches?

As time went on, the trenches became more complex. Compartments were created for supplies of ammunition. There were dugouts in which the men would try to sleep. German trenches had rooms going off the main trench. Officers' conditions were always better than those of the ordinary soldier and some German officers' trenches captured later in the war had electricity and wallpaper!

The general public on the home front were given an idealised view of the trenches. Model trenches were constructed in Hyde Park in London and members of the public were invited to share the experience of the boys over in France. Source 3.1 shows the idealised view of a trench. The reality of course was quite different. Source 3.2 gives a more realistic view of what the trenches were like.

Both Allied and German trenches developed into a complex network that stretched back many kilometres from the front line. The more complex the trench networks became and the further back they stretched, the more difficult it was going to be to break through. The front-line trench was where troops positioned themselves for launching an attack on the enemy, or awaited such an attack. These were supported with observation posts and machine-gun nests. Further back were the reserve trenches where reinforcements would wait to called up to the front line. Connecting the trenches was a series of communications trenches that stretched back even further to first-aid posts and supply depots. The trench network became so complex that soldiers began to give trenches street names.
Source 3.3 provides an aerial view of bombed-out trenches along part of the Western Front.

Source 3.1 Cross-section of a trench

Source 3.2 The reality of the trenches

Source 3.3 An aerial photograph of bombed trenches
Figure 8.12 A strong German trench with dugout entrance on right.

Figure 8.13 A cross-section of a trench on the Western Front.
Figure 8.9 An aerial photograph of the trench system. The main trench area is German. The British trenches are on the right. The white colouration around the trenches is due to the chalk soil that was thrown up during the digging. (Imperial War Museum Negative Number Q45786)

Figure 8.10 The ‘perfect trench’ (Imperial War Museum Negative Number Q15857)

Figure 8.11 A trench in Guedecourt, December 1916 (Imperial War Museum Negative Number E1/4US575)
**NO-MAN'S LAND**

The front-line trenches did not stretch across the country in a neat straight line. They often zigzagged. The aim of this was twofold: it added stability and also made possible a double line of fire if an enemy attacked. Opposing trenches did not remain the same distance apart all along the front. The area between the Allied and German front-line trenches was called no-man's land could be 8-10 kilometres wide; in other places it could be as narrow as 50 metres.

No-man’s land presented a nightmare scenario for most soldiers. Leaving one's trench and going ‘over the top’ into that area made one an easy target for enemy machine guns. No-man's land was usually full of deep craters and the combination of mud, heavy rain and artillery bombardment made it a fearful quagmire through which it was difficult to even walk, let alone fight. The Battle of Passchendaele was fought under such conditions.

No-man's land was hazardous for other reasons. It was often mined, which meant a wrong step could lead to oblivion. At night small groups of soldiers were sometimes sent out to raid opposing trenches. This placed these men at risk of fire and attacks from enemy troops undertaking the same task. At night, flares would be sent up into the air to light up no-man's land and target any men out there.

One of the greatest fears for ordinary soldiers was to be stranded in no-man's land either wounded or stuck on the barbed wire and left to die.

Later in the war, concrete pill boxes were constructed. Their aim was to control a wide area of land with minimum resources. A small group of well-armed men holed up in a pill box could achieve the same purpose as a line of men in a frontline trench.

**THE BASICS OF BATTLE**

In war, all soldiers can justly claim that there is no such thing as a typical battle. Every situation is unique, determined by the lie of the land, the weather, the timing of the battle, the skills of the commanders and a host of other human factors. However, Western Front battles did have some common features.

- As the trench network became more complex, commanders realised that to achieve any breakthrough would require an enormous effort involving massive firepower, limitless supplies and vast numbers of men.

- Moving such a vast force required careful planning. Typically a location along the front would be selected for an attack. The men, supplies and logistical support would be assembled. However, putting together such a vast force for an attack could take months, as in the case of the Somme in 1916.

- Inevitably, it became impossible to keep such vast movements a secret. The increasing use of reconnaissance aircraft over the Western Front ensured this.

