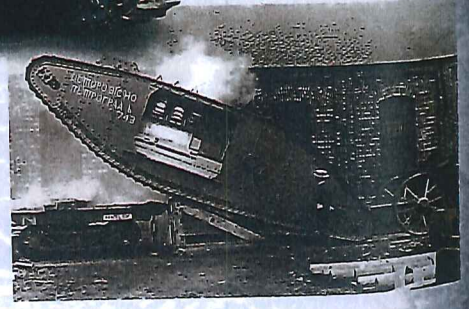
The Development of the Tank

Oddly it was the British Navy that first realized the need for some kind of cross-country armoured vehicle. In the early months of the war armoured cars (see page 59) had been used by the Royal Naval Air Service based in Dunkerque. Once the front became fixed in November 1914, they were of little further use since they could not cross trenches or barbed wire. A number of men turned their minds to possible solutions to this problem. The War Office was sceptical, but Winston Churchill, First Lord of the Admiralty, took a keen interest and, in February 1915, established a Landships Committee. Many designs were considered, one specifically for bridging trenches, one for cutting wire, another to carry troops across No Man's Land. One school of thought favoured vehicles on huge wheels, another the caterpillar track used on tractors. In the end it was the caterpillar track that prevailed.

The design that was given the go-ahead was the creation of Walter Wilson and William Tritton, working at Fosters engineering works at Lincoln. When tested on February 2, 1916, government officials and army top brass were (with the exception of Kitchener) impressed and an order was placed for 100 machines. In essence this was the design that the British army would use for the rest of the war and thus the prototype came to be known as "Mother". It gave birth to the Mark I, which saw action at the Somme later in the year. This came in two versions: the "male", armed with two naval 6-pounders in sponsons (half-turrets projecting from the sides of the tank) and four machine-guns, and the "female", with seven machine-guns. The reason for the "female" version was a fear that male tanks might be swamped by masses of enemy infantry. Production of the Mark 1 began at Fosters and at the larger plant of the Metropolitan Carriage Co, Birmingham. To preserve the weapon's secrecy the name "tank" was coined because, without its guns, it looked like a vehicle for carrying water.

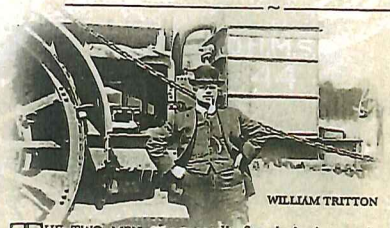
An unimpressive trial
On June 30, 1915 the Navy gave a demonstration of this American Killen-Strait tractor fitted with wire-cutters at the front. It was clearly not the answer to the deadlock in the trenches.

Little Willie
This prototype, produced by Tritton and Wilson in September, 1915, looked quite like the tanks of the future. Its trench-crossing abilities, however, were very limited and nobody gave it any serious consideration. It survives as a museum exhibit.



Disinformation
The army was determined that the first appearance of tanks on the Western Front should take the Germans by complete surprise. Accordingly the tanks' bodies (without sponsons or guns), when they were loaded on trains for transport from the factory, were labelled "to Petrograd" in case they were spotted by spies.

