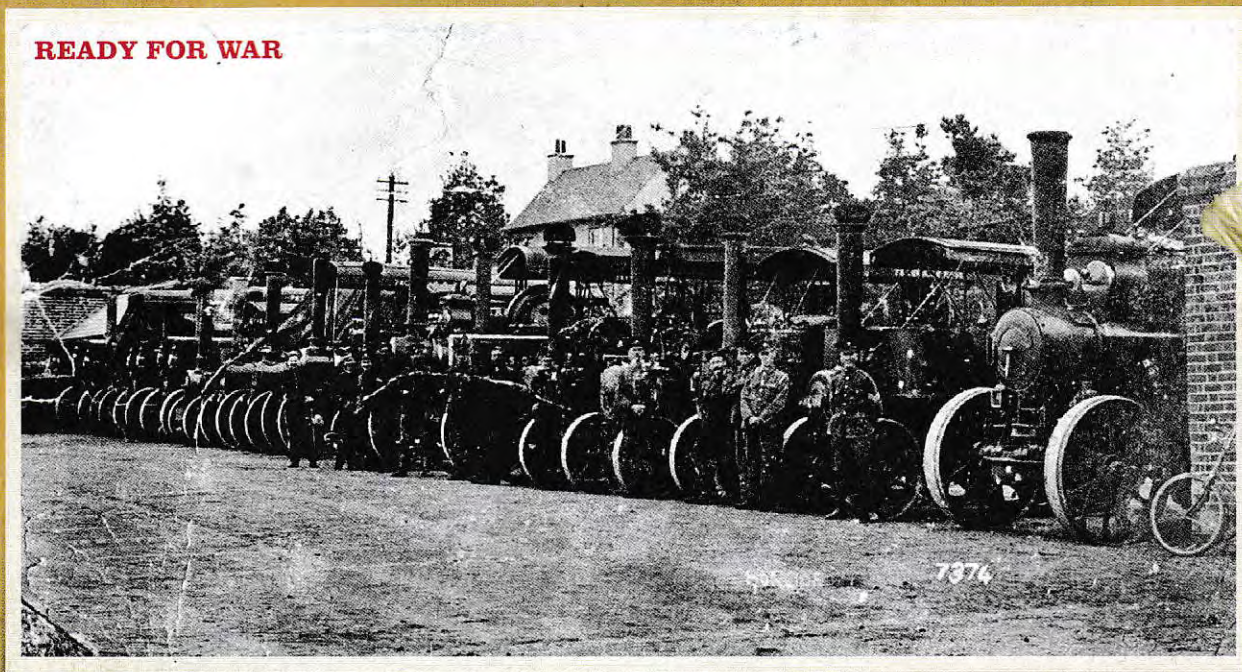


OLD GLORY

STEAM & VINTAGE PRESERVATION

READY FOR WAR



THE WWI FILES

Welcome to our 'War Files' supplement, which is our chance here at *Old Glory* to pay tribute among the centenary commemorations to those who both fought and lost their lives in the First World War.

One hundred years ago is not a very long time at all in the scheme of things and most families can still relate stories that have been handed down a couple of generations of 'great uncles' and relatives that never returned from war.

In the context of steam engine preservation, many of the engines that we rally and restore in the 21st century were built at the very workshops that turned themselves over to the manufacture of munitions for the war effort. As a couple of examples – from just a few miles away from our publishing offices in Lincolnshire – we take a look in this supplement at the efforts made by Rustons and Fosters.

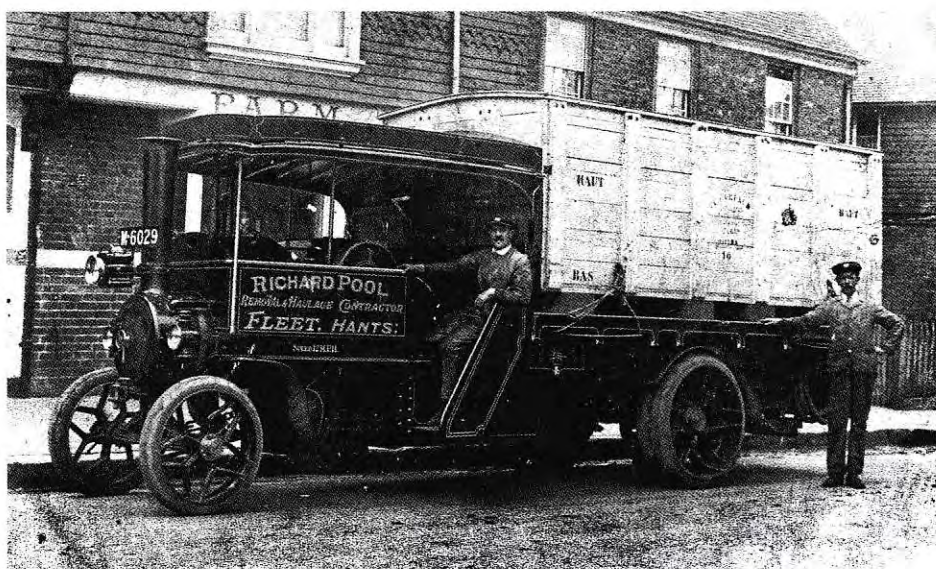
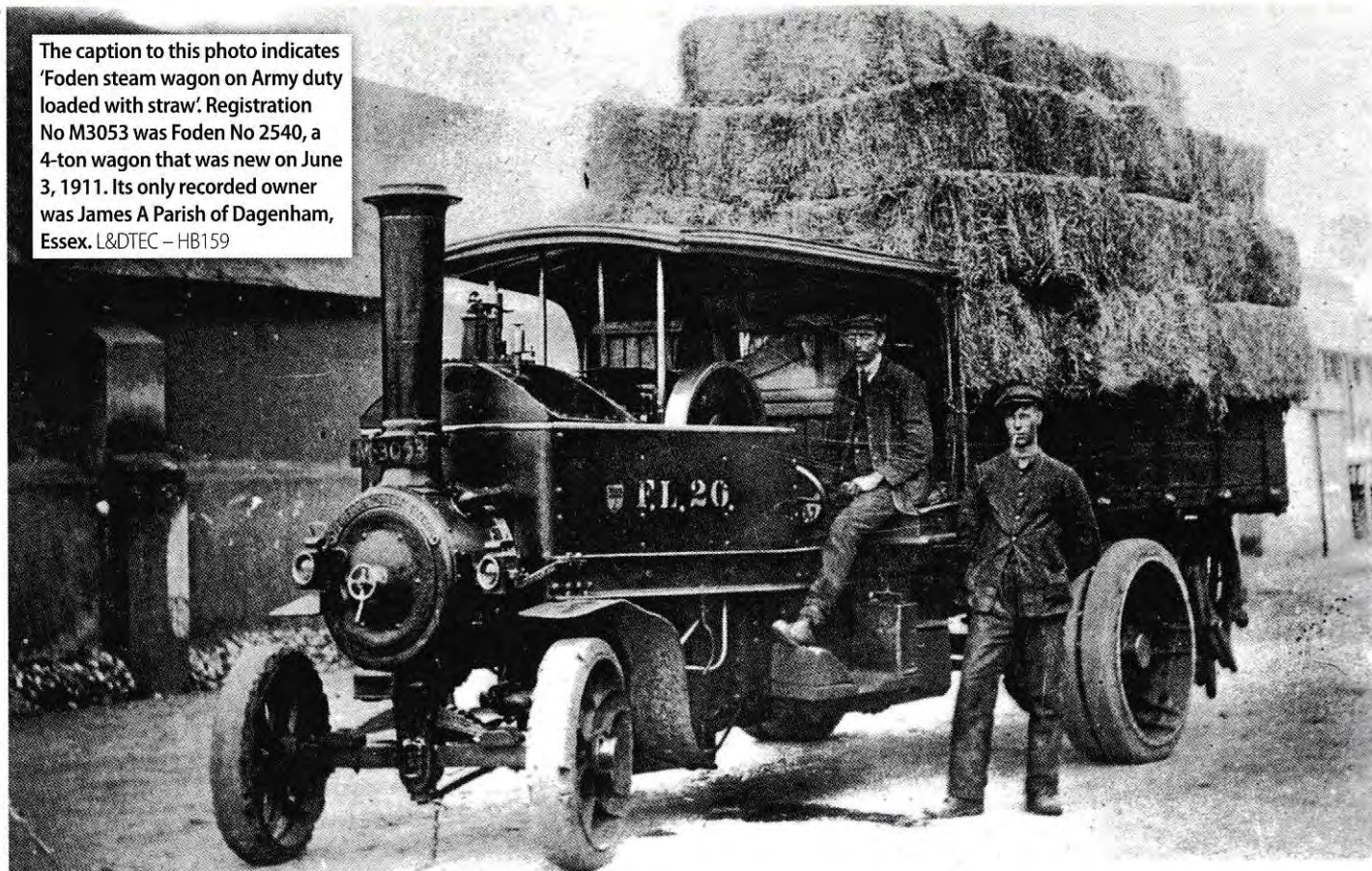
We hope you enjoy our tribute.