- This meant that if the enemy suspected a big push was underway, they would prepare their defences in a similar manner. It became almost impossible to achieve surprise.

- Once the forces had been assembled, the spot chosen for the attack was heavily bombarded by artillery. Heavy guns, such as those shown in Source 3.4, would pound the enemy’s front-line position.

- The aim was to soften up the opposing front line and drive the defenders out of their trenches. The bombardment inflicted on the Germans before the Battle of the Somme lasted for an entire week.
Artillery barrages had the capacity to turn open land into a cratered moonscape and cities into rubble. Source 3.5 shows the impact of artillery bombardment on the Belgian city of Ypres.

Once the commanders were satisfied that the enemy trenches had been cleared, the signal was given to the troops to leave the trenches. A whistle was blown and the attacking force climbed out of their trenches and across no-man’s land towards the enemy line. At the Somme, British soldiers were ordered to across no-man’s land in straight lines at one-minute intervals. The men would often be burdened not only with their weapons but also supplies, spades and anything else that might need to establish once they had taken the enemy trenches. No-man’s land was frequently a muddy quagmire peppered with craters, often filled water or gas. Crossing no-man’s land was exhausting.

As the attackers crossed no-man’s land they would be met with a chorus of machine-gun fire. Two men operating a machine gun could hold off hundreds of attacking infantry. The machine gun had become the key weapon of modern defensive warfare. Infantry attacks across no-man’s land always resulted in enormous casualties. If attackers reached the other side, they had to negotiate enemy barbed-wire defences. Artillery attacks often threw barbed wire up in the air. It then fell in a tangled mess that was sometimes almost impossible to get through.
Flow chart outlining the key elements of the experience of going ‘over the top’

- Barrage of artillery fire to weaken the defences of the enemy's front line trenches (men, barbed wire, the trenches themselves)
- Soldiers wait until just before sunrise for the order to advance

**10 minutes before the scheduled attack time:**
- Officers clarify goals, convey final orders, check equipment and offer encouragement (British troops received a rum ration)
- Soldiers fix bayonets to their rifles

- Officer signals men to go ‘over the top’ of the trench and out into ‘no man's land’
- Soldiers begin to move forward as their enemies race to set up their machine guns
- Some are wounded or killed as a result of enemy fire

- Soldiers attempt to advance towards enemy trenches but it is the enemy who has the advantage
- 'No man's land by this time is full of smoke, shell holes and the sound of artillery fire
- Visibility is poor as soldiers try to remain with their group and avoid isolation

- Soldiers continue towards original objective amid the general chaos and confusion
- Some are wounded or killed as a result of enemy fire

- Attack succeeds in achieving its aim or
- Enemy succeeds in defending its territory or
- Attack is abandoned because of changed conditions

- Soldiers return to trenches
- Roll call to see who is missing
- Wounded taken to obtain medical care
- Soldiers wait until dark to retrieve bodies or additional wounded from no man's land
If it was possible to get through the wire, hand-to-hand fighting might ensue as the defenders tried desperately to keep possession of their trenches.

Attacks like these might continue for months. There would then be a pause in the fighting until the commanders decided on another attempt to a breakthrough.

Men who fought in the trenches have described their existence as ranging from moments of utter fear and terror, when an attack was launched, to possibly weeks of utter boredom. Parts of the Western Front might see no action at all. However, this did not mean the soldier in the trenches could relax. A moment of carelessness could result in death from a sniper’s bullet. As late as November 1918 men at the front died from sniper attacks even though the massive offensives experienced earlier in the war had come to an end.

The pattern of fighting along the Western Front was futile and deadly. It might seem impossible to find humour in such horror. However, humour can highlight truths as successfully as a more sombre text, as Source 3.7 demonstrates.

**SOURCE 3.7**

Scene: in the trench

[Lieutenant George is in the trench, peering through a pair on binoculars across no-man’s land.]

Blackadder: Oh, God, why do they bother?

