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CLASSIC MILITARY VEHICLE

Issue 204

KEY

M2A1 Half-track

1943 straight six-powered White

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The Inside Track

This month's *cover feature on one of the variants of the famous US half-track of World War Two is worth a mention for various reasons. Firstly, because the story of half-tracks generally is an interesting tale starting with their development by Kegresse to mass production by the likes of White and International Harvester in just 30 years. Secondly, because the German armies of World War Two were also equipped with half-tracks, it is not uncommon to see the distinctive shape of American ones standing in for their German counterparts in old war movies. Examples include Tobruk (1967) and The Battle of the Bulge (1965). These days, things are generally more accurate and, while there are plenty in collectors' hands, one of my abiding memories from Normandy in June 2014 was seeing a pair cruising along a French autoroute near Isigny.*

World War Two, Allied and Axis, British and American, mass produced and prototype, Pre-war and Post-war, Britain and Ireland, Vietnam and Russia, wheels and tracks, colour and black and white... If all these categories were boxes to be checked, in this issue of Classic Military Vehicle there's enough featured military vehicles to tick them all.

The White M2A1 half-track was one of several mass-produced variants widely used by the US Army during World War Two

Something else that's not overlooked in this edition is vehicles used by the RAF which is appropriate as the RAF celebrates its 100th anniversary this month.

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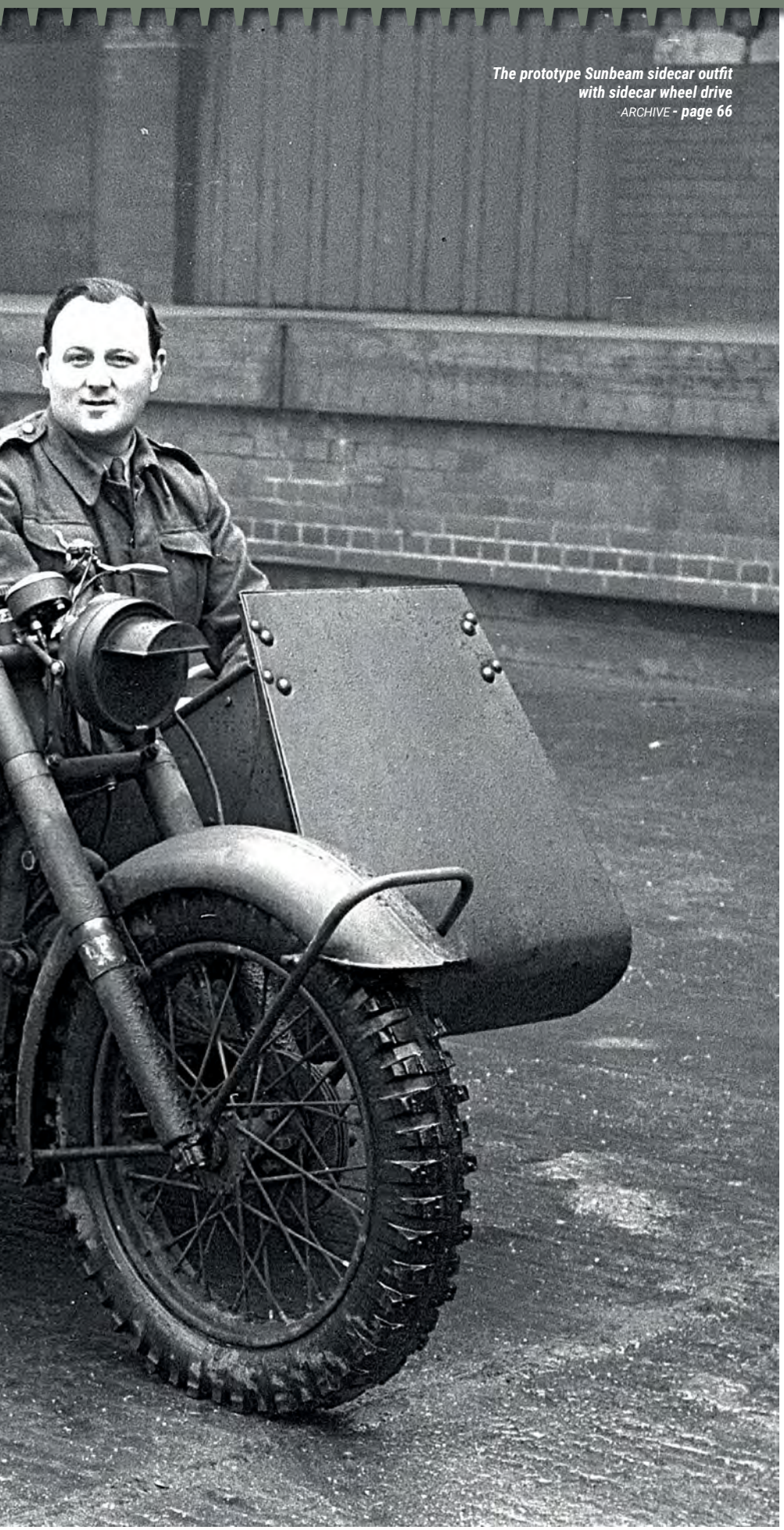
John Carroll
Editor John is a long-standing military vehicle enthusiast who has owned a variety of green machines from a Scammell Explorer to a Harley 45 via Jeeps and Land Rovers

Vicky Turner
Editorial Assistant Vicky is crucial to the organisation of the CMV team and the production of the magazine. She's a history buff and the owner of a classic 1960s Land Rover

Luke Want
Luke is the perfect member of the team to deal with our advertisers and their specific needs.He also works on our sister title Classic Land Rover

Steve Donovan
Chief Designer Steve has worked with designer Dave Robinson in redesigning the magazine to produce CMV's continuing evolution in 2018

Features



The prototype Sunbeam sidecar outfit with sidecar wheel drive
ARCHIVE ***- page 66***

Regulars

The body was formed with flat, face-hardened steel armoured panels .25in thick, front, side and rear - the plate over the wind shield was .5in thick

words **Vicky Turner** pictures **John Carroll and archive**

Not Steering But Aiming

Vicky Turner looks at the development of the M2A1 White Half-Track

It is Frenchman Adolphe Kégresse, who is the best-known designer at the forefront of half-track development. Before World War One he was in the employ of Nikolai Aleksandrovich Romanov, as technical director of the Tsar's

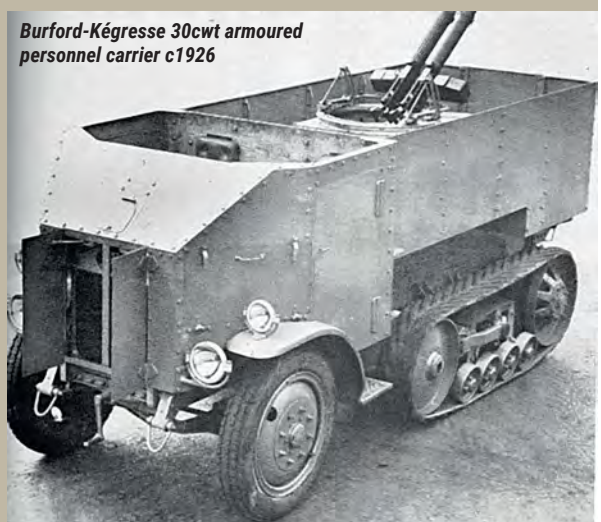
The White Motor Company produced steam cars and gas-powered automobiles, trucks and railcars before the war as well as the 'Red Jammer' buses used in many National Parks

