

# War

Right: In a bit of difficulty. This unidentified Aveling & Porter 10-ton roller has got itself into trouble and the soldiers are attempting to move it back on to firm ground. The berets, or Balmoral bonnets – later known as the tam-o'-shanter – worn by the driver and also one of the men on the ground who are struggling with small lengths of timber to lift the huge weight of the roller's front end, indicate that they are from a Scottish infantry regiment. IWM – CO 956

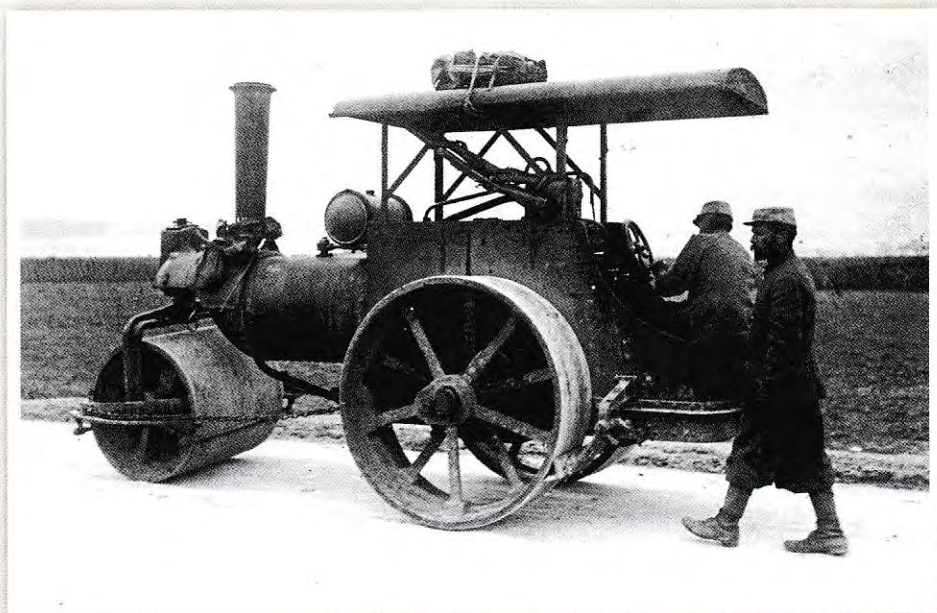


Above: Wartime humour: In its June 28, 1916 edition, *Punch* magazine carried the accompanying cartoon depicting a likeness of Austrian Emperor and King of Hungary, Franz Josef I, running in front of a hypothetical Russian steam roller which is chasing him at a seemingly excessive speed. Franz Josef is saying: "I say, you're exceeding the speed limit." Franz Josef died on November 21, 1916 and thus did not live to see Austria's defeat in the war.

Above right: The village in question was not identified in this illustration, presumably for security reasons. It shows a Barford & Perkins motor roller carrying out road repairs in Flanders. Taken from *The Illustrated War News* of August 22, 1917, the location in question had only recently been wrested from the Germans and many of the occupants had managed to stay in their homes during the occupation. The village had recently been shelled and the roller was engaged in rolling the filled-in holes left as a result of the bombardment. DEREK RAYNER COLLECTION



Right: A long way from home: A French-built Laffly motor roller said to have been repairing a road in Greece during the First World War. Note the two rifles strapped to the awning supports on the left-hand side of the machine and the baggage on the awning top. DEREK RAYNER COLLECTION





Lady workers, or Munitionettes, at Wm Fosters, Lincoln, in mid-1917.



# On His Majesty's Service BADGE ENGINEERING

Military historian, **Richard Pullen** looks at the fascinating, but sometimes confusing, history of the 1914-18 civilian workers' war service badge

**I**n 1914, Britain went to war and this war was to be very different from all those fought before. For the first time ever, soldiers would be joined on the battlefield by machines. Aircraft, tanks, submarines, artillery, torpedo boats and machine guns came together to bring a new terrible, wholesale slaughter to the fighting; war had become mechanised and even Lloyd George said at the time 'this is an engineer's war'.

Companies that had been peacefully producing traction engines, locomotives and lorries suddenly found themselves making aeroplanes, Lewis guns and tanks. Usually, this didn't present much of a problem, as most companies had a skilled and trusted workforce which could produce just about anything from a drawing put in front of them. Unfortunately, the Army was short of everything, including soldiers, so Kitchener's beckoning finger made a call to arms and men were flocking to join up before 'it was all over at Christmas'. As we all now know, the fighting was not over by Christmas and would drag on for four long

years – and soon the factories and engineering companies were beginning to suffer as their best men were disappearing off to the Western Front. Those skilled workers still left behind were encouraged by their employers to ignore the Government's call for troops, as there was still no compulsory conscription at this time, and stay where they were doing most good, producing munitions and weapons here in Britain.

## 'WHITE-FEATHERED'

There was, however, another aspect that made things very uncomfortable for the men staying at home. It became fashionable for young women to challenge men on the street who they thought were 'hanging back' and not answering England's call. These women were armed with the most awful thing a man could imagine, white feathers. If a man was awarded a white feather on the street, his honour had been questioned and unless he could prove that he had an excuse for not being in khaki, he would have little choice other than to join the Army.

In order to counter this, many employers started to produce On War Service badges at their own expense which their men could wear on their lapels to show that they were doing their bit here on the home front. These badges were often very elaborate and it is doubtless true that a company would want its employees' badges to be more stylish and impressive than its competitors. The range and style of badges was so huge that it was said that a man could probably pin a beer bottle cap to his lapel and people would think he worked in a shipyard. Some were purpose-made for a single employer and some were mass produced 'off the peg' designs. It wasn't just heavy engineering companies that produced these badges either, there were even badges made for railways and bus companies.

The Government did not condone the issuing of unofficial badges, but nor did it do anything to stop or regulate it and for a while it seemed as though the factory owners' scheme may help to solve the skills shortage. Unfortunately, as with everything in life, the

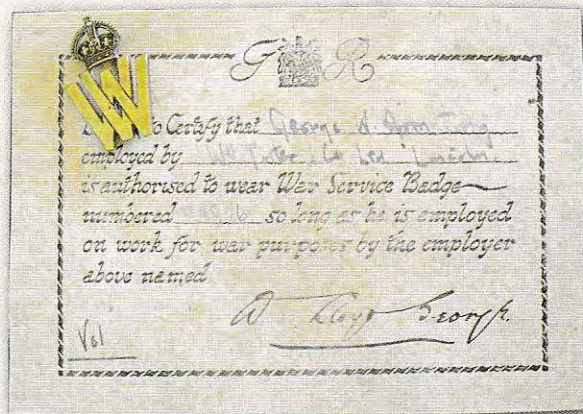




The very smart first pattern 1915 Ministry of Munitions' On War Service badge was soon dropped in favour of the cheaper pierced version without the enamel.



Left: The second 'economy' pattern 1915 Ministry of Munitions' On War Service badge.



Right: Foster's 'Volunteer's War' service badge comes complete with certificate presented to George W Armstrong.



An early un-numbered Admiralty patterned On War Service badge.



A Wm Foster women's On War Service badge, but the certificate says Richard Myers. It's a bit of a mystery as all the numbers tally up.



Left: A 1915 unofficial On War Supplies badge issued by Ruston & Hornsby in Lincoln.



Right: Brooch-fitting women's On War Service badge, first approved in 1916.

scheme was open to abuse and it soon became apparent that the Government would have to take matters into its own hands. Some factory owners were accused of using the issuing of badges for their own convenience, by giving everyone a badge in order to protect their entire workforce and not just skilled core workers. There was also apparently a thriving black market in stolen or 'lost' On War Service badges, sold by their owners to men who did not want to join the forces, but had no other excuse not to go.