George: Well, it’s to kill Jerry, isn’t it, sir?

Blackadder: Yes, but Jerry is safe underground in concrete bunkers. We’ve shot off over a million cannon shells and what’s the result? One dachshund with a slight limp!

... 

Blackadder: I, on the other hand, am a fully rounded human being with a degree from the university of life, a diploma from the school of hard knocks, and three gold stars from the kindergarten of getting the shit kicked out of me. My instincts lead me to deduce that we are at last about to go over the top. [peers over the top of the trench with a periscope]

George: Great Scott sir, you mean, you mean the moment’s finally arrived for us to give Harry Hun a darned good British style thrashing, six of the best, trousers down?

Blackadder: If you mean, "Are we all going to get killed?” Yes. Clearly, Field Marshal Haig is about to make yet another gargantuan effort to move his drinks cabinet six inches closer to Berlin.

George: Right! Bravo! Well let’s make a start eh, up and over to glory, last one in Berlin's a rotten egg.

Blackadder: Give me your helmet, lieutenant.

[George hands his helmet to Blackadder, who throws it up into the sky. Immediately heavy machine-gun fire is heard. He catches the helmet, which now has over 20 holes in it, and gives it back to George.]

George: Yes, some sort of clever hat-camouflage might be in order.
Melchett: Good man. Now, Field Marshal Haig has formulated a brilliant new tactical plan to ensure final victory in the field. [they gather around a model of the battlefield]

Blackadder: Now, would this brilliant plan involve us climbing out of our trenches and walking slowly towards the enemy sir?

Darling: How can you possibly know that Blackadder? It's classified information.

Blackadder: It's the same plan that we used last time, and the seventeen times before that.

Melchett: E-E-Exactly! And that is what so brilliant about it! We will catch the watchful Hun totally off guard! Doing precisely what we have done eighteen times before is exactly the last thing they'll expect us to do this time! There is however one small problem.

Blackadder: That everyone always gets slaughtered the first ten seconds.

Melchett: That's right! And Field Marshal Haig is worried that this may be depressing the men a tadge. So, he's looking to find a way to cheer them up.

Blackadder: Well, his resignation and suicide would seem the obvious solution.

Melchett: Interesting thought. Make a note of it, Darling!

...[Blackadder, Baldrick and George crawling across no-man's-land.]

Blackadder: All right, total and utter quiet, do you understand? So for instance if any of us crawl over any barbed wire they must on no account goaaAAAAAAAAAAHH!

Baldrick: Have you just crawled over some barbed wire sir?

Blackadder: No Baldrick, I just put my elbow in a blob of ice cream.

Baldrick: Oh, that's all right then.

Blackadder: Now, where the hell are we?

George: Well, it's difficult to say, we appear to have crawled into an area marked with mushrooms.

Blackadder: [patiently] What do those symbols denote?

George: Pff. That we're in a field of mushrooms?

Blackadder: Lieutenant, that is a military map, it is unlikely to list interesting flora and fungi. Look at the key and you'll discover that those mushrooms aren't for picking.
George: Good Lord, you’re quite right sir, it says "mine". So, these mushrooms must belong to the man who made the map.

Blackadder: Either that, or we're in the middle of a mine-field.

Baldrick: Oh dear.

George: So, he owns the field as well?

[Machine-guns fire.]

George: [yelling] THEY'RE FIRING SIR, THEY'RE FIRING.

[The guns stop.]

Blackadder: Ah yes, thank you Lieutenant. If they hit me you'll be sure to point it out, won't you?

...

Blackadder: Quite. Come on, let's get out of here.

George: Oh sir, just one thing. If we should happen to tread on a mine, what do we do?

Blackadder: Well, normal procedure, Lieutenant, is to jump 200 feet into the air and scatter yourself over a wide area.

...

[Headquarters, later that night. Melchett and Darling are dining.]

Darling: I suppose Blackadder and his boys will have gone over the top by now.