'Given America's enormous motor industry, it wasn't long before they made the half-track their own'

garages. He quickly realised that the atrocious tracks that passed for roads in Imperial Russia would hamper the state's adoption of automotive technology. Rather than think to improve the roads, he looked to adopting the half-track solution to resolve the issue. His version differs from other half-track concepts of the time in as much as he devised bands of rubber track in place of the more common interlocking metal segment track shoes. These so called Kégresse Tracks

BRITISH HALF-TRACK DEVELOPMENT

In 1923 The British War Office issued a specification for half-tracked vehicles and ran a competition in 1925 to see if any manufacturers could come up with designs. British firm Burford built an armoured personnel carrier based on their four-axle 4×2 trucks - it was called the Burford-Kégresse as it was equipped with Kégresse tracks, a licence for the technology having been bought from Citroën. These trucks, despite prototypes receiving positive feedback, never made it into serious production. Crossley also signed a licencing agreement with Citroën-Kégresse. It entered a BGT (British Government Tender, also known as the 40-50bhp) chassis with rubber Kégresse tracks fitted to the field trials held in February 1925. Crossley



Burford-Kégresse 30cwt armoured personnel carrier c1926

came out best in the trials and orders were placed for 115 chassis for deployment with the British Army and RAF

ABOVE AND BELOW: ***Engine armour open and closed - .25in thick panels protect the engine and radiator, they can be closed from inside the cab, but the engine can't run for long with them closed without overheating***

ABOVE: AND RIGHT: ***The half-track designed by Kégresse found favour with Citroën and proved itself in various applications including snow and the African deserts. The image right shows an example that crossed the Sahara in 1923.***

were internally reinforced by steel wires and were flexible, lightweight, durable and quiet. From 1910 Kégresse converted a number of the Tsar's cars and realised his idea had commercial opportunities as well as potential for the Russian military. He was able to hone his skills and improve the design when he oversaw the fitting of the tracks to a number of the Russian Army's Austin armoured cars. This experience was most useful to Kégresse, who had to return to France to seek employment following the Russian Revolution and the execution of his erstwhile boss in 1918.

If tracks replaced the rear axle, then payload could be spread over a wider surface area - especially if one considers the narrow tyres of very early motor vehicles - while retaining simple steering from the wheels on the front axle. It was these advantages that pioneers sought to capitalise on and which industrialists understood could be a money-spinner. On his return to France, Kégresse approached old auto-industry contacts with his track concept. Negotiations with André Citroën and Jacques Hinstin led to a series of Citroën-Kégresse vehicles, built between 1921 and 1937 for both civilian and military use, some of which went on to ably demonstrate great off-road capabilities in the Sahara on scientific expeditions sponsored by Citroën.

American Half-Track Development

Automobiles had already changed the face of war but it was clear that their employ for military purposes would increasingly require them to be able to cross terrain that was not hard surfaced - the mud of France was part of the psyche by now. Early experience of fully-tracked vehicles had not been altogether positive - they were complicated to manufacture, expensive to build and difficult to drive and maintain.

In the inter-war years the half-track idea was gaining momentum, as it seemed to offer a compromise and the high profiled Citroën-Kégresse successes caught the

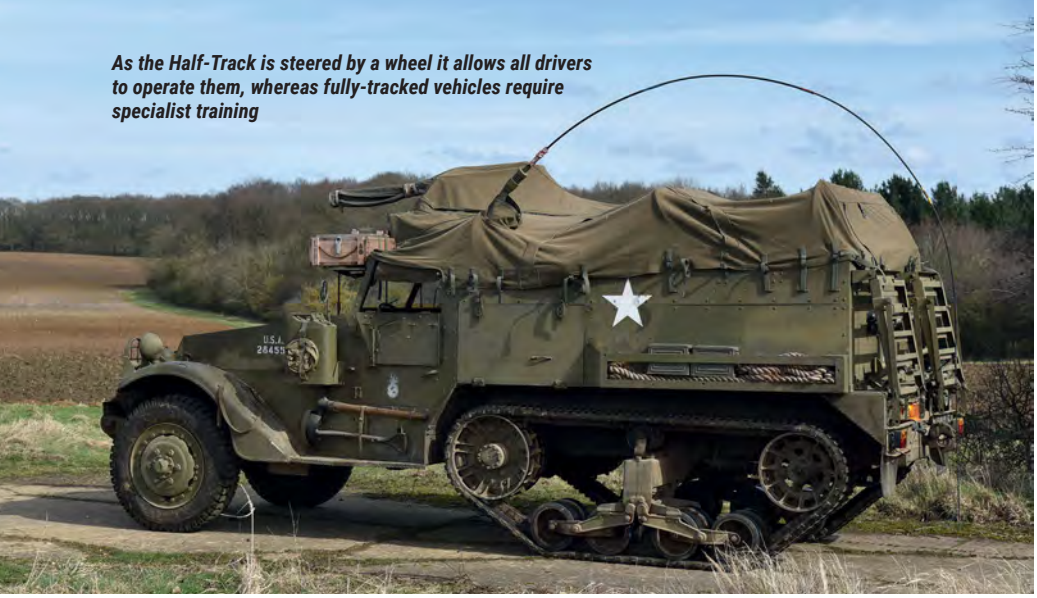
Pioneer tools were carried on each side below the cab doors, the half-track is amply fitted with externally accessible lockers, racks, boxes and hooks

ATS women working on half-tracks at a vehicle reserve depot at Bredon in Worcestershire, 25 April 1944

TRICOLORE TRACKS

When Allied forces liberated Paris in August 1944, among the first vehicles into the city were a number of half-tracks driven by Spanish Republicans: Spanish volunteers flying The Tricolore.

They sported such names as España Cañí, Guernica, Madrid, Brunete, Guadalajara and Ebro, which can be seen painted on the front of the vehicles in contemporary photographs



As the Half-Track is steered by a wheel it allows all drivers to operate them, whereas fully-tracked vehicles require specialist training

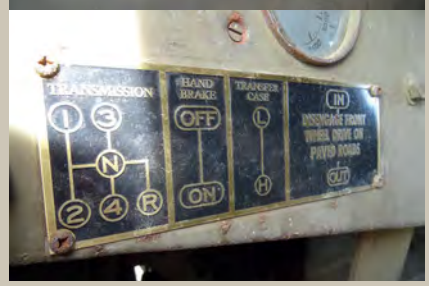
eye of the US government, which bought two Citroën-Kégresse tractors in 1925 for towing 75mm field guns. By 1931 the US ordnance department had concluded that the half-track might be the solution to the scout car mobility issues they were experiencing so bought a Citroën-Kégresse P17 to evaluate at Aberdeen Proving Ground, Maryland. The P17 had already been in use by the French Army for some time and the light four-seater half-track impressed the Americans - so much so that they subsequently bought a licence to manufacture the drive system on home soil. Such licenses were also granted to the UK, Belgium and Italy too.