*They went with songs to the battle, they were young.
Straight of limb, true of eye, steady and aglow.
They were staunch to the end against odds
uncounted,
They fell with their faces to the foe.*

*They shall grow not old, as we that are left grow old:
Age shall not weary them, nor the years condemn.
At the going down of the sun and in the morning,
We will remember them.*

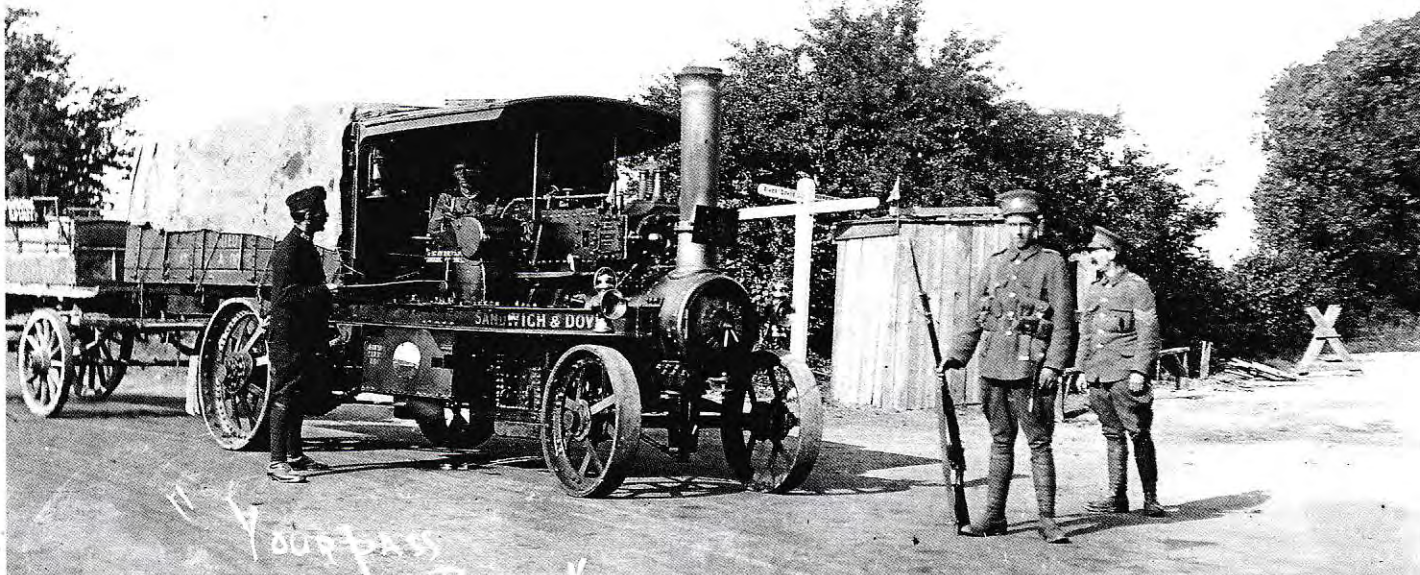
Steam wagons on the home front

The caption to this photo indicates 'Foden steam wagon on Army duty loaded with straw'. Registration No M3053 was Foden No 2540, a 4-ton wagon that was new on June 3, 1911. Its only recorded owner was James A Parish of Dagenham, Essex. L&DTEC – HB159



The Leeds and District Traction Engine Club has kindly provided some of its collection of photographs for our use. Also, courtesy of Tony Thomas, the Sentinel Drivers Club archivist and record keeper, we are able to show some of the several Sentinel waggons that were ordered for military work during the war.

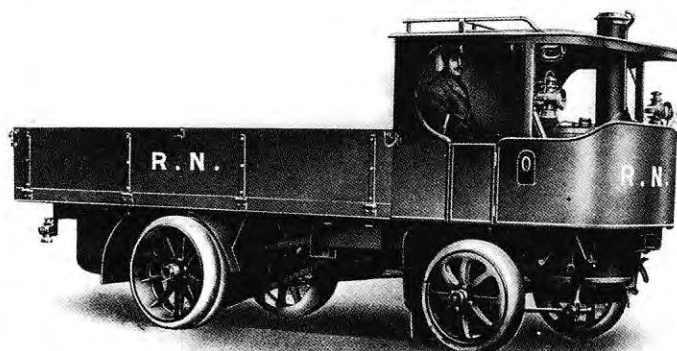
Left: This undated image shows a steam wagon that was new to Richard Pool, haulage contractor of Fleet, Hampshire, in June 1914, and sold on soon after the war. The intriguingly wooden-crated item has French markings on it – 'haut' for 'top' and 'bas' for 'bottom'. It is not known whether the crate was incoming to Britain or whether it was heading across the channel. However, it is known that the wagon was Foden 3-tonner No 4394. L&DTEC – HB123



"Your pass please". On August 30, 1914 soldiers on sentry duty at Whitfield Hill, Dover, have stopped a Wallis & Steevens' steam wagon and requested the driver's pass. The wagon, something of a rarity, is W&S No 7183 – a 5-tonner (AA 2436), new on June 15, 1911 to the East Kent Brewery Co – which was operational at both Sandwich and Dover. At the time, the wagon would have been taking items from one location to the other. PETER SMART COLLECTION



'On His Majesty's Service'. There were several army training camps located around Ripon, North Yorkshire, and in January 1915, Foden No 1848 of 1909 *The Yorkshireman*, is engaged on Harrogate Road, Ripon in moving items, perhaps beds, for one of them. L&DTEC – HB170