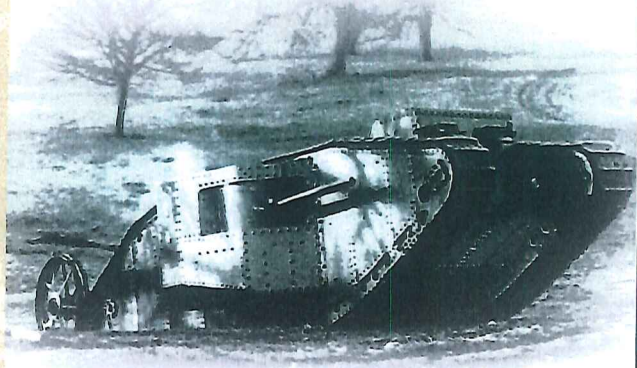
The Engineers



WILLIAM TRITTON

WALTER WILSON

The two men given credit for designing and building the first tank are William Tritton, managing director of the Fosters factory in Lincoln, and Lieutenant Walter Wilson of the Royal Naval Reserve. In peacetime Wilson, a genius in matters of gearing, had been an engineer working on cars and lorries. The two men had both worked on a number of experimental designs before coming up with one that would be used in battle. Tritton, for example, had produced a giant trench-crossing vehicle with huge wheels, shown in the picture above behind its inventor. He and Wilson worked together on the Lincoln No. 1 machine (later known as "Little Willie"). It ran on American-made Bullock "Creeping Grip" tracks. In a trial these proved completely inadequate, so Tritton devised stronger, more reliable ones. However, "Little Willie" was superseded by a tank conceived principally by Wilson – a "quasi-rhomboidal" vehicle, on which the tracks ran all the way round the hull – the Mark I.



Mechanized warfare
Nobody knew quite what to expect of the new tanks when 50 of them were despatched to battlefield of the Somme in 1916. The general hope was that they would knock out machine-guns, crush barbed wire and serve as a shield for infantry advancing across No Man's Land.

Big Willie or "Mother"
Big Willie, the prototype of the first British tank, Mark 1, succeeded at its trials in January and February 1916 in crossing a 3-m (10-ft) trench and riding over a vertical obstacle 1.4m (4ft 6in) high. This performance so outstripped that of any previous prototype that it was given the job. Its wheeled tail, for steering and balance, was dispensed with in later models.

Mark I tank
The tank used at the Somme was manned by a crew of eight: an officer and the driver sitting up front, a gunner and his mate in each sponson and two gearsmen who worked the gears on the drive shafts to the the sprocketed wheels that turned the caterpillar tracks. The tank was powered by a 105 hp Daimler engine originally designed to drive tractors.

DAIMLER MARK IV TANK ENGINE

The first tanks to go into battle were fitted with a roof of wood and wire to protect them from the full blast of grenades and shells.

Loopholes for tank commander and driver

The guns fitted in the sponsons were naval 6-pounders with their barrels cut down. When a tank went into battle it carried 324 rounds for each gun.

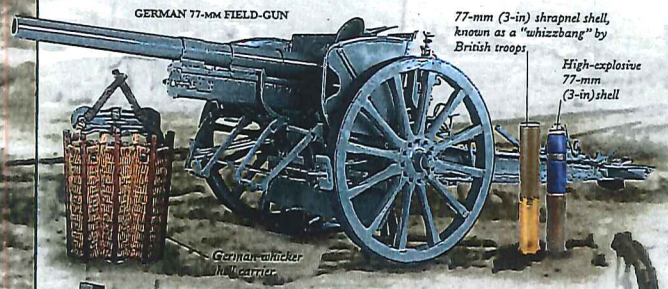
The Artillery of Trench Warfare

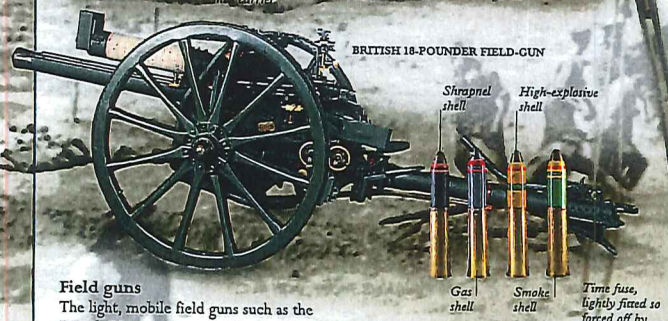
The first world war began as a war of movement and very quickly became a siege war, a fact that did much to determine how artillery developed. Initially, great faith was placed in field artillery, generally in the 75 to 85-mm (3 to 3.3-in) range, but the development of trench systems spelt the need for bigger guns and howitzers (which had short barrels and fired heavier shells on a high trajectory). Their volume of fire over protracted periods was deemed critical to infantry success, with saturation of the enemy defence system being considered far more important than the achievement of surprise.