Given America's enormous motor industry, it wasn't long before it made the half-track its own by adapting it to fit its own vehicles. The 1930s was a period of experimentation; a number of prototypes were developed by a number of companies, none of which entered serious production but over time the track and drive systems underwent several refinements, including smaller drive wheels, central track guides and the inclusion of steel cross pieces. BF Goodrich, which later became synonymous with tyres, undertook much of this track development.

PUBLICITY

The White Motor Company's wartime slogan was 'Trucks you don't steer....you aim'

HALF-TRACKS DETAILED



CLOCKWISE FROM ABOVE: ***Inside this model there is seating for 10, an M49 ring mount for a .50in M2 heavy machine gun, the feature in the A1 variant and three further .30in pintle mounts for the M1919A4 air-cooled machine gun at the rear; M2A1 plate - the M2A1 was the same basic vehicle as the M2 but has a circular ring mount above the assistant driver's seat and three pintle mounts fitted in the rear; The stick shift diagram is located on the dash to show select positions and the operation of the transfer case and front-wheel drive; The White 160AX six-cylinder engine powered the M2 half-track. This engine designed specifically for the half-track was used in the White, Autocar and Diamond T versions. It was also used in commercial trucks after the war; This half-track's operational range was around 175 miles, carrying 113 litres of fuel. These Jerrycans are for water not additional fuel***

Landing ships putting cargo ashore on Omaha Beach, at low tide during the first days of the operation, mid-1944. Among identifiable ships present are LST-532 (in the centre of the view); USS LST-262 (third LST from right); USS LST-310 (second LST from right); USS LST-533 (partially visible at far right); and USS LST-524. Note barrage balloons overhead and army half-track convoy forming up on the beach.
US COASTGUARD

The White Motor Company ranked 54th among US corporations in the value of World War Two military production contracts

LEFT: ***A wounded American soldier lying on a stretcher is being loaded into a medic half-track. There is a red cross painted on the side of the vehicle, Echtz, Germany, 1944***
BELOW: ***Floating causeway of the Mulberry artificial harbour off Omaha Beach, 16 June, 1944, with a half-track rolling toward the shore. Note tugs nested beside the pier head in the background***

White Company Half-Tracks

Based in Cleveland, Ohio, the White Motor Company combined their own chassis, the body of an M3 Scout car and the Timken rear bogie assembly from a T-9 half-track truck (built by Ford but modified by Marmon-Herrington) in 1938 to produce a prototype half-track, the T-7 half-track personnel carrier. This was desperately underpowered, so when the US Army artillery units asked for an artillery tractor or prime mover, White upgraded the engine in a vehicle that was designated the T-14 scout car.

By 1940, this had been standardised and called the M2 half-track car and was being supplied to various units as both a prime

Anti-ditching roller worked to prevent the front bumper from digging in when at too severe an angle of approach and would assist in lifting the front wheels

mover and a reconnaissance vehicle. The M2 was conceived as an artillery tractor and consequently initial design allowed only for the driver and gun crew so the slightly longer M3 was designed and manufactured as a troop carrier. Later, many received retrofitted upgrades to the engine, drive train and stowage - all were initially fitted with the Hercules 160AX but as more powerful International Harvester Company (IHC) engines became available, many half-tracks were re-motorised.

The White Motor Company was not the only manufacturer to build half-tracks - in all around 43,000 units, of all variants were built. White built around 15,500, Auto Car and Diamond T built a further 12,000 each and, from December 1942, the International Harvester Company (IHC) built around 13,000 M5s and M9s. The IHC versions were for export and mostly shipped to Europe for use by British and French forces and their model differs significantly from the other manufacturers' version. They had flat fenders not curved and used the International Red Diamond 450 engines not the Hercules 160AX. They were fitted with 1856 four-speed transmissions instead of the Spicer and came with IHC Model FOC-1370 and RHT-1590 axles not the Timken axles. In addition they were constructed with fully-welded and slightly thicker armour. This version was heavier, but the more powerful engine could handle that: all IHC models had a rear door. IHC were the manufacturer who supplied the majority of the half-tracks under the Lend Lease programme.

There were many variants to this versatile and popular vehicle; it had applications as a personnel carrier, gun carriage, prime mover, mortar carrier and as an anti-aircraft station as well as a command and communications car. Such was the demand it necessitated IHC to be set about manufacturing the similar, longer,

If you look closely behind the stowage racks, there is an M2 .50in heavy machine gun tripod ready for use

SPECIFICATIONS

Make **White**
Model **M2A1**
Nationality **American**
Year **1943**
Production Run **M2s: 11,415, M2A1s: 1,643**
Engine **Hercules 160AX**
Type **Six cylinder, in-line, water cooled**
Fuel **Petrol**
Displacement **6,320cc**
Power **16.2bhp/metric ton**
Torque **147bhp at 3,000rpm**
Transmission **Two-speed**
Type **Manual Spicer 3641 constant mesh**
Gears **Four forward, one reverse**
Front Suspension **Semi-elliptic longitudinal leaf-spring**
Rear Suspension **Vertical volute spring**
Brakes **Vacuum assisted hydraulic**
Wheels **Steel disc**
Tyres **8.25-20**
Crew/seats **10**

Dimensions(overall)
Length (with roller) **19.56ft** (5.96m)
Width **6.44ft** (1.96m)
Wheelbase **11.29ft** (3.44m)
Weight **8.75tonnes** (8,890kg)
Armour **0.25in-0/5in** (6-12mm)

Modifications
Sympathetic indicators have been added for UK road law compliance

The bogie and track assembly was standard across all the variants of the US half-track models. Track chains could be fitted for driving in ice, mud and snow. A spring-loaded idler was introduced in September 1942 to minimise track throwing

'If tracks replaced the rear axle, then payload could be spread over a wider surface area'

ABOVE LEFT: ***America's irresistible might grows every day. Soldiers of the armoured forces training in half-track scout cars at Fort Benning, Georgia are turning rapidly into hard, smart fighting men***
ABOVE RIGHT: ***White M2 Half Track vehicle under testing in Yhteissisu factory (later VAT) in Hämeenlinna/Vanaja in autumn 1947. The Finnish heavy vehicle producer bought 425 M2s from Allied surplus stock. They were supplied without armour and went into forestry or were stripped for parts***
BELOW: ***Owner Neil driving. It is not the most ergonomic driving position - he is tall and has to lean forward to look out. When he drove it to Normandy a couple of years ago the weather was hot and he discovered that driving a metal box was not altogether comfortable***

M9. There were a number of different internal configurations depending on the intended use of the vehicle and there were several weaponry and communication options too. These American half-tracks were deployed to the Philippines, North Africa and all over Europe, additionally around 800 M2s and M9s were sent to the Soviet Union and the US Marine Corps had them with them in the Pacific theatre.

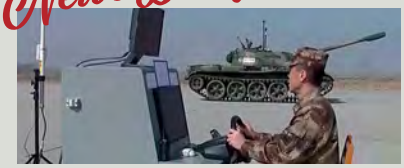
After World War Two half-tracks were still very much part of the military arsenal for the USA they were once again on duty in the Korean War and some would see action with other armies in the first Indochina War, the Algerian War, the Indo-Pakistani conflicts and the early Arab-Israeli wars.