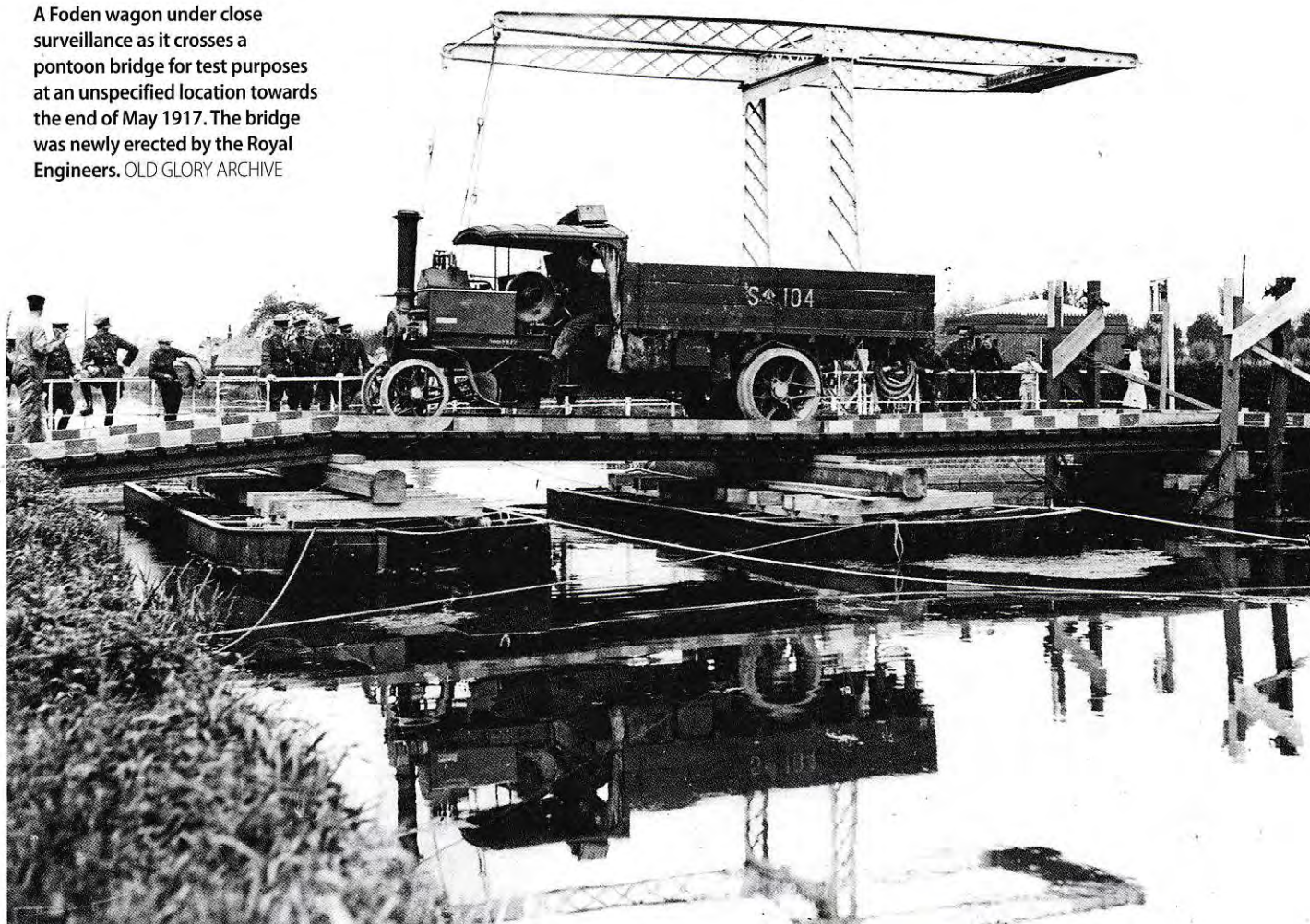


This is probably Sentinel No 1434 (AW 3276), the first in a total of 73 waggons supplied from Shrewsbury to the Royal Navy for wartime work between late 1916 and December 1918. COURTESY TONY THOMAS



The caption for this photograph in Sentinel's house magazine *Sentinel Transport News* was 'Sentinel Steam Waggons undergoing official test before delivery to the Government'. The firm's Standard type wagons were supplied to the Ministry of Munitions from January 1918 onwards, with this image being taken in April 1918. These were therefore probably within the range of works numbers 1828-1842 inclusive. COURTESY TONY THOMAS

A Foden wagon under close surveillance as it crosses a pontoon bridge for test purposes at an unspecified location towards the end of May 1917. The bridge was newly erected by the Royal Engineers. OLD GLORY ARCHIVE



Steam wagons in France

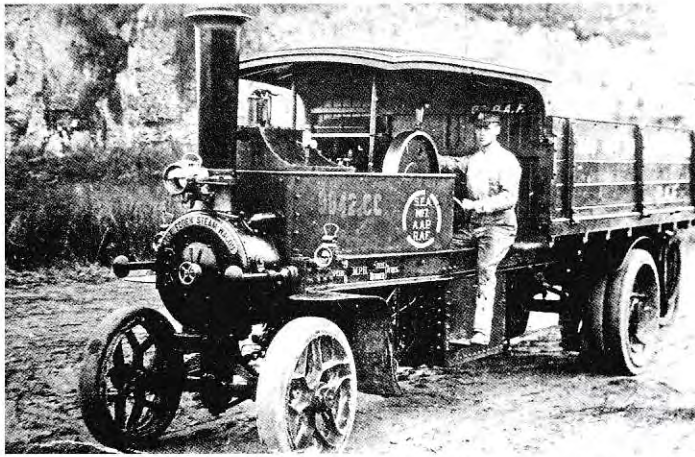
Many images have survived of Foden steam wagons in France, indicating that they were probably considered to be the easiest for the soldiers to learn to drive, being so similar to a traction engine. Surprisingly, only a very few photos exist of Sentinel wagons so employed.

The majority of photographs which are currently available have no indication as to where they were taken, or what specific machine they depict, although there are some exceptions to this.

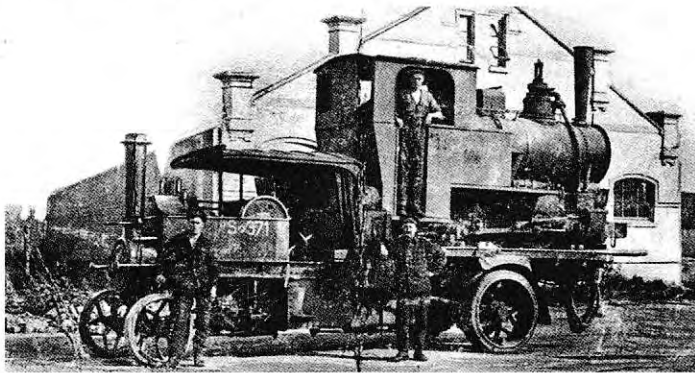
Walter Hobson, before he became the driver of Tadcaster Urban District Council's Fowler roller and was later employed by West Riding County Council in the same position, had driven steam wagons in France during the First World War. When local enthusiast Austin Windle bought a steam roller in the 1960s, Walter learned about his interest in steam and gave him several photographs, one of which is presented here, with Austin's permission.

Should any reader have other appropriate images on a First World War theme, *Old Glory* would be delighted to feature them at some time in the future. Please contact the editor if you can help.



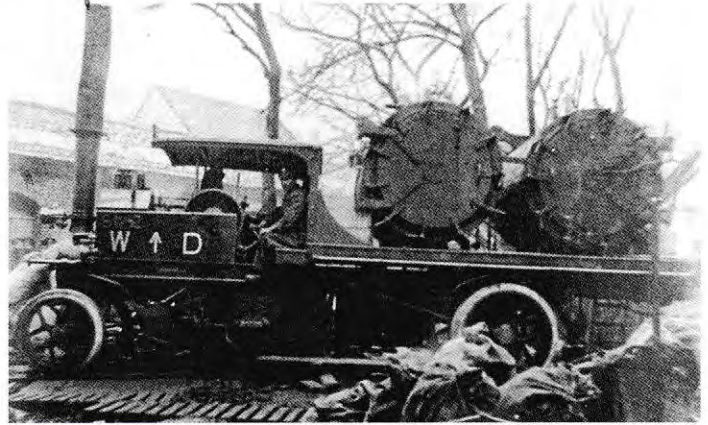


An unidentified Foden in France in RAF livery. PETER SMART COLLECTION



The driver at the front of this Foden wagon is Bill Woodhead from Leeds, later to be part of haulage contractors Woodhead Brothers of Wortley, Leeds. Foden No 6666 was new to the War Department on September 23, 1916, and is loaded with a captured 600mm 0-4-0 German-built railway locomotive. The wagon later returned to England, where it joined the fleet of Yorkshire's North Riding County Council, and was registered AJ 4238. L&DTEC - HB237

Below: A trio of Foden wagons, along with their crews, apparently 'on parade' in a town square, although not in France. Officers overseeing the men stand both left and right, with the senior man clearly standing to attention on the right. These wagons are all fitted with 'dumb buffers' at the side of their smokeboxes for shunting railway wagons. DEREK RAYNER COLLECTION



This Foden wagon, with a tall chimney extension, is clearly static and carries two large cylindrical drums on its back. These are steam disinfectors for which the wagon's boiler provided the steam. Disinfectors were extensively used during the war to cleanse the uniforms worn by soldiers in the trenches, where all sorts of unpleasant vermin could be experienced. In the foreground are bags of dirty uniforms that require attention. PETER SMART COLLECTION