## OFFICIAL BADGES

In late 1914, the first 'official' On War Service badge began to be issued with the introduction of the Admiralty On War Service badge. This badge was intended for workers whose services were 'indispensable for the rapid completion of His Majesty's Ships and Armaments'. The men issued with this first badge would really have to prove beyond any doubt that they were indispensable and if they were found lacking at all, they then had no reason not to enlist. The Admiralty badges were very jealously guarded and if you lost your badge, you were in real trouble. If you left your employment or your status changed and you were no longer officially a 'badged man', your badge would have to be returned and could not be passed on to someone else.

The Admiralty badges were made by several different makers and are all of the same design,

with the exception of some of those made by Vaughtons Ltd of Birmingham, which are made from a silver coloured metal. The badges were originally unnumbered, but soon the Admiralty started to number the badges and they also came with a certificate which would be filled out by the employer with their details, the details of the badged man and the unique number of the badge issued.

There were men during the war who were quite obviously not fit for active duty, such as the blind, the disabled or those well beyond

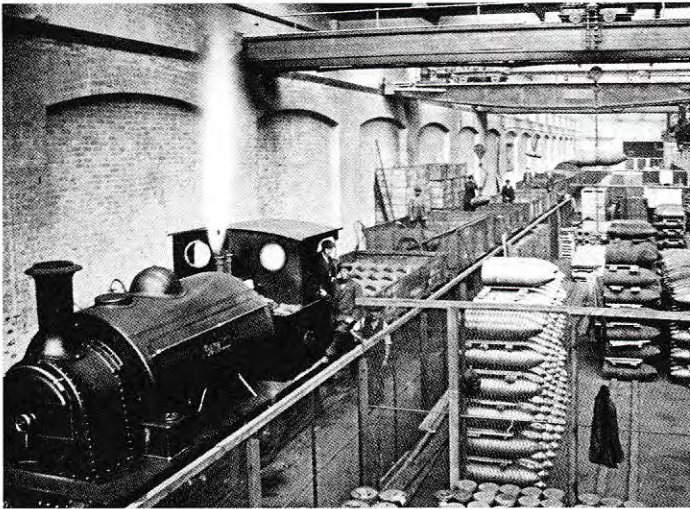
service age. These people may not have been able to fight, but they still wanted to do their bit on the home front and in recognition of this, they were issued with a volunteer workers' badge.

In early 1915, the War Office released the official Ministry of Munitions' badge adding that this badge was the ONLY official badge and all others were redundant. Suddenly if you were working at Charles Burrell & Sons or William Foster & Co Ltd your lovely brass and enamel badge counted for nothing. ➤



A team of 14 vicars who worked at Rustons in Lincoln during the First World War.





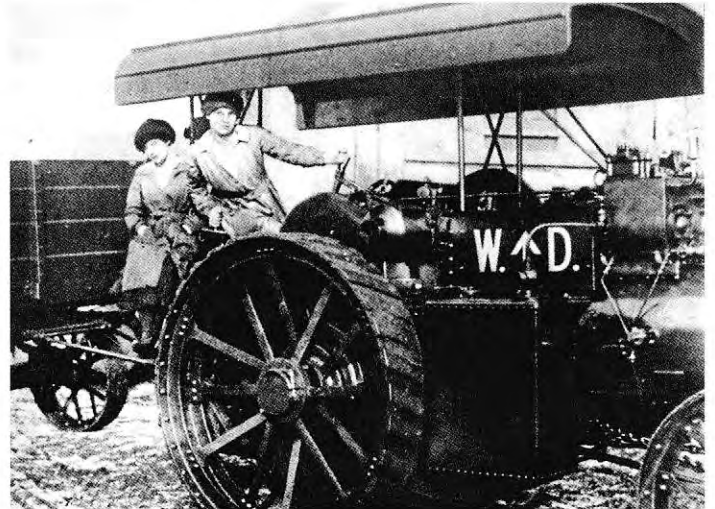
A train loads up with large-calibre shells at Daimler in 1917. One of the footplatemen is wearing his war service badge.



A jolly group of Munitionettes in 1916. The lady in the centre is wearing an On War Service badge.



Tanks take shape at Fosters in 1917. By this time the men would be able to relax, having been issued with war work badges.



Two Munitionettes in Foster's yard with a WD-liveried Wellington tractor.

In fact, as Fosters in Lincoln was doing no work on military contracts at the time, no man working at the factory had any excuse to stay at home. The only problem with this was that Fosters was actually working on the creation of a top-secret piece of military hardware, the 'Water Carrier for Mesopotamia' or as we now know it, the tank. This left the War Office with a problem, for if it didn't issue war badges to the men in Lincoln, they would all end up having to leave for the trenches, but if they did issue badges, everyone would then realise that

Fosters was in fact working on war materiel and they'd want to know what it was. In the end, the problem was solved by Lt Col Albert Stern of 20 Squadron Royal Naval Air Service who was working with Fosters on the tank project. He decided that the issuing of badges was the lesser of two evils and threatened the Ministry that if he didn't leave its office with the relevant badges and certificates, he would come back tomorrow with the rest of 20 Squadron and take them by force. Needless to say Stern got his badges.

### ENAMEL AND PLAIN BADGES

The 1915 badge first appeared in brass with blue and white enamel detailing, but the enamel was unnecessary and was soon dropped in favour of plain pierced brass. The saving in materials between the two badges may seem tiny, but they were now being produced in their thousands and every little counted. Given that the Ministry was trying to save materials it would seem odd that the next badge it produced was, at first glance, completely unnecessary.



A rare Armstrong-Whitworth war badge.



This early unofficial war workers' badge could be purchased 'off the peg' by any factory that considered their employees needed it.



'Employed on war material'. A rare Wm Foster & Co unofficial war workers' badge from 1915.





Badged men turning aircraft components at Ruston & Hornsby in 1917.



An interior view of Foster's from just after the war with banner declaring, Welcome To The Birthplace Of The Tanks.

By 1916, woman war workers or 'Munitionettes' as they were popularly known, were a familiar sight in Britain's factories. They were doing invaluable work filling in for the men who were away in the forces and it had been mentioned several times that they deserved some kind of recognition for their efforts.

## WOMENS' BADGES

There was no conscription for women and those who now found themselves in heavy engineering were all volunteers. There was also another reason for giving women some kind of official status, a woman coming home alone at midnight would attract the attention of the neighbours and get herself a reputation, but if she had an official war work badge, everyone would know that she had been out all night making aeroplanes. Unlike the official Ministry of Munitions' badges for men, the ladies' badges were issued at the employer's discretion and without a certificate. The women's On War Service badge of 1916,

should more accurately be described as a brooch, as it has a clasp on the back instead of the man's button-hole fixing. It was worn with pride by the Munitionettes who finally felt as though their efforts had been recognised.

I know of a slightly odd version of the women's On War Service badge that breaks a couple of the rules. It is a standard triangular ladies' badge, number 368026, but it was given to Richard Myers, a male worker at Foster's in Lincoln. The badge comes with a certificate and cardboard slip, but is it an oversight, a bad fake or a mistakenly issued badge? We will probably never know.

The official badges cover 1914, 1915 and 1916 and it is sometimes assumed that a worker was issued with a new badge every year, hence the dates on the front of the badges, but this is untrue, the date just denotes when that particular pattern was first approved for use.

At the end of the war, it was apparently too much trouble to collect the badges back in, despite their not inconsiderable, combined



A 1916 dated war worker's postcard with embossed triangular badge and union flag.



Although this looks like a German insignia from the Second World War, it is actually a First World War-period War Savings Committee badge.