There are probably still some built in the 1940s that are in active service today; when the US Army disposed of them from their service they remained useful for other nations, for example the Argentinians only retired their upgraded M9s in 2009, donating them to Bolivia.

TANKS 4 A RIDE

Neil, the owner of this half-track also has five tanks and other military vehicles that can be hired for shows, weddings, parties or for use in films.
Being interested in all vehicles, especially military ones, Neil bought his first Abbot Self Propelled Gun (SPG) in 2006 and has since bought four more tanks - he has a very understanding wife
Tanks 4 a Ride were established in 2008, with parent company Neil's Plant to support them in transporting the vehicles all around the country.
For more information head to www.tanks4aride.co.uk

News Briefs



China tests unmanned tank

China is in the process of revolutionising its armed forces and has revealed it is testing unmanned tanks that can potentially feature artificial intelligence-based systems. The Chinese state broadcaster CCTV revealed a brief clip of an ageing Type-59 tank fitted with new remote control technology and seemingly being driven by a soldier sitting at a nearby control desk.
State media said the Chinese military was investigating how to network the tanks to aircraft and satellites to work faster and more lethally than conventionally driven versions.
The Global Times newspaper quoted Liu Qingshan, chief editor of Tank and Armored Vehicle, as saying: "A large number of due-to-retire Type 59 tanks can be converted into unmanned vehicles if equipped with artificial intelligence."

No Leopards in Singapore

Singapore is denying it took delivery of Leopard 2A7 main battle tanks from Germany, as was claimed in the annual arms transfer database by the Stockholm International Peace Research Institute. Singapore's Ministry of Defence said that "no other variants of the Leopard have been acquired" since the country ordered Leopard 2A4 tanks from Germany in 2006.
Despite denying the acquisition of the Leopard 2A7, it does look like Singapore is ordering additional Leopard 2 tanks, with the German government's annual military equipment export report stating that a further seven were delivered to Singapore in 2016. Singapore initially ordered a total of 96 Leopard 2 tanks drawn from surplus German stocks in 2004, with 66 put into service and the remaining 30 reportedly kept for spares.

Abrams Upgrade

US Army M1 Abrams tanks are being upgraded with a type of invisible shield that will destroy incoming antitank missiles and other threats before reaching the tank. Known as Trophy, this cutting-edge technology will provide M1 Abrams tanks with 360 degree protection.
Since the 1950s, the army has been determined to give tanks active protection systems.
The army has chosen Raphaels Tech to upgrade 261 M1 Abrams tanks with Israeli-made Trophy active-protection systems. For nearly a decade, Trophy has already been protecting Israel Defence Force Merkava main battle tanks and relied on in conflicts in the Gaza Strip for example. Now approximately three brigades-worth of US tanks will also bring Trophy into battles.

Gas, Gas, Gas!

ABOVE: **A stunning panoramic view of Gruinard Bay, Gruinard Island can be seen behind the rocks in the foreground on the left; hard to believe this was the site of Anthrax testing during World War Two** WIKIMEDIA COMMONS: SYNCHROMIUM

17th March 2018.

Dear Editor.

I have just been reading the latest (april) 2018 issue of Classic Military Vehicles, and saw the article on page 15 where there is ap couple of pictures of an Australian Army Austin Ambulance and one of the questions asked is what ,s that plate?.

The plate referred to is in front of the drivers windscreen on the right hand side and is some 5"x4".I have a possible answer to this , it is possibly where a gas sensitive paper would be fitted which if it turned a certain colour it would alert to the presence of certain gases.

This would I think be a reaction to what happened in WW 1 where both sides ie both Allies and Germans deployed Chlorine and Mustard Gases as offensive weapons.

The gas could be deployed from banks of gas containing cylinders and directed towards the opposing side, unfortunately this could backfire on the user especially if the wind changed direction.

Another means of deploying such agents would be to fill artillery shells with these subsances which would release on the shell reaching its target and exploding, usually the components of the gas would be separate and mix on the shell etc exploding.

As a result of what happened during WW 1 with the use of poison gases as a weapon of warfare ie Chlorine or Mustard Gas the use of such items was banned by the Geneva Convention.

As an aside to this apparently when WW 2 was brewing up an Island off of the Scottish Coast was infected with Anthrax, the human population of course was removed before hand, and I understand that even today some 73 years or so after the end of WW 2 in europe in 1945, this island is still contaminated with Anthrax and scientists who monitor this island have to go there in full NBC protection.

I also understand that clear warning was passed on to the Germans that if they used Chlorine or Mustard Gas or indeed any other form of poison gas against britian during WW 2, we would not hesitate to reply inkind by dropping Anthrax filled bombs on Germany as a result fortunately these weapons were not used against troops of combatants of either the Allied or Axis powers.

So getting back to the plate fitted to the Ambulance if it was suspected that noxious gases ie Chlorine, Mustard etc were encountered there would be a change in colour of the paint or treated paper attached to the plate on the vehicle, and it would be a case of get your Gas Mask on P.D.Q. (pretty Damn Quick).

Having served in the British Army for 6 years from 1974-1980 one of the things we would do on a regular basis would be to enact being under attack from the opposition, ie warsaw pack armies and we would always expect an attack by them to involve , the use of biological or chemical weapons.

This could involve being sprayed by low flying aircraft, ie like crop spraying, being bombed or shelled the munitions containing these agents. This would involve being suited up in our NBC gear and then masking up when a threat was imminent.

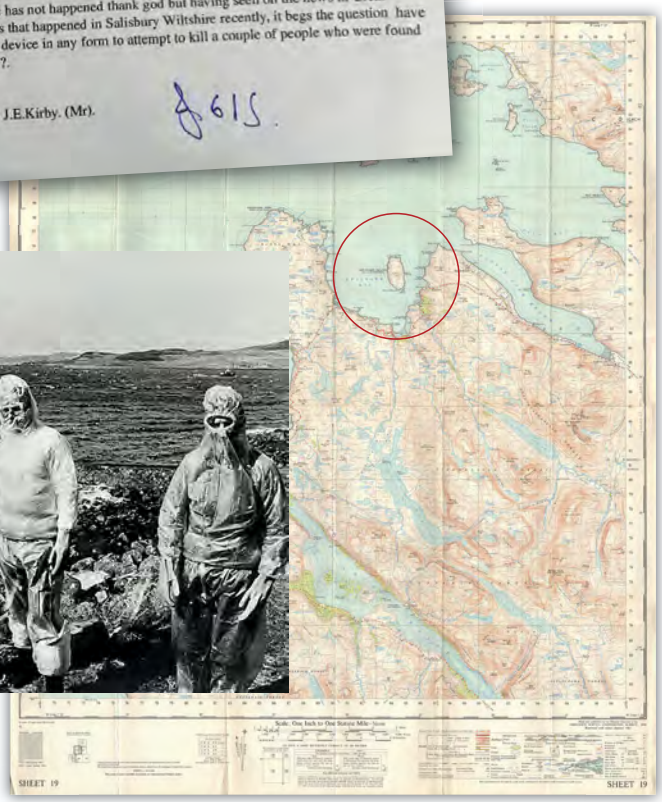
Hopefully this will give www.awm.govau/collection/C189286 Rupert Condick an answer to his question.