In many ways the French offensives of spring and autumn 1915 reflect the transition from one system of warfare to the other. In the Artois offensive in May the French employed some 300 heavy guns. Just a few months later, in the Champagne offensive – for which three railway lines were built in order to get artillery and ammunition into position – they employed 2,000 guns in support of 11 corps against two German corps with 600 guns. The intensity of the French bombardment ensured the destruction of three German infantry regiments before rain transformed the battlefield into a sea of mud.

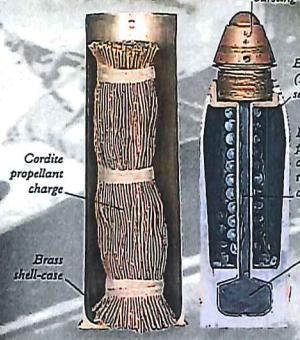
The battle in Champagne lasted 15 days and at heavy cost to the attacking French forces, but the lesson derived from it was that an even greater concentration of firepower was needed. In 1915 the British at Loos had only 12 guns per km (19 guns per mile) of front, and heavy guns were limited to 96 rounds a day – that is, one shell every 15 minutes. At Messines in 1917 they had 756 heavy guns and 1,510 field guns on a 13.5-km (8.5-mile) front.

As well as an increase in the number of heavy weapons, there were three major developments in artillery over the course of the war. First, various medium guns and howitzers were developed. Initially the maximum size was determined by what a horse team could draw, but in the final stages of the war, horses were replaced by tractors. Second, mobile artillery was developed in the form of the tank. This was a response to the fact that the shattering of defensive positions by artillery firepower made it virtually impossible for the artillery to move across the battlefield in order to repeat the process against the next enemy line. Third, a new kind of artillery – the rail gun – was developed when it became apparent just how expensive medium and heavy guns were in terms of manpower, their crews of up to 28 men invariably being subjected to intense counter-battery fire. Some rail guns, such as the British 9.2-in (234-mm) gun, the German 170-mm (6.7-in) Instant Gun and the American 14-in (356-mm) gun were standard weapons mounted on flatcars. However, the most famous model – the Paris Gun with which the Germans bombarded Paris in 1918 – was purpose-built.



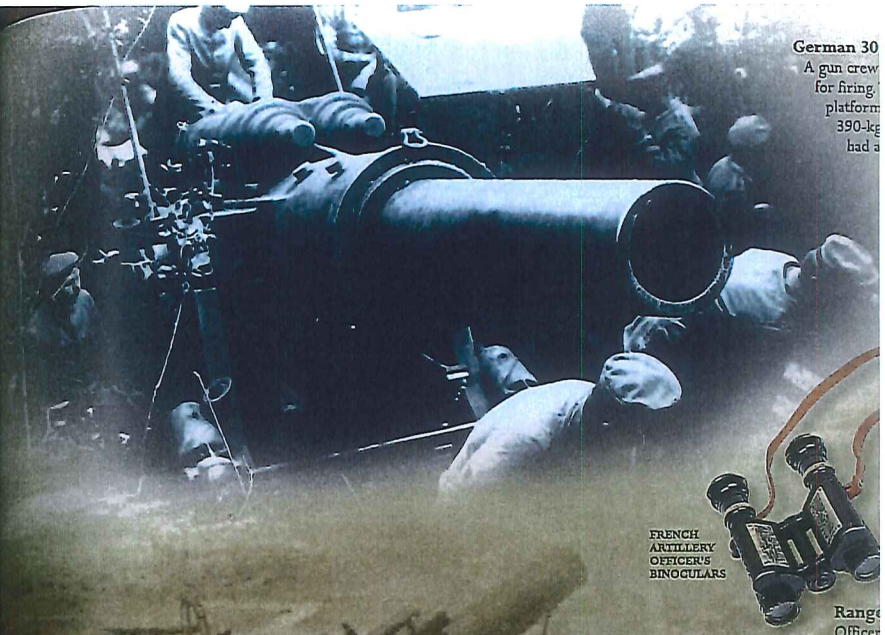


Field guns
The light, mobile field guns such as the French 75-mm (see page 55), the German 77-mm and the British 18-pounder did not have the weight of shell or the angle of fire to be effective against well-dug trenches and barbed wire. With their rapid rate of fire they still played their part in barrages, firing from batteries about 3 km (2 miles) behind the front line. When enemy troops were in view, they were loaded with shrapnel.