A Lincoln-built Clayton & Shuttleworth wagon with Walter Hobson on the left. It is identified as S 245, but as far as is known, no appropriate listings have survived in which this number might be found in order to provide the wagon's works number identification or date of manufacture. AUSTIN WINDLE COLLECTION

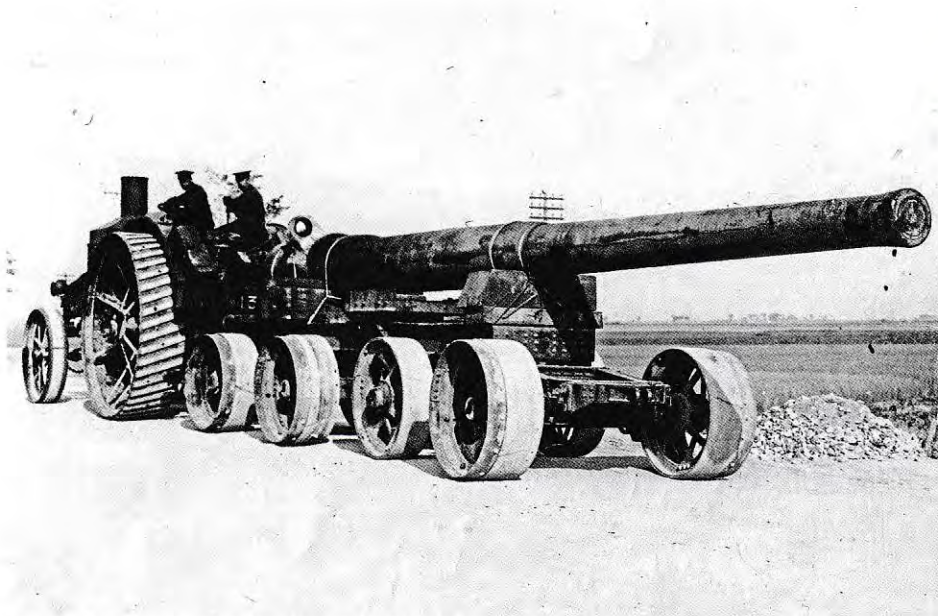




A Holt tractor in Northern France in mid-1918. The Sergeant is Royal Artillery and the others are Army Service Corps.

Lincoln's factories at war

Military historian **Richard Pullen** looks at the contribution made by Lincoln's agricultural engineering factories during the First World War



A Foster Daimler tractor doing what it was built for out on the Western Front.

Lincolnshire today is a thriving agricultural county and home to one of the finest medieval cathedrals in the world, but not so long ago, Lincolnshire was equally famous as a prosperous industrial county. Within the city of Lincoln, world renowned factories such as Penny & Porter, Robey & Co, John Cooke & Sons, Clayton & Shuttleworth, William Foster & Co, James Dawson's and the mighty Ruston Proctor employed just about every man of working age.

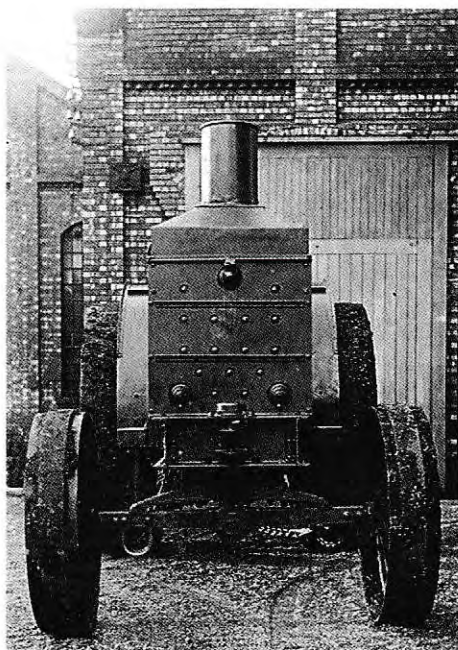
In August 1914, the nation's factories were put on an emergency war footing and Lincoln saw a huge change from producing ploughs and threshing machines to the creation of aircraft and tanks. This transformation is even more remarkable when you take into account that the country still needed to eat, so factories that had changed over to war production had to continue to produce their pre-war agricultural machinery on top of their new military contracts. For modest manufacturers



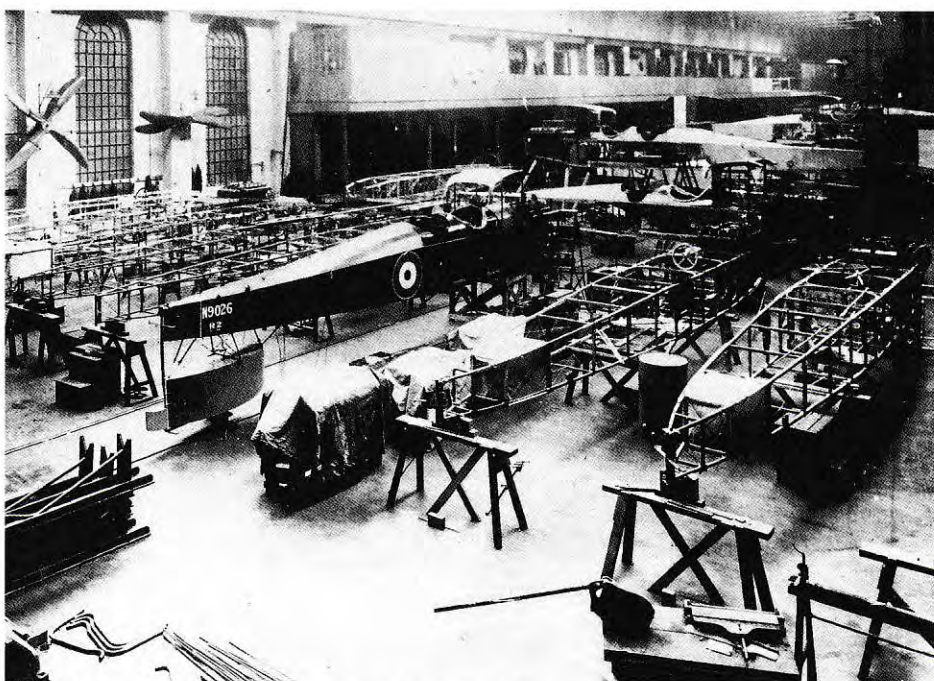
An early Clayton tractor undergoing military tests on Lincoln's South Common.



Ruston's version of the American Holt being demonstrated in Lincoln.



The 105 hp tractor in Foster's works yard in early 1915.



Short 184 Sea Planes under construction at Robeys in 1916.

like Penny and Porter or Fosters, this became a struggle, but for the likes of Ruston Proctor, the transition was easier, although no less chaotic.

Ruston Proctor had been formed in 1857 and by 1914 its Lincoln factory covered over 100 acres and employed more than 5000 people. During the First World War, Rustons was one of the few factories to produce war materials for land, sea and air. One of the main problems with any war is logistics; taking munitions, food and thousands of other consumables from their place of origin to where they are required. For this, the army needed wagons, limbers and special carriages and for the production of these, Rustons couldn't be beaten by any of its local rivals.

By 1918, Rustons had produced over 17,000 searchlight wagons, Lewis gun carts and general service wagons. By this time it had also changed its name to Ruston and Hornsby Ltd after an amalgamation with Richard Hornsby of Grantham, which employed over 3000

people, mostly on war work. Ruston's wartime output is staggering and includes everything from the production of boilers and tank sponsons to the delicate and state of the art creation of front line fighters such as the legendary Sopwith Camel. The Ruston-built aircraft weren't a kit, assembled from parts made by other manufacturers either, everything from nose to tail, including the beautiful engines were made 'in-house'. The firm even built the actual aircraft that Lieutenant William Leefe Robinson V.C. used to shoot down the first Zeppelin over British soil.