Fortunatley this kind of warfare has not happened thank god but having seen on the news in Great Britian recently regarding the events that happened in Salisbury Wiltshire recently, it begs the question have or has a foreign power used such a device in any form to attempt to kill a couple of people who were found to violently ill recently in Salisbury?.

Yours Sincerely. J.E.Kirby. (Mr).

615.

LEFT: **Original letter from Mr Kirby sent in March this year**



BELOW: **Ordnance Survey Map, Sheet19, Gairloch, Published in 1958 showing Gruinard Island off the coast of Scotland**

ABOVE: **Picture of the sign that remains today on Gruinard Island warning of the chemical danger there**

Tank is bound for Lincoln

The TV production team and Guy Martin had originally planned to drive the replica tank Deborah II up Lincoln High Street on Armistice Day last year as part of a Channel 4 documentary but these plans were thwarted amid health and safety concerns and it ended up being driven in Cambrai instead. Good news for Lincoln now though.

Jon Hogan, public engagement manager at Lincolnshire County Council, said: "The replica World War One tank from Guy Martin's Channel 4 documentary will be making a special appearance at the Museum of Lincolnshire Life on May 5 and 6, thanks to the kind permission of Norfolk Tank Museum and NorthOne TV. As the birthplace of the tank and the city where so many World War One tanks were built, Lincoln is the ideal place to showcase this fantastic piece of engineering."

The tank will be on display for visitors to admire and photograph and there will also be a chance to talk to some of the volunteers who helped build it. In addition, visitors can see an original World War One tank that resides in the museum collection.

The same weekend and on the bank holiday Monday, nearby Lincoln Castle will be hosting the Kings of the Sky, with a replica Spitfire on the castle lawns to celebrate the centenary of the RAF.

Entry to the Museum of Lincolnshire Life event will cost £2.50 for adults and £1 for children and concessions. Family tickets will be available for £5.

Dig for Victory

The Dig For Victory Show is a 1940s family-friendly festival held in the beautiful North Somerset countryside on June 9 and 10. Enjoy military vehicles, re-enactors, live music and dancing, history talks, vintage stalls, delicious local food including a vintage tearoom and bar, arena events, a 1940s farm, vintage funfair as well as themed activities for children.

Although Dig For Victory is a 40s festival at heart, there will be a large number of post-war vehicles attending too. The vehicles are arranged on a timeline that takes visitors on a journey back to the 1940s. With close links to the local community the festival has raised £16,000 for charity to date.

This event is not-for-profit, organised entirely by volunteers and is proudly supporting Combat Stress and the Great Western Air Ambulance Charity this year.

The show aims to bring the generations together to learn, remember and have fun and prides itself on creating the traditional atmosphere of an old fashioned rally.

www.digforvictoryshow.com

News Briefs

New Tank and Aircraft Carrier

France is increasing funding for concept and feasibility studies for future weapons to the value of €2.8 billion. This increase includes an annual €1.8 billion budget for concept studies for large arms programmes and raising the finance for feasibility studies to an annual €1 billion by 2022 from the present €730 million. The funding will apply to the future fighter jet, battle tank and a successor to the Charles de Gaulle aircraft carrier.

This real change in direction for studies geared toward future programmes will also be tied to other European countries. France is partnering with Germany on a future fighter jet and a tank, as well as teaming with Britain on a combat UAV, although the latter is in suspension due to Britain's exit from the European Union.

Vintage M-60 Tanks

The M60 'Patton' tank is iconic of the Cold War. Though not used in the Vietnam War, it saw extensive use by Israel and Iran in the various hot wars of the 20th century and made up the bulk of the USA's fleet facing down the Warsaw Pact throughout the 1970s and 1980s.

It was phased out of American service in the 2000s and most other tank fleets by the 2010s but the M60 continues to serve in some countries and are now receiving advanced upgrade packages in an attempt to make them adequate for today's battlefield.

After failing to acquire M-1 Abrams tanks from the United States, Taiwan is now attempting to upgrade its fleet of 400 M-60A3 tanks. Their upgrade package is said to include new a fire control system, turret drive, sighting systems and nuclear, biological and chemical defences — and environmental control systems, and an automatic loading system.

The Turkish M-60T, based on the Israeli Sabra upgrade, is the most numerous of the those in actual service. Turkey is now acquiring additional ERA packages for the turret to counter more modern anti-tank guided missiles. An enhanced stabilisation system is being procured to help the tank shoot on the move

Some of the more obscure M-60 upgrade packages are those for the Royal Thai Army's M-60A3s - these feature appliqué side armour made out of a biodegradable, lightweight, eco-friendly material — wood. They also includes a new Israeli fire-control system, and a possible Israeli Blazer ERA package.

The Thai, Turkish and Taiwanese upgrade packages represent three different approaches to modernising the M-60.

News Briefs

Windbreaker MBT protection

The latest generation of Israeli-made Merkava IV with Rafael Trophy Active Protection System, nicknamed Windbreaker, is one of the most protected Main Battle Tanks in the world. The latest generation of Trophy APS mounted on Merkava IV MBT, has four sensors, one on each side at the front of the turret and two at the rear to increase detection of threats from the back of the tank. It is also equipped with the Amcoram LWS-2 laser warning system. The main armament of the Merkava Mark IVM Windbreaker consists of one 120mm smoothbore gun that can fire various 120mm munitions, including all standard NATO munitions. It can also fire LAHAT anti-tank guided missiles in the same manner as ordinary projectiles. The secondary armament consists of a 7.62mm coaxial machine gun

Decoy Tanks

Russia has unveiled a devious new battlefield tactic: use tanks as decoys in order to hunt down enemy artillery batteries. According to Russia's Sputnik News, when facing an enemy that has artillery, Russia will attempt to locate the enemy batteries and destroy them through counter-battery fire. Russia intends to lure enemies out of concealment by having its tanks pretend to be artillery pieces. Normally, tanks use direct fire, in which they have a line of sight to the target. But on occasion, they have been used as artillery. During the Korean War—because the terrain was too rocky for armour to manoeuvre - the United States inclined tanks on ramps and had them fire indirectly with high, arcing shots that passed over hills and hit targets on the other side. Presumably Russia will do something similar - but only as a ruse. The idea is that the enemy will think the Russian tanks are vulnerable artillery pieces and reply with counter-battery fire.

By the time enemy artillery fires, the tanks will be gone from the target zone and drones will be overhead to pinpoint the enemy's location and transmit it to the tanks and allied artillery. The allied artillery opens fire immediately and the tanks, which posed as artillery earlier, appear out of nowhere to finish what remains of the enemy positions. The technique was used during recent exercises near the Russian city of Voronezh. The tank/drone/artillery combo recently struck targets as far as eight miles away.

New exhibit at Bovington

ABOVE: ***Some of the 21 exhibits of the new "Tank, Back to the Future" exhibition at Bovington***
BELOW FROM TOP: ***Ball Tank - a perfectly spherical design from Germany; DaVinci's Assault Wagon was propelled by eight men and could fire in a 360 degree circle; The Land-IronClad is an armoured vehicle described by H G Wells in one of his novellas***

Twenty-one mini-war machines have gone on temporary display at The Tank Museum. Through highly detailed models Tank, Back to the Future explores the failed designs of armoured vehicles throughout history from as far back as 9th century BC.