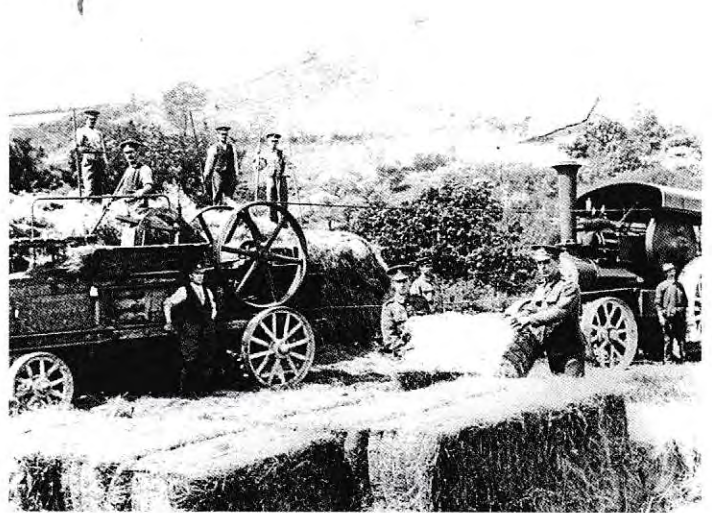
An extremely rare First World War service badge for employees of Colonel Stephens on his light railways, namely his Kent & East Sussex, Shropshire & Montgomery and the Weston, Clevedon & Portishead railways. This badge fetched £2100 at auction in 2013.

scrap value and the Ministry of Munitions seems to have just let people keep their old badges as a memento of their war service. There were no medals for work on the home front or for being a Munitionette, so the old brass badge was all you had to remind yourself of the times when you built submarines or fitted fighter aircraft engines during the 'war to end all wars'. ■



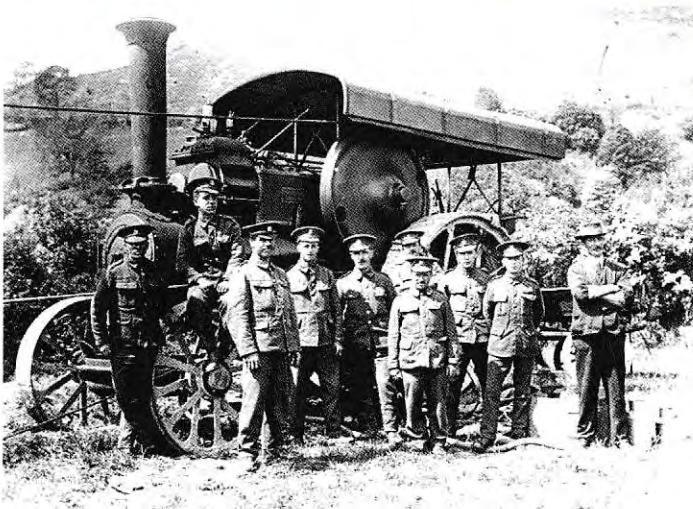


Engine belted to the baler with service personnel wielding pitchforks. Note the size of the bales.



Engine (right) and baler with army personnel in attendance.

# Home Front: Food production



**D**uring the First World War, it was the job of the Army Service Corps to supply not only the troops with ammunition and the equipment of war but, in addition, food for the men and also for the very many horses used at home and in France and Belgium, both for war purposes and also for non-mechanised transport. It is well known that many omnibuses from London were requisitioned as well as motor and steam lorries for carrying both troops, equipment and food, together with hundreds of trailers. Steam tractors were also used by the mechanical transport companies. Steam engines, of course, relied on coal, which was relatively easily obtainable, but the horses needed feeding and therefore hay was also required – in large quantities.

In different parts of the country, army personnel were drafted in to help with baling the hay and we are fortunate to be able to show some images of such an exercise taking place in west Wales.

Left: A group photo, perhaps at the conclusion of the exercise.



For domestic food production, tractors were extremely important. An Overtime tractor and a Standard Fordson are posed with a group of soldiers and, presumably, the farmer wearing his trilby hat and long coat – plus two dogs. DEREK RAYNER COLLECTION





The engine pictured is Fowler No 10294, an A5 road engine, which was delivered to John Davies & Co, Cardigan, on November 20, 1906, and named *Countess of Cardigan*. At the time these images were taken during the war, it was in the ownership of Thomas D Ladd of High Street, Clynderwen, Pembrokeshire, by whom it was bought on a date not recorded. The engine was registered DE 2863 in around September 1921 and sometime before September 1932 was sold on to Thomas Jones, Crymych, Pems, and eventually scrapped.

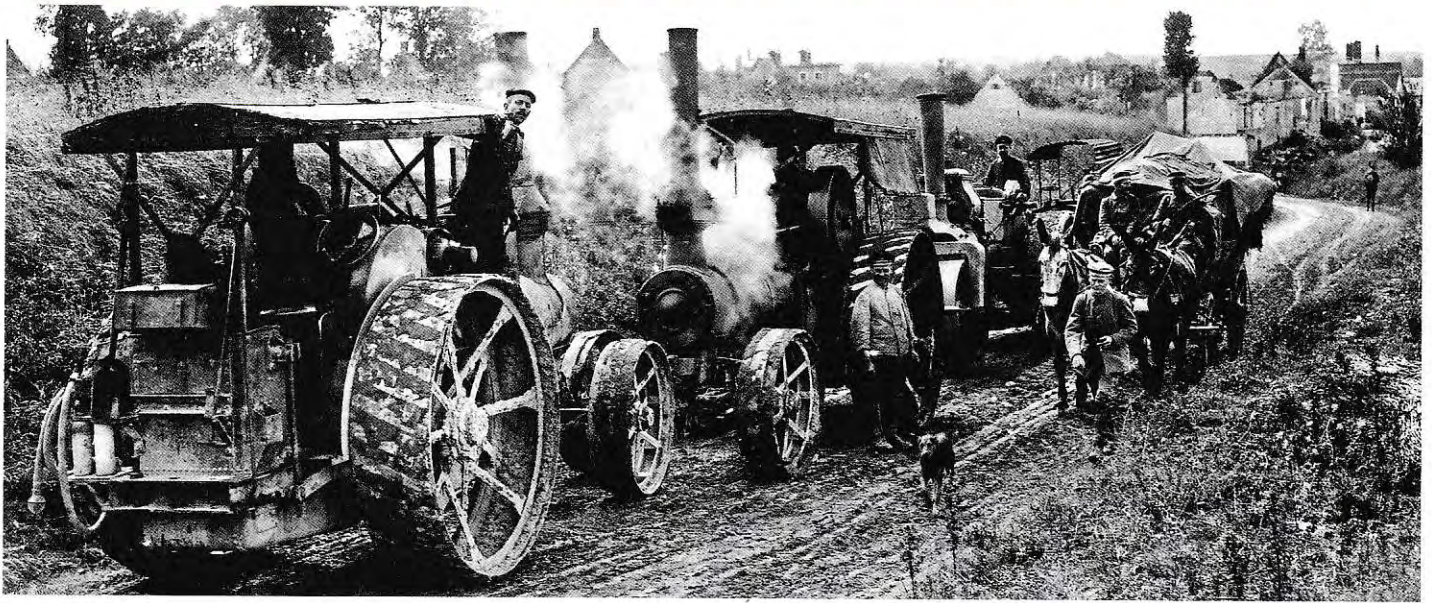
Above: A somewhat rare Fyson traction engine, manufactured at Soham, Cambridgeshire, pictured during the First World War powering a Ruston baler. The driver is in the foreground with his 'badge of office' – his oil can. Many of the balers used at this time were produced by Rustons at Lincoln.  
PETER SMART COLLECTION

Below: The tractor driver, wearing cap, is there to ensure that the soldiers 'do it right'. DEREK RAYNER COLLECTION