Melchett: Yes. God, I wish I were out there with them, dodging the bullets, instead of having to sit here drinking this Chateau Lafite, eating these Filets Mignon in sauce Bernaise.

Darling: My thoughts exactly sir. Damn this Chateau Lafite.

Melchett: He's a very brave man, Blackadder. And of course that Lieutenant of his, George, Cambridge man you know. His uncle Bertie and I used to break wind for our college.

## The Weaponry of World War I

Table showing the main weapons of trench warfare, their uses and effectiveness

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<tr>
<th>Weapon</th>
<th>Use</th>
<th>Effectiveness</th>
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<tbody>
<tr>
<td>artillery</td>
<td>Both armies used artillery bombardments for both attack and defence. Gunners fired shells from behind their own lines, both before an attack and over the heads of advancing troops.</td>
<td>Artillery bombardments caused 50 percent of all casualties on the Western Front. Initially some of these were from the perpetrators’ own army. Bombardments preceded a major attack and therefore gave warning of it. They often failed to achieve their goal of destroying barbed wire and enemy trench positions and severely damaged the area of no man’s land over which their own soldiers had to advance. The enemy’s counter barrage made this problem worse. By 1916, artillery fire was more accurate.</td>
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<tr>
<td>bayonets</td>
<td>Designers intended the bayonet for use in offensive warfare. While used by both sides for the entire period of the war, opportunities for their use were limited by the defensive nature of the war.</td>
<td>Bayonets were of little use to soldiers facing machine gun fire. In close combat, the bayonet was safer to use than a bullet that might move through the enemy’s body to hit one of the shooter’s fellow soldiers. Soldiers feared bayonet wounds so the bayonet did have psychological impact.</td>
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<td>flame throwers (Flammenwerfer)</td>
<td>The Germans initiated the first of 650 uses of its flame throwers in October 1914. The British and French subsequently used similar weapons.</td>
<td>The burning fuel produced by the flame thrower terrified its victims. It was effective as a short-range weapon but the possibility of its cylinder exploding accidentally meant that it could also endanger its user.</td>
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<tr>
<td>grenades</td>
<td>All armies had grenade-throwing troops. Grenades were used as a defensive weapon, whereas the Germans used them for defensive purposes. Both sides established separate machine gun corps in 1915.</td>
<td>For obvious reasons, grenadiers preferred grenades with timed safety devices to percussion grenades which detonated when they hit something. These had to be handled very carefully to prevent premature explosion. Initially unsafe and unreliable, by 1917 the Mills bomb grenade had become a popular and effective means of destroying enemy pillboxes. It was a ‘fragmentation’ bomb, meaning that it exploded into many small, sharp pieces. In 1917, the British ‘No. 3M’ reduced the number of non-explosive grenades. Grenade supplies were difficult to carry around and this limited their practicality.</td>
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<tr>
<td>machine guns</td>
<td>The Belgians began using these in the form of the Lewis gun in 1914 and the Germans followed with the Bergmann gun soon after. From 1915, the British began producing large numbers of Lewis guns, which could be regulated to fire as many as 500-600 rounds/minute, and became very skilled in their use. The British used them as an offensive weapon, whereas the Germans used them for defensive purposes. Both sides established separate machine gun corps in 1915.</td>
<td>Very effective against an infantry attack with firing power of eight bullets per second and able to inflict casualties very quickly. At the same time, the sheer weight of machine guns (30-60 kg), limited their portability. Early machine guns were often dependent on the availability of water to cool them down. Machine guns often jammed. Despite these problems, on average, fire from a single machine gun was as effective as 80 rifles. Machine guns were used most effectively as a defensive weapon with gunners positioned to fire at an attack of enemy infantry.</td>
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<tr>
<td>poison gas, including chlorine gas, mustard gas and phosgene</td>
<td>The French used tear gas grenades in August 1914 and, after some use of chemicals in shrapnel shells in late 1914, the Germans used chlorine gas in cylinders in 1915 at the second Battle of Ypres. All the Allied armies subsequently adopted gas weaponry, the Germans using 60,000 tonnes by 1918; the French using 36,000 tonnes; and the British 25,000 tonnes.</td>
<td>Men soon learnt to fear blindness or the slow and painful death that this weapon could ultimately cause. While they failed to have a significant impact on battle outcomes, gas attacks did impinge on troop morale. They also initially had the problem that if the wind changed the gas might blow back to injure those who had fired it (see the warning devices in source 11.8). The development of gas shells to be used with artillery helped to overcome this problem. Gas attacks became less effective with the development of improved protective devices.</td>
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### Weapons