The models were painstakingly created by experts in the Netherlands for the country's National Military Museum, but are now on display in the UK for the first time.

Among the vehicles reproduced is one designed by ancient Assyrians from 9th century BC, which was an early siege vehicle – a battering ram with armour and a protruding weapon. The Romans, as pioneers of military hardware, had a number of designs that were used, including the Carrobalista which could fire arrows 328 yards (300m).

Leonardo Da Vinci, as well as everything else he did, managed to design a tank that was propelled by eight men and could fire in a 360 degree circle. The collection also includes a 1903 design, the Land Ironclad, by author HG Wells who described armoured combat vehicles in one of his novellas.

Other models include a flying tank and a perfectly spherical design from Germany in World War Two that was captured by the Russians.

Chris van Schaardenburgh, head of collections at The Tank Museum, said: "Our collection here begins in the First World War when the Mark I was developed and first saw action in September 1916, but this model collection shows that the military inventors and designers throughout history have always dreamed of creating tanks. The reason is always the same; it's about protection, mobility and firepower – or inflicting damage on the enemy. This exhibition is a fascinating journey through some of the might-have-beens and pre-cursors of our amazing collection."

Fit for a King

Four military vehicles from the collection of Romania's King Michael, who died in December 2017 aged 96, have been returned to Romania from Switzerland. They are on display at the Royal Car Museum in the Royal Village of Savarsin and visitors will be able to see them from May.

King Michael received one of the four Jeeps, the Ford GPW, at the end of 1944, as a gift from the US Army. The second is a Willys 'Paton' Jeep built in 1944, offered to the Grand Duke of Luxembourg at the end of the war, who in turn gave it to his cousin, Queen Anne, in 1969.

The other two, the Ford GP and the Bantam BRC 40 Jeep, were made in 1941 and King Michael bought them in poor repair from the US in 1977. These are only part of the exhibit that will include the king's garage memorabilia too - he was a well-known collector and restorer of military vehicles.

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MVT Safety Training Day

The class of 2018 line up in front of an Armourgeddon 432

ABOVE: ***Armourgeddon instructor Heather Bailey about to run her 432 over a dummy representing a small child on a trike. In the background is a Russian BRDM2***
LEFT: ***Fire-fighting was on the agenda***

Members of the Military Vehicle Trust came from all over the country to attend a safety training day at the tank driving centre Armourgeddon in Husbands Bosworth, Leicestershire

Those taking part learned about event safety and the new MVT code of conduct, basic fire-fighting, vehicle marshalling, data protection and radio etiquette.

In a graphic demonstration of what can go wrong, a 432 driven by SE Midlands Area's Heather Bailey, ran over a dummy which then became tangled in the tracks.

Help Save LCT 7074

The National Museum of the Royal Navy and the D-Day Museum are working together to save one of the last surviving Landing Craft Tank (LCTs), which, on D-Day, delivered troops and armoured vehicles onto the sand of Gold Beach in 1944 as part of the enormous Normandy landings operation.

Since the war LCT7074 has fallen into disrepair having spent time ingloriously as a floating clubhouse and nightclub on her moorings at East Float Dock, Birkenhead. In 2014 she was salvaged and moved to Portsmouth by The National Museum of the Royal Navy who now want to carry out a full restoration and display the LCT to the public and help mark the 75th Anniversary of D-Day in 2019. This is an ambitious and expensive project and the museums are seeking your help in seeing the dream become a reality.

They have secured a generous donation from the Heritage Lottery Fund but they need now to provide matching raised funding to unlock the HLF monies to carry out the full restoration and have established a crowd-funding campaign.

Donate as much or as little as you can to help preserve this piece of history via the just giving page **www.justgiving.com/fundraising/lct-7074**

News Briefs

New tank for US Army

The US Army plans to build prototypes of a new Mobile Protected Firepower lightweight armoured vehicle designed to support infantry combat teams in fast-moving combat situations. They are now evaluating industry proposals for the new vehicle which seeks to combine rapid deployability, manoeuvrability and survivability for crew members in combat.

Army developers say that the new armoured vehicle is expected to change land war by outmatching Russian equivalents and bring a new dimension to advancing infantry as it manoeuvres toward enemy attack.

Developers within army research claim to be reducing the weight of combat vehicles while simultaneously enhancing mobility.

Karl Kappra, chief of the office of strategy management for the army research lab said: "Making a vehicle lighter weight and more capable requires a multi-function effort. For instance, you can integrate an antenna into the armour protection."

British Boxer

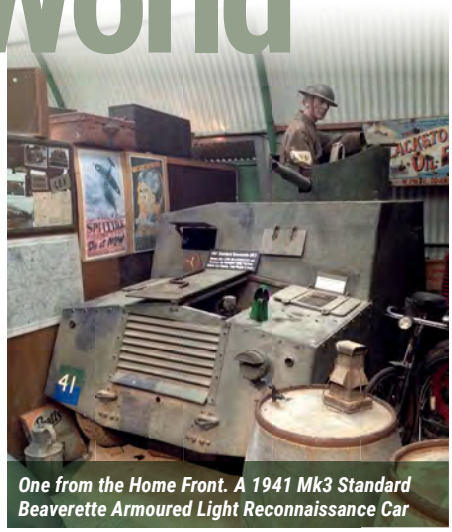
Leading British companies in the defence sector BAE Systems, Pearson Engineering and Thales UK have signed agreements with the ARTEC consortium as partners for the production of BOXER.

Should the armoured wheeled vehicle be selected as the British Army's next generation Mechanised Infantry Vehicle (MIV), at least 60% of BOXER's value creation and 100% of final assembly will take place in Britain.

To ensure the best value to the British taxpayer, ARTEC has defined a competitive process for the main partners and their supply chains to follow. ARTEC's investment in the UK value chain is estimated to secure or create at least 1,000 jobs all across the country. The UK partnership approach will ensure that British companies are fully embedded in the MIV supply chain. Rolls Royce, ParkerHannifin, WFEL and British subsidiaries of the ARTEC parent companies will also supply British content. Further, Rheinmetall intends to establish a modern production and integration centre for armoured vehicles in the UK as part of the programme. This represents a significant commitment from Rheinmetall which will lead to long-lasting armoured vehicle capability in the UK.

The Best Shed in the World

The Best Shed in The World. One of the Romney buildings housing the treasures of the Cobbatton Combat Collection



One from the Home Front. A 1941 Mk3 Standard Beaverette Armoured Light Reconnaissance Car

The impressive bulk of the 1944 Chevrolet C15TA weighs in at four-and-a-half tons. They were used as armoured personnel carriers or ambulances

1942 Daimler Mk1 Armoured Car. Armed with a 2 Pdr main gun and Besa machine gun, this vehicle was used in the film A Bridge Too Far

The Boneyard. A shrapnel damaged ex-range target 5.5in gun dated 1943 and a 1945 Comet Cruiser tank await restoration

Cobbatton Combat Collection

The museum is located 5.5 miles south east of Barnstaple close to the village of Chittlehampton. Access is off the A377 and brown signs direct visitors on all local routes. Opening hours vary and can be found by visiting the website below.
Chittlehampton, Umberleigh, Devon, EX37 9RZ. Tel 01769 540 740
www.cobbattoncombat.co.uk

A Soviet T34 and a Sexton self-propelled Gun vie for space with a replica section of a Horsa glider and a Morris C9B SP Bofors Tractor

The Cobbatton Combat Collection is a privately-owned museum in North Devon and is described by its founder Preston Isaac as "a hobby that got out of hand!"