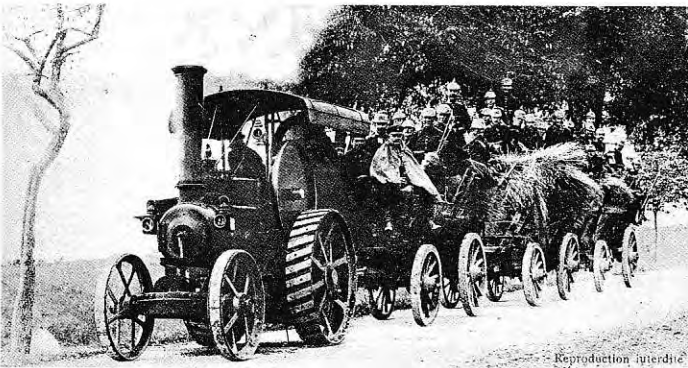




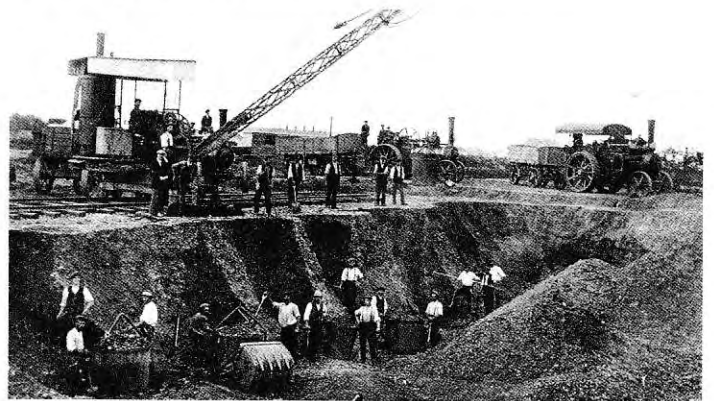
# Other engines in wartime



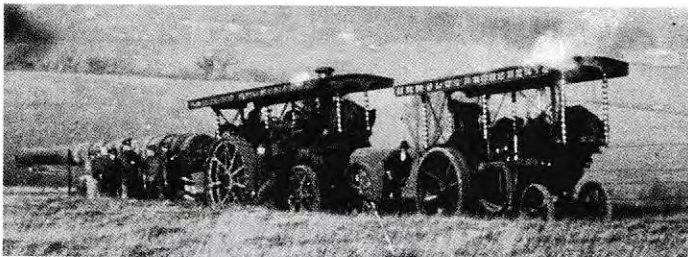
With a spark arrester fitted at the base of each chimney, the leading two engines are very recognisable as Lanz manufacture, made in Mannheim, Germany. They are working very hard hauling two captured British rollers up a hill. The third machine in line has a horse visible on its front and is clearly an overhead valve Aveling & Porter roller; a close inspection of it will reveal that it has no flywheel! It is this fact that is probably causing the two traction engines to make heavy weather of their task. Behind the Aveling is a small motor roller, which, judging by the shape of the canopy and the vertical steering column, is more than likely a product of Barford & Perkins of Peterborough. DEREK RAYNER COLLECTION



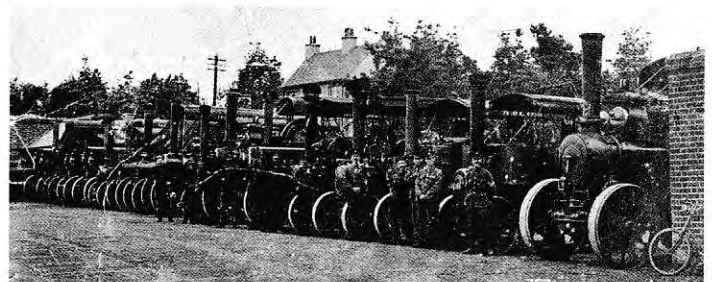
Although the caption on this postally-used French-produced card shows soldiers of General-Feldmarschall von Hindenburg's (2nd Masurian) 147th Infantry Regiment and indicates it depicts 'Modern warfare - 1914', the image was taken early 1900s. It describes them as 'modern German burglars' with a locomobile hauling three trailers containing produce taken from the countryside. A clear case of the army 'living off the land'; a situation that was obviously not at all appreciated by the card's publisher! The engine is one of a pair of single-cylinder Fowler 3hp 'N type' light road locomotives, Nos 8865 and 8866, supplied to Magdeburg for the German War Office in 1901. DEREK RAYNER COLLECTION



A rail-mounted steam crane at Romsey, Hampshire, engaged on extracting sand and gravel from a deep pit from whence it is loaded into trailers hauled by a Fowler road locomotive (on the far right) and other engines. The extracted material was being used in connection with the construction of training camps for the military in 1915. L&DTEC - HB138



The incongruous sight of two showland engines, Burrell No 3868 leading No 2126, complete with twisted brass work and covered dynamos, engaged in the transportation of a large and exceedingly heavy gun barrel at Bembridge Downs, Isle of Wight. 6hp single crank compound Burrell 'Devonshire' type traction engine No 2126 was new in September 1898; being acquired by Arnold's of Southampton in 1913 and converted to showman's specification. It was originally named *Showman* but later became *Island Queen*. Showman's tractor No 3868 was new to George Baker of Southampton in January 1921, and named *The Russell Baby*, having been exhibited at the 1920 Smithfield Show in London. The engine was later acquired by Arnold Brothers and renamed *Island Prince*. The latter remains in preservation. At the time of the photograph, both engines were in Arnold's ownership. L&DTEC - HB124



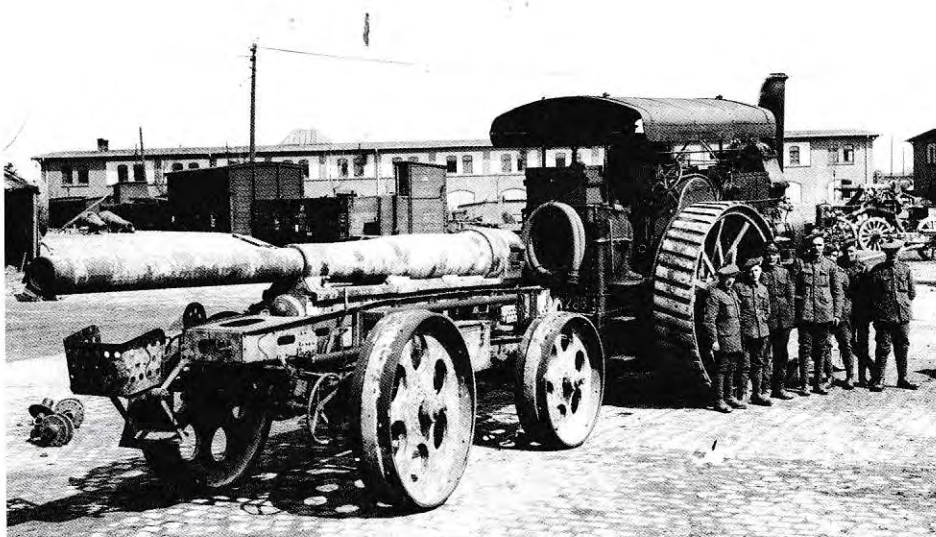
Ready for war service: A line-up of no less than 15 engines, including Fowler road locos and at least two Foster 'Wellington' tractors with extra-large pannier water tanks. Some of the engines are lettered ASC - Army Service Corps. A number of soldiers pose with them at an unknown location. L&DTEC - HB230



# After the conflict

**W**hen the war was over, many of the vehicles involved were returned to England, renovated, and later sold at Army surplus sales. A lot of the narrow gauge railway locomotives that saw use on behind-the-trenches supply lines went to Australia where many of them finished up working in Queensland on sugar-cane haulage – and some still are to be found there, preserved in various museums. One Hunslet 4-6-0T loco has returned to the UK and is to be found on the Moseley Railway Trust's Apedale Railway in Staffordshire.