HAY BALERS

Things were just as busy on land for Rustons, with the Ministry of Munitions taking over the entire output of many of the products including hay balers. Steam was still a force to be reckoned with and 100 of its 5-ton Compound steam tractors were ordered for the army, but the internal combustion engine

was the next big thing and Rustons was ready with its Caterpillar tractors. The Ruston-built tractors were actually little more than a copy of the American Holt machine built under licence in the UK. Coincidentally, these terrific machines were actually loosely derived from a tractor built by the Grantham-based company of Richard Hornsby and Sons in the early 1900s. The machine was a commercial disaster for Hornsby and the Holt Co. of Stockton, California bought the rights to the Hornsby 'Caterpillar Track' system and created a new machine, hardly recognisable from the English original.

The company was so pleased with the acquisition that it eventually changed its name from Holt to Caterpillar and became one of the most successful companies in the world. The British War Office knew a good thing when they saw it and snapped up the Holt which soon proved itself indispensable for towing artillery through the clinging mud of the Western Front. ►



Sopwith Gunbus aircraft leaves Robey's Globe works in 1915.

“
*Contrary to opinion,
not a single 'bolt from
a Holt' was used on
any British tank*
”

Rustons was also suitably impressed with the American tractor and built 442 clones of the original Holt, making sure to put its own name on the radiator and just about anywhere else it would fit. The Holt was a terrific tool for the job, but it is sometimes cited as being the basis for the British Tank invented in 1916.

However, there is no truth whatsoever in this claim and although both France and Germany based armoured fighting vehicles on Holt type tracks, not a single 'bolt from a Holt' was used in any British tank. To properly cover the output of Rustons factories during the war

would require an entire book, but just a few of the other items it produced included Silicol Hydrogen Generators for inflating Airships, Disinfecting Wagons, over half a million horse shoes, locomotives, Livens Projectors, oil engines, munitions and even flame throwers and poison gas apparatus.

Perhaps an equally important Lincoln based factory during the Great War was that of William Foster & Co Ltd. Fosters was a relatively tiny company compared with Rustons, but its contribution to the war effort was huge and it even managed to invent the

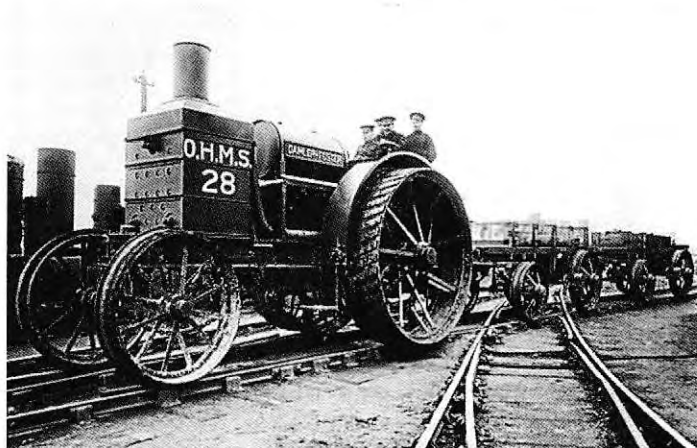


Above: The majestic Handley Page O 400 of the type made by Clayton & Shuttleworth.

Right: The size and power of the US Holt tractor conveys well in this photo.



A very rare shot of the first of the 105 hp tractors being tested in Lincoln in 1914.



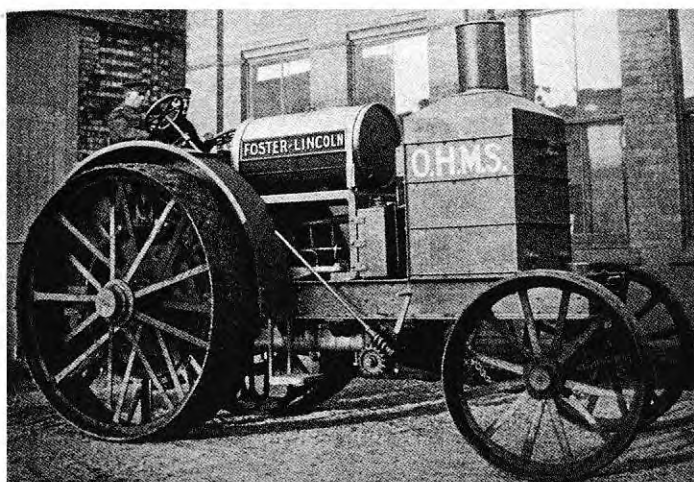
A Foster Daimler tractor with flanged wheels for rail use.



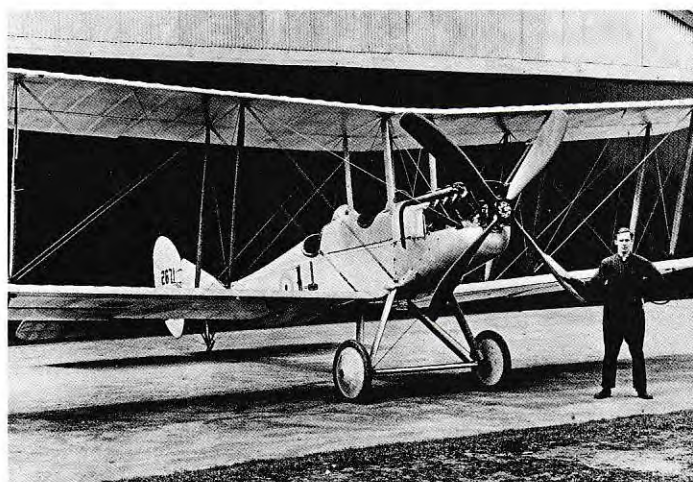
A wonderful Clayton tractor, seen at Carrington rally 2011.



A Clayton tractor in Egypt in 1918. The men are studying a burnt-out aircraft.



The scale of the Foster 105 hp tractor is staggering.



This B.E.2c was the first aircraft to leave Ruston's factory.

world's first tank (see page 26). The factory had been formed by entrepreneur, William Foster in 1856 when he converted his flour mill into an iron foundry. The new business thrived and Foster became one of Lincoln's best remembered citizens and mayors. By the early 20th century the company was ticking over, but was never going to be a world-class factory. The products were well-respected and known to be of terrific quality, but output was small and the future uncertain. This is why, in 1905, the directors head-hunted a dynamic and gifted man by the name of William Tritton. He had spent most of his life working in a veritable 'who's who' of manufacturers including Richard Garrett & Sons, Thornycroft and Gwynnes Pumps, so he knew a thing or two about engineering and how a company should be run.

THE 'TRITTON EFFECT'

Tritton started to turn the business around and gained many new contracts for both the usual agricultural production and new, inventive machines such as the Foster-Hornsby 'Yukon' tractor, the tracked 'Centipede Tractor' of 1912 and the Daimler-Foster Agrimotor Tractor. By the time war was declared, Tritton and the team at Fosters had a close working relationship with Daimler and together, they would work on two very important projects, the world's first Tank and the Foster-Daimler heavy tractor. The heavy tractor is not often discussed and was built as a response to a

particularly devastating piece of German military strategy. They pairing decided that their campaign would go more smoothly if Liege and the city's impregnable fortress wasn't there. On August 5, 1914, the German artillery opened up with a battery of huge 420mm Howitzers and to cut a short story even shorter, 11 days after, the fortress and much of Liege was dust. This swift and brutal battle had a huge impact on the war and on the thinking of the British staff, so orders were placed for some heavy artillery of our own. Eventually, 15in guns were chosen and as the guns were basically ordnance fit for a battleship, the whole job was given to the Royal Marine Artillery. The only problem with the scheme was that there was nothing available to pull such enormous Howitzers. This is where Fosters stepped in and in September 1914 was asked to complete 97 Petrol Engine Tractors and 291 special wagons for moving the 15in monster guns. The tractor would use the six-cylinder, 105hp, 16 litre Daimler Sleeve Valve 'Silent Knight' engine, named after its American creator Charles Yale Knight.