Cobbatton is a place of pilgrimage for anyone with an interest in rare, unusual British and Commonwealth military vehicles. There is also a vast array of associated militaria and weaponry, home front paraphernalia and a smattering of more modern armour which can absorb a visitor for many hours.

The collection is housed in a series of Romney-type buildings which adds to the ambience but beware; anyone expecting virtual reality and interactive displays is going to be disappointed. The collection is an unashamedly traditional museum with the vehicles packed tight against each other interspersed with smaller pieces of kit.

This is one of the primary attractions as a visitor simply doesn't know where to look next and every trip around reveals something new or something that was missed on previous forays.

The variety of vehicles in the collection is impressive and, unlike other very worthy museums, they are not pristine and restored to a shiny finish they would never have had. There is a patina and authenticity about these tanks and trucks that appeals greatly as is the ability to reach out and touch history.

The only real drawback to such a packed collection is that it is quite hard to get good photographs but this pales into insignificance compared to the quality of what is on display.

The boneyard outside is also worth wandering around where a variety of tanks, armoured cars and artillery pieces sit awaiting spares or repair.

A cup of tea and a pasty from the NAAFI wagon and a look around the small shop will top off a visit to the Best Shed in The World.

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Land Rover Defender 130 4 Door Utility Vehicle RHD, Fitted Front and rear anti roll bars, Heavy duty twin coil spring rear suspension, Heavy duty modular wheels, 2 Ton Electric winch, Central locking with alarm via remote fob, Electric front windows, Air Conditioning, Heated Seats, 82,683 Miles, Year 2011, Very Good condition.....**Price from £17,500** (1 Available)

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Form an Orderly Queue

It looks like being an interesting few months with plenty of military vehicles bound for the auctions

Jon Phillips' prize-winning and unique Sturmgeschutz III Ausf D trundled onto the market last month and set the military vehicle world alive with speculation as to how much it would sell for. Certainly this is one for collectors with very deep pockets and they have already raised their heads above the parapet, but as we went to press, it had not yet sold.

Jon told us he has had some very serious offers, but he would like to achieve a seven figure sum to comfortably wave goodbye to the Stug.

It is one of only three of this model in existence and the only one running and driving. Probably used by the Deutsche Afrika Korps and later used as a hard target on Pirbright ranges, it was certainly a well documented and challenging restoration. Unable to find a suitable Maybach HL 120 TRM V-12 gasoline engine, Jon grafted in a Rolls-Royce multi-fuel engine and Allison gearbox and FV432 steering box to ensure this was a running and driving Stug. We'll let you know what happens to it in a future issue.

Meanwhile, there has been plenty of buying and selling at the more average level of the market. We are still impressed with the number of vehicles coming in and out of the UK, despite the weak pound.

Most people placing an advert take photos to show the best aspects of their vehicle and try to hide the worst. One bold seller advertised a sometime restored but neglected Ford GPW "needing a few things doing" for £15,000 and included brutally honest photos of rust patches and holes, oil leaks and other faults. Within four days he had sold it, a little bit under the asking price but the new owner took away a good basis for a refurbishment that should easily be ready for War and Peace.

We saw a Ford GPW with a very unusual retrofitted body come up for sale again. It was sold at auction in 2016 in France, apparently the body was built by soldiers with too much time on their hands at the end of hostilities. No price on it, but it would only appeal to a few collectors and it's not one for the purists. Jeep prices are still riding high between £25,000-£30,000 at present and even project Jeeps are creeping up. Selling for a client, RR Services offered a Ford GPA Amphibian rolling chassis with engine for a very realistic £15,000. An Austin K2 ambulance at £22,000 contrasted well with a good Dodge Command car at a modest £19,000.

Retro-bodied Ford GPW

We expect to see Command Car prices rise this summer in the run up to Normandy 2019. There has been a recent feast of Dodge Weapons Carriers between £7,000 and £16,000. A Cushman Airborne Scooter at €15950 confirmed that the price of these has come down to earth again – after the Normandy Tank Museum sale realised almost 10 times that for their example.

More British wartime bikes have come onto the market, including a Matchless G3WO 1940 for restoration at £4,600 and an Ariel WNG 350cc ex-RAF for €6,950 and for the same price a Royal Enfield Flying Flea from Dutch Lion Motorcycles in Holland. Airborne Garage offered a very nice 1941 Indian Scout 741 B for €17,950.

We have seen a few more CVRTs come onto the market and sell quickly. These too are commanding better prices than they were a year or so ago. The regular sales of CVRTs direct form the MoD through Withams have pretty much dried up. Far fewer vehicles are coming out of the MoD at present. The award of the new MoD Disposal contract should have been announced by now but has been delayed and is expected soon.

New and rather worrying legislation in Belgium may affect the use and display of privately-owned tanks and artillery and we are waiting clarification from the organisers of Tanks in Town. Pierre Deghaye and his team are working hard with the Belgian government to ensure that events like Tanks In Town can continue in the format we know and love. The military vehicle community is very grateful for their efforts and hopefully it will be good news. For owners of deactivated weapons the news is not so good – the EU are continuing to meddle in the regulations and significant negative changes to the already punitive regulations become law in June. The recent laws forced on us, even though we leave the EU next March, have had a really bad effect on the deactivated weapons market. Space doesn't permit us to detail all this but readers should check out the information on www.ukdwa.org

ABOVE: ***a very nice 1941 Indian Scout 741 B for €17,950***
LEFT: ***Sturmgeschutz III Ausf D for a wheelbarrow of money***
RIGHT: ***Ford GPA Amphibian rolling chassis at £15,000***

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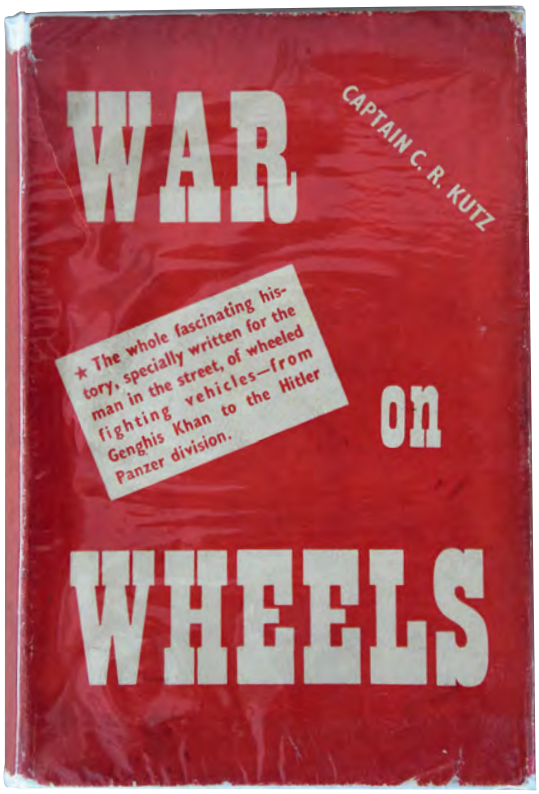
War on Wheels