Most of the steam road vehicles were gathered at Calais before coming back across the English Channel. Some, of course, were left behind and have returned since. The agreement in respect of the Armistice required the Germans to hand over a large amount of their materiel and other items to the Allies and, as a consequence, more than a dozen Kemna traction engines, built in Breslau (now Wroclaw in Poland) found their way to England where they worked in various ownerships. Some were converted for showland use and also there were two traction engines that subsequently enjoyed a long working life on the Isle of Man. ■



A Fowler B6 road loco prepares to haul a high-velocity German gun out of an ordnance park in Cologne on April 5, 1919. It had been handed over, along with others, as a result of the Armistice.  
OLD GLORY ARCHIVE

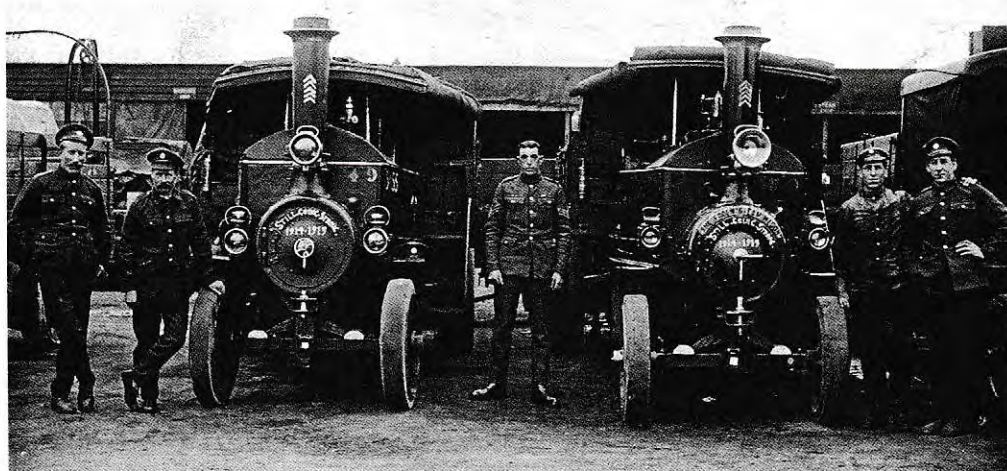


Above: An unidentified Foden wagon, with others in the background, in the engine park of 59th Divisional Motor Transport Coy, Army Service Corps, Calais, in September 1919.  
PETER SMART COLLECTION



Left: A significant line-up of half a dozen Foden wagons in the same engine park, presumably taken on the same occasion.  
PETER SMART COLLECTION

Right: A group of soldiers who have survived the war posing with a couple of Foden wagons on May 7, 1919, their smokebox doors bearing the legend: 'STILL GOING STRONG – 1914-1918'. This was therefore taken at a supply depot in France not long after the war had finished and before the soldiers and the wagons pictured returned home. Walter Hobson, with a moustache, and later to become a Tadcaster UDC roller driver, is on the far left. Other wagons are to be seen in the background. AUSTIN WINDLE COLLECTION





# Wm Foster & Co Ltd

## FROM PROTOTYPES TO TANKS



The Lincoln No 1 machine in its original form, with dummy turret and American track set.

**Richard Pullen** looks at how a small agricultural machinery maker in Lincoln ended up changing the world by inventing the military tank

**T**he First World War was a war without movement, where trenches and barbed wire snaked from the Channel Ports down to the Alps. To get the war moving again, how could someone get their soldiers past the enemy machine guns and over the barbed wire without losing every man in the regiment? This problem became known as 'The Riddle of the Trenches'. Some kind of armoured vehicle was obviously needed, but it did not come on to the battlefield straight away, there were all sorts of fabulous prototypes and heroic failures such as Elephants Feet, the Tritton Trench Crawler, the

Pedrail Landship and Hetherington's Big Wheel. It soon became apparent that the machine the War Office needed would have to run on tracks, but the problem was that tracked machines were almost non-existent in England, so before anything else, they had to buy some off-the-shelf American farm tractors for evaluation.

### 'LANDSHIP'

The hope was that with the addition of armour plate and guns, one of them would become a 'Landship'. The contenders were the Bullock Creeping Grip, the Holt and the Killen-Strait. A great deal of testing and general fun and

games was had with all three of them before it was decided that the nearest to the requirements was the Bullock machine and a set of tracks was sent to William Foster & Co Ltd in Lincoln. It is generally recorded that Fosters was picked as it already had experience with tracked vehicles and was a small, fairly anonymous manufacturer, but it has been said that the War Office may have got the wrong factory, with the intended manufacturer being the much larger Ruston Proctor Ltd just down the road. Whatever the truth of the matter, Fosters had its first prototype ready within a few weeks.

The Lincoln No 1 Machine left the factory in the summer of 1915 and was a riveted boiler

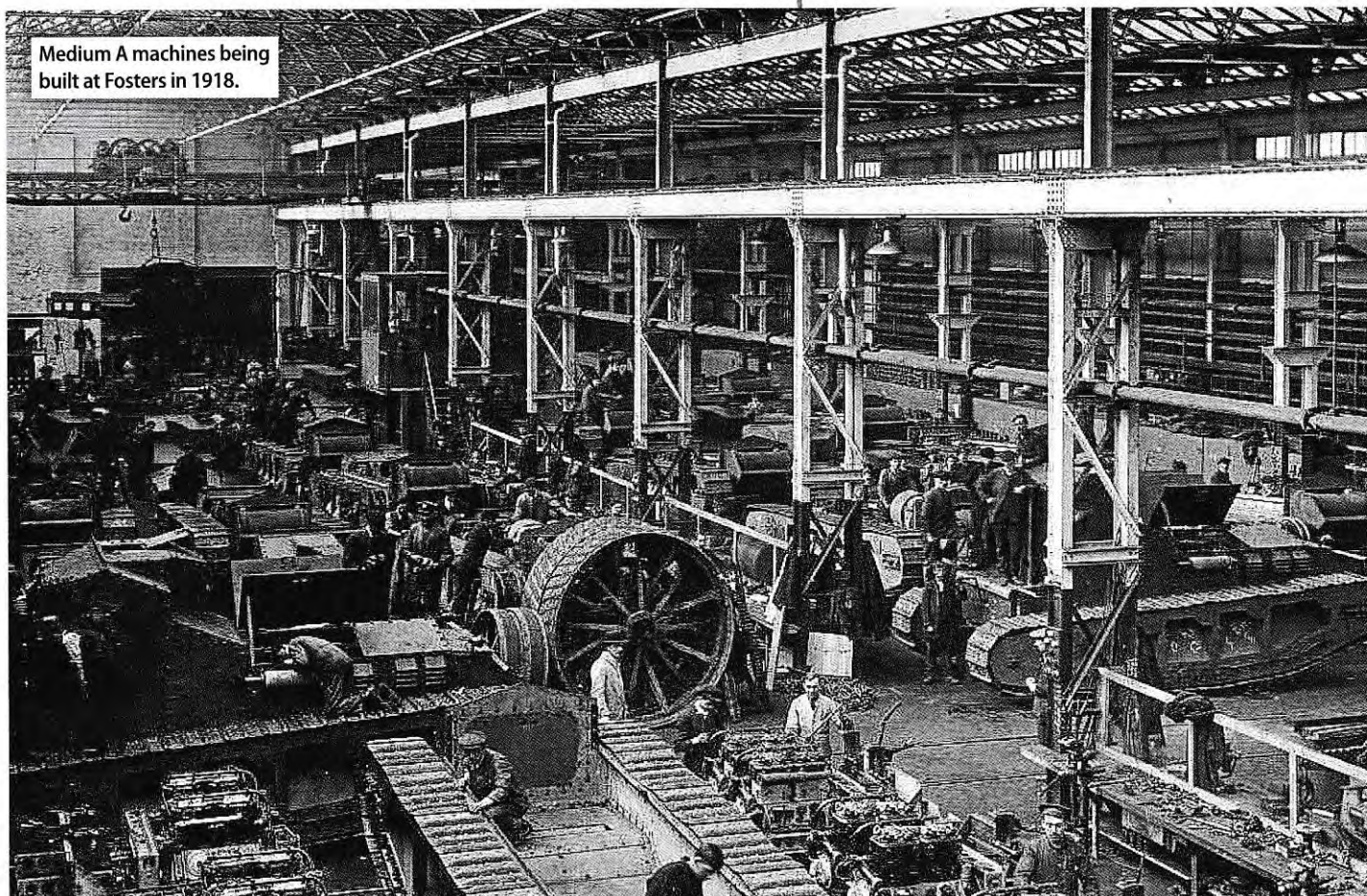


A works photo showing *Little Willie* in his final form in the yard at Fosters.