Just two months later in November 1914, the first of the new tractors started to leave the works and the entire job was complete by the summer of 1915. Everything about the tractor was huge, the 105hp engine was the largest land based petrol engine available, the rear wheels were just over 8ft tall, they were able to pull up to 35 tons at the draw bar and the on-board winch was capable of pulling 16,000lbs. ►



The remains of a massive Zeppelin propeller being salvaged after Leefe Robinson and his Ruston-built Sopwith had finished with it.



Above: A standard Ruston 5-ton wagon in military trim.

Right: This wonderful vehicle is the Hornsby Chain Track Tractor of 1909, although commercially unsuccessful, it did pave the way for future



The Yukon chain track tractor of 1909 was important in the development of other similar machines.

The huge tractors and their crews were despatched to France and, often working in pairs, did all that was asked of them. Unfortunately, none of these wonderful leviathans survive.

Another Lincoln factory which made a huge contribution to the war effort was Clayton & Shuttlesworth. The company had been building threshers and traction engines since the 1840s and by the mid-1870s employed almost 1500 people and had offices in Hungary, Vienna, Poland and the Ukraine. The company were quick to embrace the internal combustion engine and had been making large tractors since 1911, but it was for their smaller 35 and 40hp Dorman Stafford engined crawler tractor that they will perhaps be best remembered. This little machine was very useful for many roles and they were ordered by the War Office on a near continuous contract from 1917 to 1919. Claytons was another of Lincoln's factories that didn't solely concentrate on land based machines and during the war they built Sopwith Triplanes, Handley Page O/400 bombers and Sopwith Camels. They also built Sopwith Camel No B7270, piloted by Captain Arthur Brown when he was officially credited with shooting down Baron Manfred von Richthofen.

Robey & Co was another well-established company, having been based at its Globe Works in Lincoln since 1854. With the coming

A Ruston 'Caterpillar' tractor being demonstrated for a more peaceful job – ploughing.





This little Ruston loco was mainly used for hauling munitions in factories. MUSEUM OF LINCOLNSHIRE LIFE COLLECTION



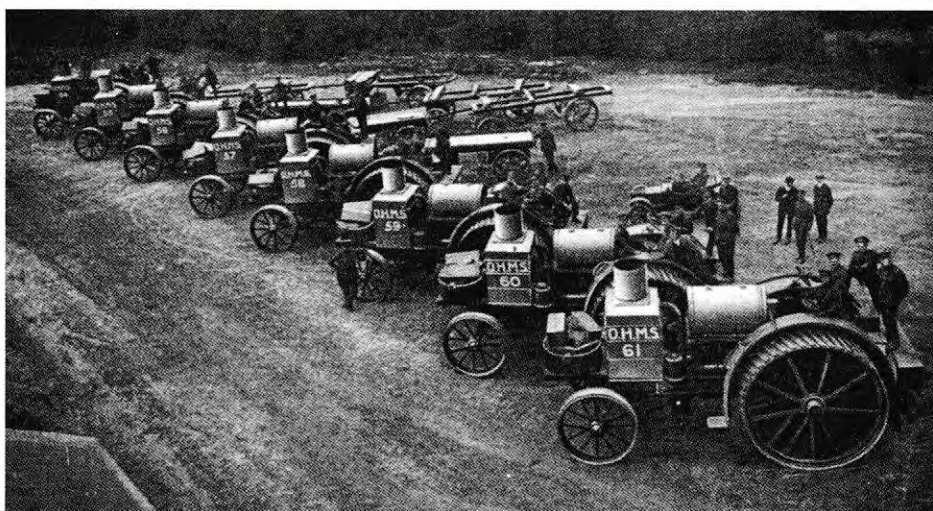
A Great War Ruston loco at work.



Ruston munitions loco on display at the Museum of Lincolnshire Life.

of the First World War, it successfully combined its usual heavy engineering and foundry work with military contracts for fighter aircraft. Although Robey built other military items and all sorts of aircraft, it specialised in the relatively new and unknown world of the Seaplane and gained contracts from the Short Brothers aircraft company.

Without exception, all of Lincoln's other factories were turned over to a war footing. Penny and Porter made fuel tanks for aircraft and James Dawson's made leather kit including Sam Brown belts and holsters for officers. They may not all have made aircraft or tanks, but each one made an invaluable contribution to the overall war effort, yet, today little thought is given to the hectic and often ground breaking work undertaken in Lincoln during the First World War. ■



On His Majesty's Service: Ready for dispatch to France are eight completed tractors.

Army Service Corps

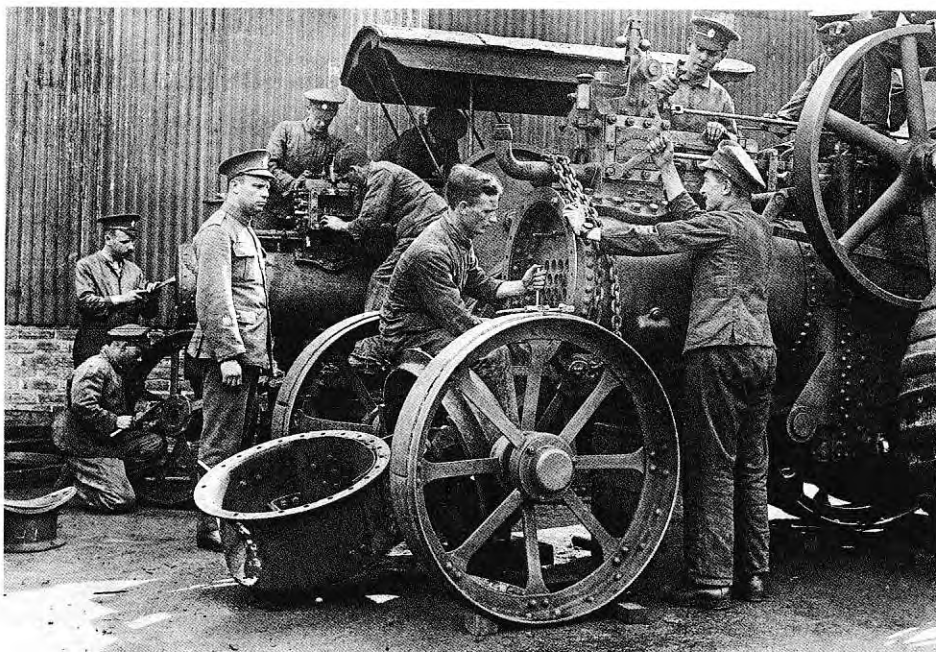
The Army Service Corps was divided into companies associated with horse transport, mechanical transport, supply and remount – this latter being the body responsible for the purchase and training of horses and mules for the Army. As its name

implies, the mechanical transport companies worked with motor lorries and traction engines which were of special value when there was a scarcity of animals. The ranks of the ASC also contained a number of butchers and bakers and these men slaughtered the cattle and sheep and baked the loaves to feed the hungry troops.

In order to maintain the various steam vehicles that the Army used, it was necessary to train soldiers in the skills required to repair them when needed. The Mechanical Transport Section held classes for this purpose. These two images were taken at such an instructional class on September 26, 1917.



An ASC instructor has been advising the class of the differences between a traction engine and a Foden steam wagon. In his hands, he is holding an injector and is presumably using this to explain to the group of soldiers how such a device works. IWM - HU 069751



This arrangement of front end on the left was designed and used by Fowlers at that time to enable it to be easily dismantled for access to the tubes, for example, and the 'standard' D2 type boiler was built up into several different formats, depending on the customer's requirements. They were able to be delivered as traction engines, steam rollers or even convertible engines but it's necessary to refer to Fowler's original build records to ascertain which particular type of engine a specific works number was. It is not appropriate to assume that just because they had this 'ring of bolts' at the front end, that all machines of this period were convertible engines since they most definitely were not. ■

Left: In what is obviously a posed photograph, a class of soldiers is under instruction in the workings of a steam engine. In this instance, it's a Fowler traction engine – and its smokebox has been removed by releasing the 'ring of bolts' around the front end of the boiler. The smokebox is lying on the ground in front of the engine and the chimney base has also been taken off.