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<tr>
<th>Weapon</th>
<th>Use</th>
<th>Effectiveness</th>
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<tr>
<td>rifles</td>
<td>The main weapon used by infantrymen of all armies throughout the war. It was also the main weapon used by snipers. The British preferred the Lee Enfield rifle, the French, the Lebel rifle, with its slow and dangerous loading mechanism; and the Germans, the Mauser.</td>
<td>One of the most important weapons of the war, rifles were much easier to transport than most weapons. Effectiveness depended on the skills of the user. British rifle fire at Mons in 1915 was so fast (15 rounds per minute) that the Germans thought they were using machine guns. Armies could not maintain this level of skill and accuracy as they became reliant on non-professional soldiers. While rifle fire was suited to targets at up to 1400 metres away, the gunner’s accuracy declined at distances greater than 600 metres. The Lee Enfield Rifle was the most effective rifle. Soldiers valued its sturdy design and its rapid fire. The Mauser was more suited to use by snipers than to situations requiring rapid fire.</td>
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<tr>
<td>tanks</td>
<td>First used by the British at the Somme in 1916 and subsequently by the French from April 1917. It wasn’t until the whole British Tank Corps took them into operation at the Battle of Cambrai, in November 1917, that their value really became obvious. The Germans began using them effectively from April 1918.</td>
<td>Initially of limited value as they were very slow, liable to breakdown, had poor manoeuvrability (they could only move in a forwards direction) and were extremely uncomfortable for their occupants. By early 1917, tanks were being used more effectively in crashing through enemy lines, although infantry support lagged far behind. By 1918, German field guns were able to fire at them. Australian General Sir John Monash made very effective use of tanks in early July 1918 in coordination with artillery and aircraft to destroy enemy positions ahead of an infantry advance at Le Hamel. As a result, it took his forces only 93 minutes to attain their objective.</td>
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<tr>
<td>trench mortars</td>
<td>This was a tubular weapon from which soldiers could fire a projectile at angles above 45 degrees. The projectile then fell straight to the ground (if effective, into the enemy trench). The Germans used the minenwerfer and the British used the Stokes 3-inch mortar.</td>
<td>While effective when fired from one trench to another against enemy machine gun or sniper positions in a time of static warfare, the trench mortar was of little use after the resumption of a war of movement in 1918.</td>
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The war on the Western Front was dominated by rapid technological developments. Existing weapons were made to operate more quickly, accurately and effectively. Others were made increasingly bigger. New weapons that were to transform the face of modern warfare were introduced. Weaponry also ventured into the chemical and biological areas.

**THE RIFLE**

The rifle had long been a staple weapon of the infantry. However, by 1914 it had become absolutely deadly in the hands of trained troops. Most rifles had a range of about 500 metres though if they were used en masse, such as a group of soldiers firing simultaneously at enemy troops attacking across no-man’s land, they could be accurate up to 1000 metres. The staple German rifle was the Mauser 1898-pattern rifle, which was a magazine rifle, loaded from five-round chargers. The British Lee Enfield rifle contained a magazine with ten rounds and a trained soldier could fire fifteen per minute. When the German army faced the British Expeditionary Force at Mons in August 1914, they reported that they were hit with light machine-gun fire. In fact, the British troops were using only rifle fire.
THE MACHINE GUN

The key weapon on the Western Front was the machine gun. The machine gun was an excellent defensive weapon. With its range of anything between 500 and 1000 metres and its cone of fire, the term used to describe the varying trajectory of a machine-gun burst, a single weapon could wipe out hundreds of advancing troops. The principal German gun was the Maxim, while the British had the Vickers. Each could fire more than 450 rounds per minute. The machine gun was heavy and so it was not easy to move it to aid advancing troops. Later in the war, lighter versions were introduced such as the British Lewis light machine gun.