Foster's testing ground in mid-1918. Several Whippets and a couple of 105hp tractors can be seen.





Medium A machines being built at Fosters in 1918.

plate box, powered by a 105hp Daimler engine and transmission, as had also been used in the 1914 Foster-Daimler tractor. The machine went on initial trials at South Common, Lincoln, and was a complete disaster. The biggest problem was the American tracks; they spent more time being reattached than actually being evaluated. The designers went back to the drawing board and created their own simpler version of the Bullock tracks. The new steel track plates were riveted on to drop forged shoes which would run around the outside of the track frames guided by T-shaped channels. The tracks were designed by William Tritton and were one of those simple, but clever pieces of engineering that go from paper to finished product with no alteration.

The machine, with its new 'Tritton Tracks' was soon finished and when tested, everything

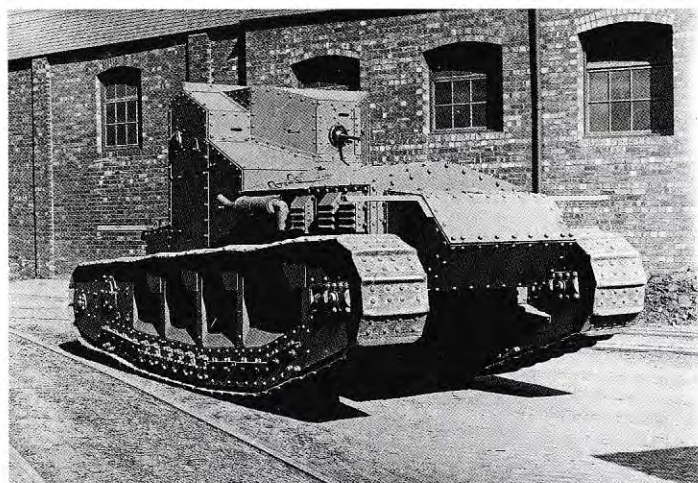
worked perfectly. The name 'Lincoln No 1 Machine' was deemed to be too descriptive for a top secret new weapon and so it was renamed 'Little Willie' instead. The name is often seen as a joke poking fun at Keiser Wilhelm, but it could easily have been named after William Tritton. *Little Willie* was a huge improvement, but it soon became apparent that it couldn't cross trenches.

### STUCK IN THE MUD

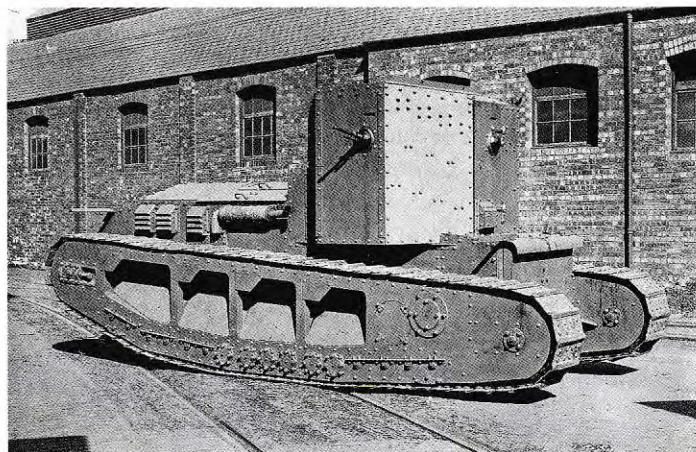
The sloped front and low tracks meant that when it tried to cross a trench, the nose dug into the other side and *Willie* was stuck. Ideally, for crossing trenches, the designers needed a massive wheel which would roll over everything, so their next move was proposed by the engineering genius Walter Wilson of the Royal Naval Air Service, who had been

seconded to Fosters to oversee the Landship project. He squashed the Big Wheel idea into a pair of rhomboid-shaped track frames with a similar body used for *Little Willie* placed between.

Thus was born the next machine that moved one step closer to the true tank. Fosters started work and in January 1916, the rhomboid machine moved under its own power in the works yard. At this time, it was designated 'His Majesties Landship Centipede', but soon became known to everyone as *Mother*. The new machine went for trials at Burton Park near Lincoln and then at Hatfield House, Hertfordshire, and at both trials she did everything asked of her. At the end of the day, the general feeling was that this machine could be the answer to the stalemate of the trenches. ▶



Official works photo of a Medium A Whippet tank.



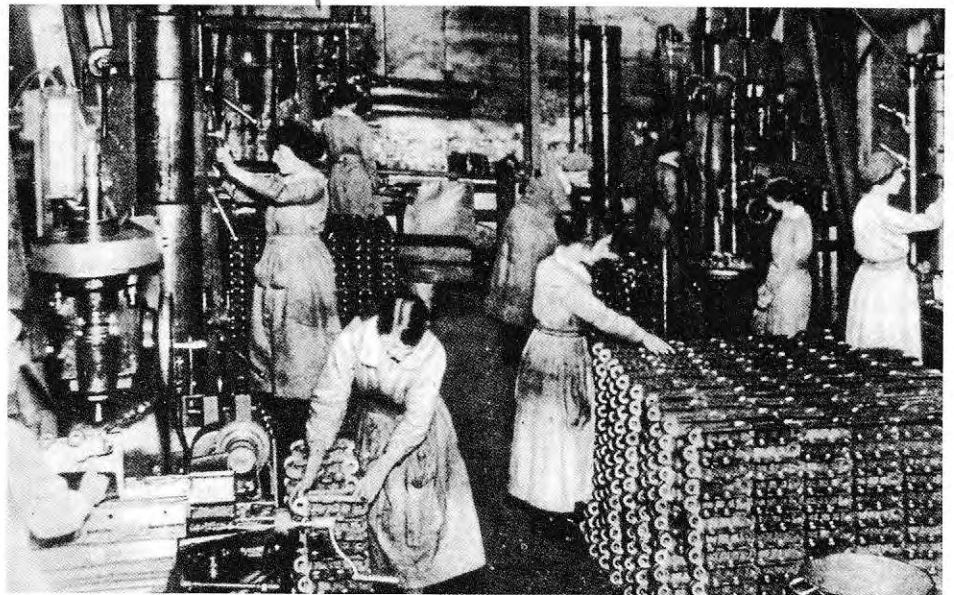
The Whippet was so called as it was twice as fast as a heavy tank, being able to do almost 8mph.



*Mother* and the design team from Lincoln had proved themselves and an enthusiastic General Haig ordered 1000 tanks for his 1916 summer offensive on the Somme. Unfortunately, there was no way that 1000 tanks, trained crews, spares, ammunition and all the paraphernalia that goes with them could be organised in a matter of weeks, so their debut was postponed until September 1916 and the order brought down to a more realistic 150 machines. Other factories were approached to help with the order and The Metropolitan Wagon & Finance Co in Birmingham said that they would join in. It was soon realised that tanks would be needed for two quite separate jobs; they would need to deal with soft targets like infantry, but also destroy hard targets like bunkers. For anti-personnel work they needed machine guns and these tanks became known as Females. For hard targets, tanks fitted with six-pound cannons would be used and these were to be known as Males. By this new ruling, *Mother* would be a male tank, as it was fitted with cannon, but there was never any call to rename it 'Father'.