18-pounder shrapnel shell
When the bursting charge exploded, it blasted away the fuse and projected the bullets through the nose of the shell.

60-pounders at the Somme
The 60-pounder was Britain's largest field-gun, pulled by a team of heavy horses. Noted for its accuracy, it had a range of 9,400 m (10,300 yds).



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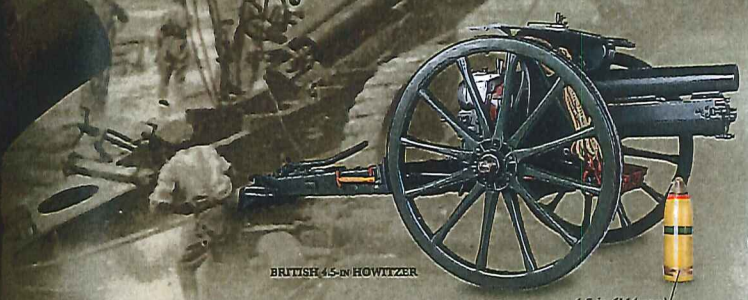
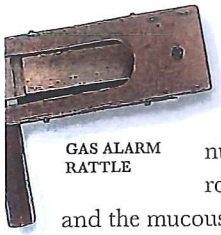


British howitzers
At the start of the war, heavy howitzers were thought of as siege weapons, while lighter more mobile guns were intended for use on targets such as railway stations or bridges. Trench warfare brought them to the battlefield, sited in hollows and woods behind the lines. Once in place they were very difficult to move. The 9.2-in howitzer weighed 15 tons and it took 36 hours to dismantle it ready for transportation.

Gas Attacks

THE FIRST USE OF POISON GAS was at Ypres on April 22, 1915. The Germans released chlorine from canisters and relied on the wind to blow gas clouds to the enemy position. After this, both sides began to use different types of gas, including phosgene, an insidious weapon that had little immediate effect but struck soldiers down 24 hours later. Both gases caused a painful death over a number of days by asphyxiation. The gas that caused the greatest number of casualties was mustard gas. It had the effect of rotting the body both inside and out, so that the skin blistered and the mucous membrane was stripped off the bronchial tubes. The pain was almost unendurable and could last for up to five weeks. It was hard to counteract and victims who survived were left scarred for life.



GAS ALARM RATTLE

The first improvised protection used by the Allies at Ypres consisted simply of water- or urine-soaked handkerchiefs and towels. Within three days, cotton pads dipped in bicarbonate of soda had been rushed to the front. Later in 1915 block gauze pads soaked in hyposulphite solution, with an extra flap to cover the eyes and tapes to tie round the head, were used. The British and French went on to develop more elaborate forms of protection. From late 1917 the box respirator, which used charcoal or antidote chemicals to neutralize the gas agents, became standard British issue. The antidotes were only effective for 30 minutes, however, at which point the respirator had to be changed – a potentially fatal procedure.

Gas masks
Early gas protection for British and French troops consisted simply of goggles and a gauze pad. Next came flannel hoods impregnated with phenol, and incorporating mica eye-pieces. Later masks included a rubber-tipped metal tube that was held between the teeth for exhalation. The Germans quickly developed a mask that had a cylindrical screw-fitted filter, still in use in 1917.

EARLY FRENCH GAS MASK AND GOGGLES, 1915

EARLY BRITISH "HYPO" GAS HELMET, 1915

GERMAN M1915 GAS MASK, 1917

FRENCH M2 GAS MASK, 1916

Gas alert
At the first sign of gas, whistles or rattles would be sounded. Soldiers, such as these French troops, would have to find and fit their gas masks as quickly as possible.

German gas shells
Gas shells, first used by both sides in 1916, contained liquid gas, which evaporated on impact. They were a more effective way of delivering gas to enemy lines than relying on the wind.

Primitive protection
Cameronians (Scottish Rifles) in 1915 sta action, wearing early gas masks. These cor goggles and gauze and provided little pro chlorine and phosgene.