ARTILLERY

The prime purpose of artillery was to soften up enemy trenches and attack heavily fortified positions. Early in the war, most armies had light artillery such as the 75-millimetre field gun with a range of about 8 kilometres. These had the advantage of mobility but had a limited impact unless used in groups. Corps artillery included 200-millimetre guns with a range of up to 20 kilometres; army artillery included 250-millimetre guns with a range of more than 20 kilometres. The most famous German artillery piece was Big Bertha, a 420-millimetre howitzer. The range and destructive power of such guns were enormous, but their effectiveness was limited as their immense weight meant that rail transport was needed to move them.

Artillery tactics increased in sophistication as the war progressed. Creeping barrages attempted to protect troops as they moved forward by providing an advancing screen of cover. Box barrages were used to support trench-raiding teams by creating a safe area into which advancing troops would move. The advancing troops would raid a specific section of an enemy trench and then quickly retire.

OTHER WEAPONS

Grenades were favoured by attacking forces because of their portability. Grenades were small bombs that could be thrown easily. In 1915 the Germans started using the flamethrower, or flammenwerfer. It caused terror in opposing troops but its effectiveness was limited by its short range and duration capability. Mortars were commonly used. Mortars were small bombs launched from metal tubes. They had a high trajectory and a limited range and their use was restricted to limited attacks on close rival trenches.
AIRCRAFT

Aircraft such as those pictured in Source 3.8 played an increasingly important role during World War I. Aircraft proved very useful for reconnaissance of enemy positions, though effective bombing was a generation away. As trench formations became more complex, commanders needed accurate reconnaissance information and it was here that the aircraft came into its own. By 1916 aerial had become common as the flimsily built planes tried to maintain air supremacy. The gallant one-on-one contests soon gave way to team fighting. The best-known team was the German Richthofen Circus led by Manfred von Richthofen, who allegedly shot down more than eighty Allied aircraft during the war. Allied aces, as these heroes of the air became known, included British Captain Albert Ball, Canadian Billy Bishop and Frenchman Capitaine Georges Guynemer.

SOURCE 3.8 An artist’s impression of a dogfight

GAS

The most fearful weapon introduced during the war was gas. Gas canisters were fired into enemy positions. On impact they exploded and allowed the gas to escape. The aim of using gas was to clear the trenches, thus allowing attacking troops to advance and take the enemy position. Gas often caused real panic among it was not a reliable weapon as changes in wind direction could blow it back onto the attacking side.

There were several of gas, including chlorine, mustard, phosgene, chloropicrin and prussic acid. Gas could have horrific effects on the men at the front. Mustard gas could burn the skin and cause breathing problems; phosgene gas destroyed the lungs; and prussic acid gas attacked the nervous system. Gas could burn, blind and suffocate.

Gradually defences against gas were developed. In 1915 a urine-soaked piece of cloth sufficed but by 1918 effective gas masks had rendered gas a much formidable weapon of war.

SOURCE 3.10 The impact of gas warfare on soldiers
Examine Sources 3.9 and 3.10 for examples of how gas had a major impact on the troops in the trenches. Source 3.9 is a poem by British soldier-poet who served in France from January 1916 until his death on 4 November 1918.

**SOURCE 3.9**

**DULCE ET DECORUM EST**

Bent double, like old beggars under sacks,  
Knock-kneed, coughing like hags, we cursed through sludge,  
Till on the haunting flares we turned our backs  
And towards our distant rest began to trudge.  
Men marched asleep. Many had lost their boots  
But limped on, blood-shod. All went lame; all blind;  
Drunk with fatigue; deaf even to the hoots  
Of tired, outstripped Five-Nines that dropped behind.