### READY FOR BATTLE

The tanks built in Lincoln and Birmingham were soon ready and got their first taste of battle at Flers Courcellette on September 15, 1916. Unfortunately, the first battle was a disappointment, to say the least. Those directing the tanks thought they were unstoppable and consequently put them into conditions and against defences they could not hope to breach. The engine and transmission

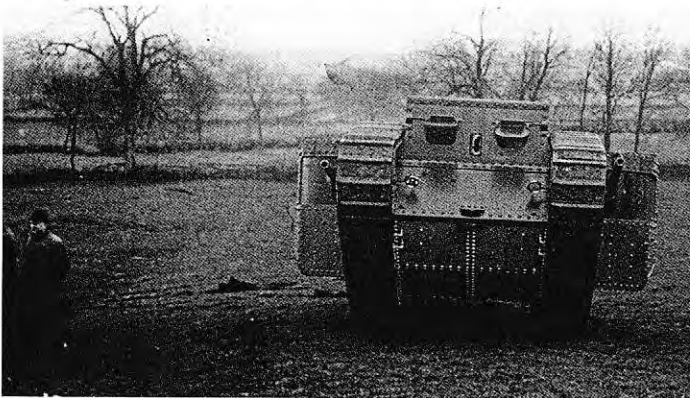


Female workers at Fosters making track shoes for tanks in early 1917.

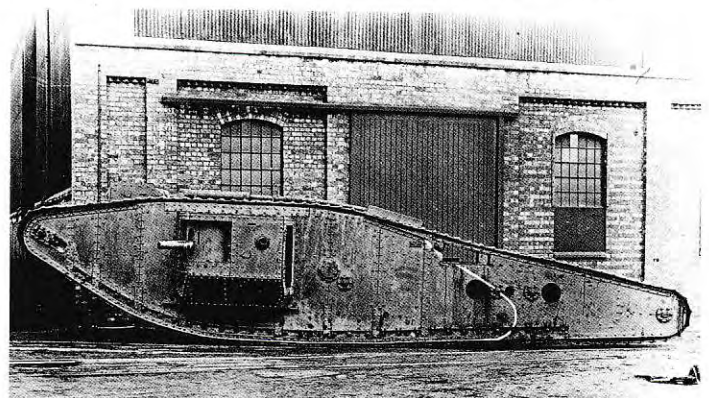
had been borrowed from the 105hp Foster Daimler tractor and were not really up to propelling 30 tons of tank through mud and barbed wire, so mechanical troubles were rife. Despite the best efforts of the manufacturers, only 48 tanks had been ready and perhaps, worse than the loss of the crews and tanks, the British had now lost the tanks most valuable asset, the element of surprise.

Some tanks did good work at Flers, but if the Generals had waited for more machines and better ground, Flers could have been their finest hour instead of a disappointing debut. After the debacle of the tanks first battle, the

whole project was almost scrapped, but there were still a few who believed in the tank and pushed for its development. After several months of work and design changes a new tank entered the war, it was designated as the Mk IV. In reality, the Mk I should have been a test machine and perhaps should not have seen action at all, but its failings led to a much better, safer and more useful machine in the Mk IV. The tank may have been an improvement, but the tactics and the Generals who directed the battles hadn't changed and the first use of the Mk IV in the near swamps of the Ypres Salient was an unmitigated



*Mother* climbs the hill in Burton Park, Lincoln, during its first tests in January 1916.



An experimental lengthened tank known as the Mk IV Tadpole, designed to cross very wide trenches.



A brand new Medium C Hornet on Foster's testing ground.

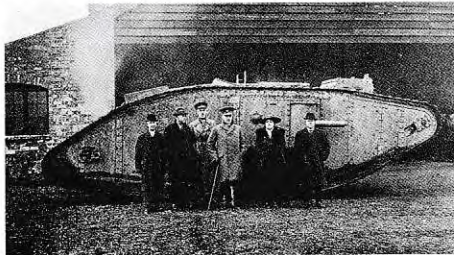


An unarmoured Mk II training tank is inspected by Queen Mary.





Serious testing of the Killen Strait, or just fun and games? It never formed the basis of any tank design.



William Tritton and Lady Tritton stand on the right during General Robertson's visit to Lincoln in 1918.



Foster Mk I tanks lined up and preparing for their first battle in September 1916.



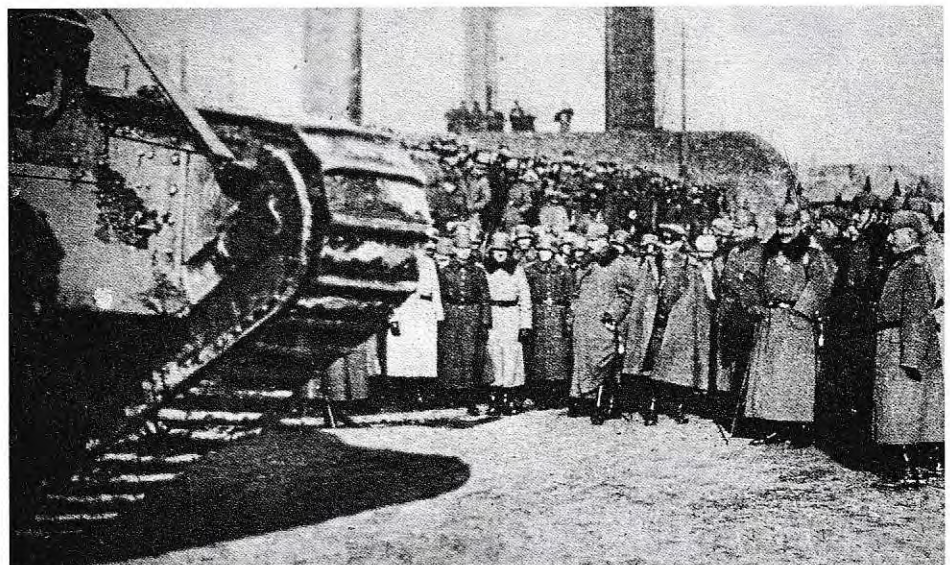
A destroyed Whippet, photographed at Le Fresnoy in 1918.

catastrophe. Again, the tank and the specialists who crewed them had been wasted. What was needed was a battle on firm ground and the chance for the tanks to prove themselves came on November 20, 1917, at Cambrai, Northern France. At Cambrai, the tanks broke through the German defences and in some places pushed several miles into enemy territory. Unfortunately, the tank's gains were not exploited by the infantry and the battle ended as a near draw, but the tank had at last showed what it could and couldn't do.

Back in Lincoln, the design team started to think about fast, chaser tanks that could pursue the Germans over open ground once the trenches were broken. They came up with the Medium A Whippet which was a great improvement on previous designs and would incorporate several new ideas. One of the main problems with the heavy tanks was that they obviously lost a great deal of forward momentum when using their track brakes to steer, so the Whippet would be steered by using the two engines instead of track brakes. The new tank was steered using a steering wheel, as you'd find in any standard car, but



Canadian military take a moment out of the front line to pose with a Lincoln-built Mk IV tank.



A captured Mk IV is paraded in front of the German High Command after being captured intact at Cambrai.

instead of steering road wheels, the steering wheel was used to control the two throttles linked to it. This made steering a simple process of turning the wheel which would increase the throttle on one engine, making the track that it was linked to run faster while decreasing the other tracks speed in an easy rotary motion.

### HARD TO CONTROL

The down side to the system was that two engines means two gear selectors, clutches and throttles which all needed attention while driving through shot and shell. It was said that the Tank Corps were looking for circus jugglers to drive the new tank. It may be assumed that if one engine was damaged or stopped, the whole machine would be crippled and would spin around in a circle, but the Whippet employed a clever system with a slip clutch between the two final output drives. The clutch would slip if the output between the two sides differed by more than 12hp, so if one engine failed completely the driver could still limp along at low revs from the remaining engine. If this happened, going in a slow

straight line was fine, but turning was more complicated. If the right-hand engine failed, turning left would be no problem at all, but to turn right, you would have to turn hard to the left and limp through 270°.

The last heavy tank made during the First World War was another one from Lincoln, the Medium C Hornet. It had the ability to create its own smoke screen thanks to a reservoir of Sulphonic Acid which could be squirted into the machines hot exhaust. The tank was described as the best tank of its era, but by the time it was ready, the war was all but over. ■



After the war, the Foster tank was incorporated into Wm Foster's traction engine smokebox plates.