WM - HU 069750



'Fowler traction engine stuck in the mud near Feuchy, some three miles to the east of Arras in April 1917. The River Scarpe is in the background'. The group is pictured between Blagny and Feuchy, close to the river and just to the east of Arras. *Old Glory* reader Joe Nourish advises that his grandfather was the driver of the engine in the background and came home on leave shortly after it was taken and saw it published in the *Daily Mail*. OLD GLORY ARCHIVE

Stuck in the mud: near Arras

It is perhaps these two iconic images of a couple of Fowler road locomotives that provide the general assumption that guns were hauled by this type of engine throughout the war. This is not exactly true. Traction engines were used at the beginning of the conflict to move the large artillery pieces around. However, it soon became apparent that unless the engines were kept on hard road surfaces, moving them 'off road' would result in predicaments occurring such as those illustrated here.

Gun movements by traction engine did take place but, as was discovered with the many military railways that were in use in the latter part of the war for transporting supplies and men up to the front line (and the wounded away from it), the engines were a major hazard to those with them, and also their own troops, when used for this purpose.

The reason for this was that the smoke from their fires – an integral part of steam engine operation – could be seen from long distances, especially by German look-outs in balloons that were used for the purpose of spotting suitable targets on the enemy side. The location of the smoke was able to be relayed to the guns on the ground and therefore the



Left: Taken slightly later than the above photo, the Fowler engine on the right has moved forward, perhaps in readiness of hauling the other out of its predicament by using its wire rope. OLD GLORY ARCHIVE

location of the smoke very rapidly became a target for bombardment.

Petrol locomotives were soon used on the many narrow gauge supply railways just behind the front line and gun haulage became the province of the US-built Holt caterpillar-tracked tractors and other such machines later produced by the British war effort by firms including Fosters, Rustons and Daimler.

These two Fowler engines may have been involved in moving the gun and because of the horrendous ground conditions that can be seen, one of the engines has become stuck.

This unfortunate situation is obviously leading to some considerable discussion between various levels of command as to what to do next. However, the two images were taken towards the end of the war and one would have perhaps expected that lessons would have been learned by then.

The 6in gun, the barrel of which appears in both images, is mounted on traction engine driving wheels, part of one of which can be seen on the left of the top photograph. Large numbers of these wheels were produced by engine manufacturers for the war effort. ■

Electrical Generator sets of the First World War

Tim Keenan reminds us of the role that conventional machinery played in the conflict and found a trio from his archive that tells an interesting story from the 'forgotten front'

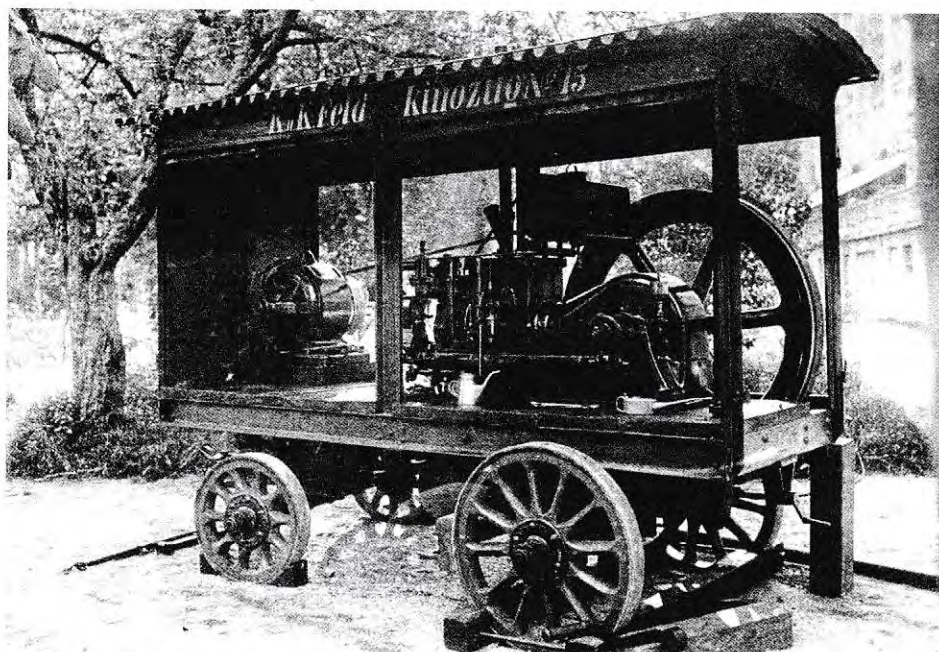


Fig 2. A side-shaft view of the same engine on its trolley at Klagenfurt.

In the mountainous border region between southern Austria and northern Italy, one of the bloodiest battlefields of the First World War was fought in the Austrian Dolomites. Today, it is hard to find a more peaceful spot, but then this outstanding panorama was the setting for the highest and bitterest war in modern history.

Fighting took place high up in these Alps between specialist mountain troops of both Austria and their allies and the Italians; sadly, very heavy casualties were sustained on both sides. This conflict today is still referred to as the Alpenkrieg and stretched from the Swiss border to the Adriatic, a distance of some 640km. It is often referred to as 'The White War', owing to the severe conditions experienced in winters and, following Italy's declaration of war on the Habsburg Empire in May 1915, over 1,500,000 men died during fighting in the area.

This part of the war is not often mentioned in publications, unlike the famous areas of the

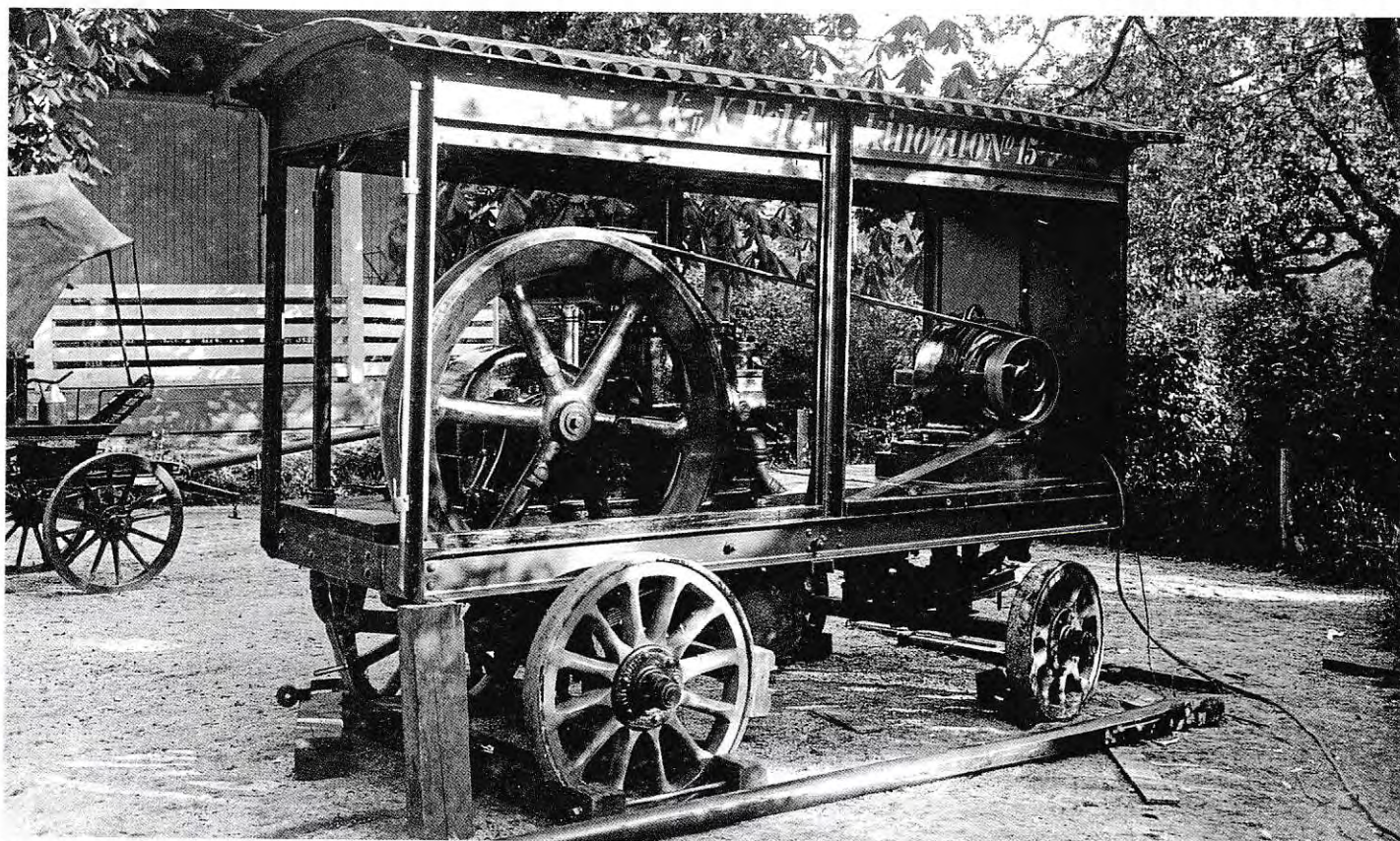
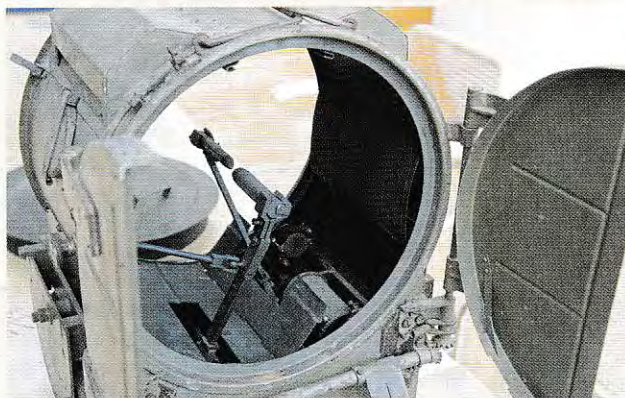