Gas! Gas! Quick, boys! – An ecstasy of fumbling,  
Fitting the clumsy helmets just in time;  
But someone still was yelling out and stumbling,  
And flound’ring like a man in fire or lime . . .  
Dim, through the misty panes and thick green light,  
As under a green sea, I saw him drowning.  
In all my dreams, before my helpless sight,  
He plunges at me, guttering, choking, drowning.

If in some smothering dreams you too could pace  
Behind the wagon that we flung him in,  
And watch the white eyes wrighting in his face,  
His hanging face, like a devil’s sick of sin;  
If you could hear, at every jolt, the blood  
Come gargling from the froth-corrupted lungs,  
Obscene as cancer, bitter as the cud  
Of vile, incurable sores on innocent tongues,  
My friend, you would not tell with such high zest  
To children ardent for some desperate glory,  
The old Lie; Dulce et Decorum est  
Pro patria mori.

[Dulce et decorum est Pro Patria mori: it is sweet and meet  
(fitting) to die for one’s country.]

Owen, W, ‘Dulce et Decorum est’, in Cross, T, The Lost Voices of World  
War One, Bloomsbury, London, 1988, p. 78
THE TANK

Arguably the key technological development of World War I was the tank. The tank and its increasingly effective use were important factors in turning the tide of war in 1918. The German commander General Ludendorff emphasised this point in his speech relayed to the Reichstag in October 1918 (see Source 14.6).

Nevertheless, it took several years for the tank to achieve its potential and to be accepted by wartime commanders. General Haig had great doubts about its capability while Lor Kitchener, Britain's War Minister, described it as a pretty mechanical toy.

The first tank, the British Mark I, appeared early in 1916. Initially it terrified defending German troops but for nearly two years the tank proved ineffective.

The 'willies', as they were called, were too slow, moving at only 6 kilometres per which made them easy targets. Their engines were not powerful enough to move through the mud of the front and they broke down frequently. Such a scene is shown is Source 3.11.

Not only were the early tanks ineffective, they were also hell to work in. Tank crews reported that conditions were hot, claustrophobic and incredibly noisy. If fire broke out, it was almost impossible to escape the burning wreck.

In 1916 tanks were used singly or at best in twos and threes. However, by late 1917, Allied commanders were beginning to understand the potential of the tank much better. At Cambrai on 20 November 1917 a massed Allied tank attack led by Brigadier General Elles broke through German lines, creating a 4-kilometre gap. Elles had almost 400 Mark IV tanks under his command. However, lack of supporting infantry prevented a consolidation of the breakthrough and by early December, Ludendorff's counterattack had forced Haig to withdraw British forces.

The photograph in Source 3.12 shows tanks and infantry troops preparing for action at Bellicourt, 1918.

The tank's main uses were to flatten barbed wire obstacles, to offer the advancing troops a sense of 'moral support' and a degree of shelter, and to knock out enemy machine-gun nests. However, tank crews faced an ever-increasing risk of carbon-monoxide poisoning, over-heating or general 'seasickness'.

Tanks were noisy, which was deafening for the crew inside, and 'blind'. At Cambrai, even extreme care in choosing forward routes failed to prevent the tanks from tearing up most of the signallers' delicately laid telephone cables. Tanks could not operate safely in built-up areas or woods, which excluded a good proportion of the areas where infantry needed it most, or over badly cratered or muddy ground.

A great deal is often made about the role of the tank in the successful Allied offensives of 1918, late in the war. These claims exaggerate the significance of the tank as an actual rather than a potential weapon in the war. By the time the tank was reliable enough to consistently be a factor on the battlefields of the Western Front, the war had been lost by Germany. It is true that in 1918 many German positions were surrendered quickly once tanks arrived on the scene; however, by October 1918 tanks were more often an excuse to give up rather than a cause of surrender. By 1918 the war of attrition had taken its toll and this, not the tank, ended the stalemate.