*Mephisto* after capture at the 5th Tank Brigade demonstration ground at Vaux-en-Amiénois, near Amiens on August 4, 1918.  
AUSTRALIAN WAR MEMORIAL



# A unique German Great War survivor – in Australia

*Old Glory's* regular Australian correspondent, **Andy Plunkett**, describes the construction of a First World War German tank and tells how it comes to now be in his country. In so doing, he pays tribute to the bravery of those who rescued it and all the Australian and other Allied soldiers who laid down their lives during the conflict

**I**PSWICH, Queensland, is perhaps not the most likely place in the world where the only surviving German-designed and manufactured First World War tank is to be found. However, with the war centenary commemorations now upon us, tank model A7V, chassis No 506, *Mephisto*, is attracting worldwide interest.

This model was developed in response to the use of British Mk. I heavy tanks in the Somme in September 1916 and the French CA1 medium tank in 1917. At this early stage, the Allied tanks were not proving overly successful in offensive operations but their initial appearances did have an impact on German front line troops – often described as ‘tank terror’. The German War Ministry responded by ordering the design of an armoured assault vehicle. The first wooden prototype was demonstrated in April 1917. Tests were successful but production models were slow to enter service owing to a low production priority and technical issues.

The Battle of Cambrai in November 1917 demonstrated that Allied tanks, in a well-supported massed attack, proved effective. The first production A7V, No 501, finally rolled out of Daimler-Benz’s plant at Berlin-Marienfelde in October 1917, with production now a priority. In the meantime, the Germans had been using captured and repaired Allied tanks.

The A7V is described as being an armoured-plated box with varying plate thicknesses, mounted on a tracked chassis. Two water-cooled four-cylinder 100hp Daimler petrol engines mounted side by side at its centre powered it. A common gearbox housing was employed but each engine had its own track drive train. The US Holt-type track system with sprung suspension was used. The driver sat centrally in the cupola above the engines with a good all-round view. Initial steering was by varying engine speed using a steering wheel but clutches/transmission brakes were engaged for sharper turns. The tank was able to turn in its own length by engaging forward gear on

one engine, with the other in reverse. Gross weight was more than 30 tons and road speed was 10kph; 4kph on broken ground.

There were two main A7V types depending on the armament. The male had a front-mounted 57mm cannon and six machine guns at the sides/rear. The female had no cannon; it being replaced by two machine guns. No 506 appeared first as a female, later converted to a male. An order for 100 A7Vs was placed – but by the war’s end, only 20 had been produced.

Eighteen men crewed an A7V, all volunteers. They consisted of a commander, driver, mechanic and gunners. A special uniform of flameproof linen, impregnated with asbestos fibres, was issued to crews but they generally preferred standard woollen service dress. A padded leather cap or steel helmet was worn during combat. Internal communication was basic; the commander speaking to the driver but an orderly passed messages to the rest of the crew. Outside communication was by runner and coloured flares.



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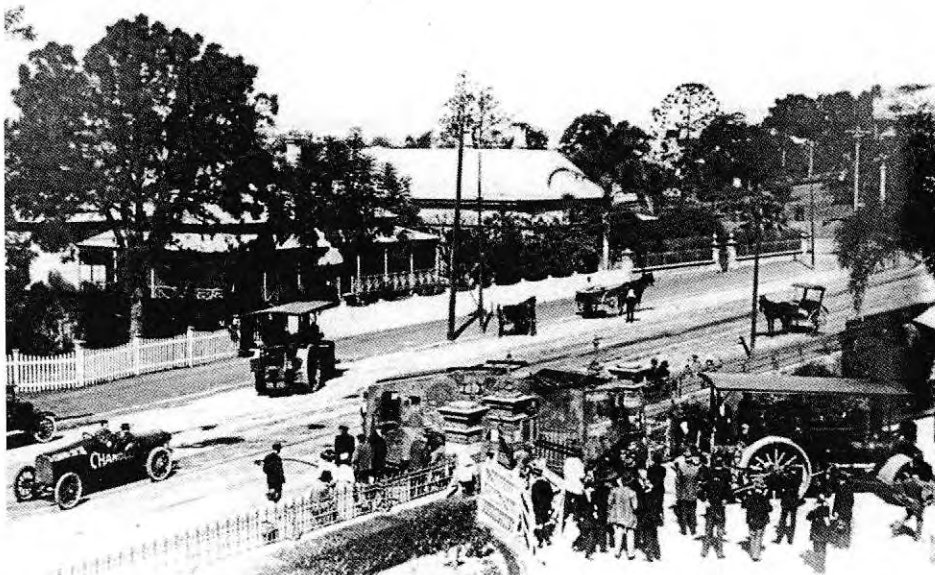
Their first deployment was during the German offensive in March 1918. No 506 was involved and played a minor role. However, deficiencies became apparent with poor trench crossing abilities and top heaviness. After repairs and unit re-allocation, it was named *Mephisto*. An incarnation of the 'devil', Mephistopheles, was painted on the hull showing it running off with a British tank under one arm.

### TANK V TANK BATTLE

Late in April, *Mephisto*, plus 12 other A7Vs, were despatched as infantry support to Villers-Bretonneux, 'Monument Wood' and close to the Allied lines at Cachy. The attack involved the first-ever tank versus tank battle. *Mephisto*, while advancing on Monument Wood, became stranded in a deep shell crater and was unable to be recovered. A German demolition party set charges from which superficial damage occurred. It lay there abandoned until July when the 26<sup>th</sup> Battalion, Australian Infantry Forces (AIF) consisting mainly of Queenslanders, took up duty at positions near Monument Wood. Major J A Robinson, the battalion's commander, was keen to recover *Mephisto* and obtained approval from his hierarchy. With assistance from nearby tank and artillery units, a night recovery operation was undertaken on July 22. Two Allied tanks from the Gun Carrier Company, together with a sergeant plus 12 men from the battalion, undertook the dangerous task. Despite German artillery fire, plus gas attacks on that sector, the recovery was successful.

### 'SOLDIER ART' APPLIED

Following capture, *Mephisto* was transferred to Vaux, the 5<sup>th</sup> Tank Brigade demonstration ground. While there, considerable 'soldier art' was applied, including details of the two units involved in its recovery. Efforts were then made to take *Mephisto* to Queensland as a 'war trophy'. Queensland's Governor plus the State Premier were vocal supporters of this proposal. *Mephisto* thus travelled, via England, and arrived at Brisbane Port aboard the SS *Armagh*



Arriving at the Brisbane Museum in 1919, *Mephisto* was towed there by two Aveling & Porter steam rollers. It's possible that one of these is that now restored and in preservation today at Pimpama, south of Brisbane. Note the two-seater Chandler car on the left. PHIL BROOKSHAW COLLECTION



The tank was later moved to a display area at Southbank where it was damaged in the 2011 Brisbane floods. It was then transferred to Ipswich's Workshop Rail Museum to be dried out and conserved; this photo being taken on its arrival. A photograph of *Mephisto* in its 'cocoon' during this process appeared in OG 289. DAVID MEWES

on April 2, 1919. Two local council steam rollers towed *Mephisto* on its own tracks to the Queensland Museum, then in Gregory Terrace.

Most of the 20 A7Vs survived the war but they finally ended up being scrapped. No 529 (Nixe 11) was captured by American forces and shipped to the US as a 'war prize'. It, too, was scrapped in 1942 as part of their war 'scrap drive'.

In the near century since *Mephisto*'s design/manufacture it has suffered indifference and floodwater immersion.

However, it has now risen to international importance, not only because it is a unique survivor but as a prototype of an emerging technology that revolutionised warfare. It is also a memorial to the far-sightedness of the 26<sup>th</sup> Battalion commander and the tenacity of the men who retrieved *Mephisto* from 'no man's land' at great risk to themselves.

In 2018, this unique tank will once again be on display at Queensland Museum's South Brisbane complex as part of a planned ANZAC Legacy Gallery. It will have finally achieved world heritage significance. ■

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