Fig 1. The flywheel-side view of an unidentified make of stationary engine on its transport, as described in the accompanying article, at the Austrian army base at Klagenfurt in 1916.

A newly-found WWI arc lamp



QUITE recently, a Siemens and Schuckert carbon arc search light, manufactured during the First World War, has been discovered in Germany. It could well have been powered by one of these engines and its generator. The lamp is rated at 20 amperes at 43 volts and is in quite reasonable original order.

BOTH: DR FRIEDRICH W BUSCH



Somme and Ypres – where the British and our Allies from the dominions and colonies played a highly significant part.

Off duty, the enemy troops were entertained by early movie films in field cinemas; power for these being provided by purpose-built generating sets manufactured for the Imperial and Royal Austro-Hungarian Army. Fig 1 was taken some time in 1916 at an army base at Klagenfurt, Austria, and carries set number '15' on the unit's top side boards. From this, one would presume that quite a number were ordered for this purpose.

The horizontal oil engine, which is of about 5 to 7hp, is of a semi-enclosed crankcase short base design. The crankcase guard is of cast iron and easily removable for oiling the bearings. The engine drives an open-pole generator by belt and they both sit inside a purpose-built transporter. The electrical switchboard is mounted on the front, on what is possibly a slate panel to guard against shocks; cables can be seen running off to the right.

TRANSPORTER

The transporter was specially and substantially constructed with U-channel and can be closed up for travelling; roller shutters being provided on the sides and removable swing doors at the rear. The steel-tyred wooden wheels have wooden brake blocks to the rear pair. The machine was horse-drawn being pulled by two animals. The main spar is lying on the ground in front and a screwed wooden jacking arrangement is tightened up under the rear wheels to steady the whole machine when generating.

Rather irritatingly, on the original image of Fig 1, the maker's name can be made out on the cast wheel hubs but unfortunately this is not able to be read, even with the use of a high-powered microscope.

It's quite possible that when the cinema was set up and running, it would have been the first time that many of the troops had experienced moving pictures – something that would no doubt have been of major interest to them during their relaxation times.

The engine has a heavy-duty flywheel of about 4ft diameter to ensure steady running when under load. The cylinder is water cooled with a short hopper and above it there is an

extended filler pipe. The camshaft drives both inlet and exhaust valves, as well as a magneto and governors. It's believed that the fuel used was Benzine or petrol. In the side-shaft view of the set [Fig 2], a starting handle is in front of the rear wheel and two oil cans are adjacent to the engine and ready for use.

IDENTIFICATION

It has not yet been possible to identify the engine's maker. At this period of engine history in the Austria-Hungarian Empire, there were many makers of high class and high quality machinery; two of the most prominent being Langen & Wolf of Vienna and Ganz & Co of Budapest. Recent thoughts, via research, are that it was not a product of these – but could quite possibly have been made in Germany by either Gebrüder Körting of Hanover or Gasmotorenfabrik Deutz AG of Cologne; the latter of which celebrates its 150th anniversary this year. If any reader can help identify the engine, the author would be pleased to hear from them (contact via the editor, please).

The soldier in Fig 3 is almost certainly an Austro-Hungarian army electrician in the fortified caverns/tunnels at Mitterberg,

Austria. He is operating an electric lighting set, similar to that previously described. This complex was excavated out of the living rock.

To the right is what may be a large old oil drum converted into a stove, with the smoke pipe going up along the tunnel's roof to the outside. A large paraffin lamp sits on top, perhaps as an emergency light when the generating set is not operational. On the left is a workbench with wood kindling below. The outfit's transporter wheels are visible and the corrugated roof covering.

The electrician is opening (or closing) a direct current double-bladed knife switch on the control board.

As well as being used in tunnels, these engines and generators are known to have been dismantled and carried up to the mountain tops by men and mules, then reassembled for work. They saw use in powering searchlights and illumination during tunnel construction. The fortifications, constructed by both sides in this conflict, can be visited today.

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Fig 3. An electrician with a generator set in the Mitterburg fortified tunnels in 1916. TIM KEENAN COLLECTION

Road Rollers in the Great



An Aveling steam roller – with camels! The Imperial Camel Corps Brigade was raised in December 1916 for service in the Middle East. It eventually comprised four battalions, one each from Great Britain and New Zealand and two from Australia. It was disbanded after the end of the war in May 1919.

One of its supporting groups was drawn from the Royal Engineers and it's therefore likely that the Aveling & Porter steam roller pictured was part of this. The image was taken at Ludd, Palestine, in 1918 and the troops are some of the Australian contingent.

At first glance, what appears to be a fleet number on the forecarriagehead is in the same style as those carried by steam rollers belonging to the Eddison Steam Rolling Co. of Dorchester. If this is the case, then the roller is Aveling No 4491 which was supplied new to the earlier named firm of Eddison & De Mattos in February 1900.

Somewhat coincidentally, a photograph of Eddison roller No 50 appears in the firm's definitive history, *A Century of Service*, published in 1968. This shows a roller with no awning and with the fleet number plate somewhat unusually mounted on the side of the forecarriagehead. There is no record of this roller being involved in war service. However, it is not impossible, but not able to be verified, that this roller went to war and later returned to the same firm. Records of the Road Locomotive Society indicate that Aveling No 4491 was issued with Dorset road registration FX 6909 and was last registered in December 1949. IWM – Q 050893

19. SAINT-QUENTIN — Faubourg Saint-Martin (Vue prise de la Place Dufour-Denelle)



Left: Shell damage at Saint Quentin. The town lies on the river Somme and was at the heart of the war zone from 1916 since it had been integrated into the German defence Hindenburg Line. It consequently suffered considerably as a result of this with more than three quarters of the town being destroyed. The imposing church, the Basilica of St Quentin, was particularly badly damaged. This view of Faubourg Saint-Martin from La Place Dufour-Denelle fortuitously has a Marshall steam roller, with what appears to be a former horse-drawn living wagon to its right, standing among the ruins of the town in Picardy, some 100 miles north east of Paris.

DEREK RAYNER COLLECTION