The evolution of an idea

Author **Charles Randolph Kutz**
Publisher **Bodley Head**
Year **1941**
ISBN **n/a**
Language **English**
Binding **Hardback**
Pages **286**
Size **130x190mm** (5.125x7.5in)
Price **£3.50+**
www.Amazon.co.uk

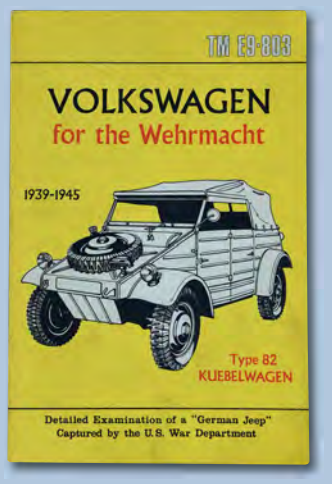


At first glance this month's collectable books have little in common. Both are American but are not specifically about German subjects from World War Two although they only exist because of them. This book for example is, according to the author, "primarily a history of armoured cars - the machine which pointed the way to modern independent armoured forces and today's Lightning War. To a lesser extent it is the story of motor artillery, or motorised infantry, of armoured trains and of the tank." The 'Lightning War' - blitzkrieg - is of course where the Germans come in, because by the time this book was published in America and Great Britain in 1941 (and subsequently reprinted by The Scientific Book Club in 1942), blitzkrieg had allowed the German armies to conquer most of western Europe and were embarking on their ill-fated incursions into the USSR. The author was a captain in the US Army's Armoured Corps and probably wrote this book while taking a professional interest in the developments in warfare that were taking place in Europe. Of this he says: "The warriors of the Third Reich had the military vision, selected the time and, as the world knows, were successful in their trial."

I picked up this copy, years ago, primarily to read chapters four and five about British use of light cars and armoured cars in Palestine and Mesopotamia during World War One and later noted that another chapter deals with the advent of the half-track. Apart from a few basic maps of campaigns the book is unillustrated but, regardless of this, is a fascinating read for both its history and its being contemporary to an uncertain period of World War Two. In the latter guise it acts as a warning of what as to come and how warfare was evolving rapidly. War on Wheels is readily available online cheaply but don't let that put you off, it is a worthwhile addition to the collection of anyone interested in the development of military vehicles.

Volkswagen for the Wehrmacht

Author **n/a**
Publisher **Post Era Books**
Year **1972**
ISBN **911160-43-4**
Language **English**
Binding **Softback**
Pages **148**
Size **151x228mm** (6x9in)
Price **£30**
www.ebay.com



In the post-war years, the VW Beetle made a big impression on the world's motoring habits as it became as important as the Model T Ford in mobilising the masses. US imports started in 1949 and derivatives such as the Type 181, known as 'The Thing' in the USA - Trekker in Europe - added to the model's coolness rating. However, a fascinating bit of VW military history pre-dates that. On June 6, 1944, the US War Department published a technical manual TM E9-803 dedicated to what it called the 'German Volkswagen'. I am sure that the D-Day date is a coincidence but the US Army realised that, in the European Theatre of Operations, its soldiers would capture and find Kübelwagens so prepared a workshop manual to allow American troops to keep them running. It stated: "These instructions are published for the information and guidance of the personnel to whom this equipment is assigned. They contain information on the operation and maintenance of the German Volkswagen as well as descriptions of the major units and their functions in relation to the other components of the vehicle."

While the TM 9 -803 covered the Willys MB and Ford GPW 1/4 Ton 4x4 Truck, the E in this manual's E9 portion of its similar designation signified 'enemy' and was one of a series of such manuals produced for the US Army. TM E9-803 was compiled by the team at the Aberdeen Proving Ground in Maryland from a Kübelwagen that had been captured in North Africa and shipped across the Atlantic. Copies of the manual were distributed in Europe and were probably very useful as numerous photographs exist of captured Kübelwagens with hand-painted allied stars on their slab-sided bodywork.

The TM describes the Type 82 Volkswagen as "a four-wheeled, rubber-tyred, rear axle drive personnel carrier and reconnaissance car, comparable in purpose and size to the American 1/4 ton truck." The manual is as comprehensive as the one for the Jeep and explains all the features of the German design that may not have been familiar to American mechanics such as the transmission arrangement and torsion bar front suspension. Perhaps, if the VW Beetle hadn't become a motoring phenomenon, that might have been the end of it with just a few copies on shelves somewhere. The popularity of the Beetle in the early 1970s led to the TM being republished by a Californian outfit with a brief foreword that gives the vehicle's historical context and a redesigned cover. I don't own a Kübelwagen but really like this '70s collectable that reflects the VW's importance in American car enthusiast circles and subtly reinforces social history and the stories of what the GIs brought home to the US. Printed versions of the manual seem scarce but it can be found for free downloads from the web.

101st Airborne soldiers with a captured Kübelwagen near Carentan, Normandy

Rückmarsch!

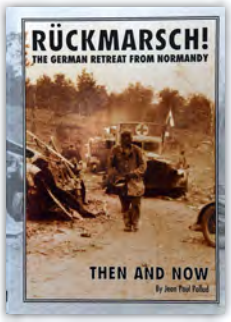
Then and Now: The German Retreat from Normandy

Author **Jean Paul Pallud**
Publisher **After The Battle**
Year **2007**
ISBN **1 870067 57 6**
Language **English**
Binding **Hardback**
Pages **376**
Size **215x304mm** (8.5x12in)
Price **£39.95**
www.afterthebattle.com

Plenty is talked about the landings in Normandy but less is said about the German retreat from there and the destruction of much of Hitler's army in the west. It was a costly retreat from the fighting to contain the allies within the wider Normandy beachhead area following the axis attempt to recover the initiative with Operation Lüttich - the counter-attack from Mortain on August 7. This book, originally published in 2006, balances up the history with one of After The Battle's detailed then-and-now approaches to World War Two history.

Its author Jean Paul Pallud follows in the footsteps of the Germans as they retreat from Falaise, back across the Seine and across France. The numerous photos of destroyed German transport and armour and the columns of dishevelled men portray an army clearly in retreat and belie the modern pictures of rural France where traces of the fighting are fewer. The Germans lost around 300,000 men during the retreat: killed, wounded, missing or captured. But by the beginning of September, the German forces were preparing to make a stand again; this time along a line that ran 650km between Switzerland and the North Sea.

The book perhaps offers visitors to France suggestions for less well-known places to visit but, as with all After The Battle books, the period photos are a source of fascination; a few of many that caught my eye include one of a Scammell Pioneer being used to move a disabled Tiger tank, a Schwimmwagen driving out of the River Seine during the retreat, British Cromwell tanks in pursuit of the retreat and lots of motorcycles of at least three nationalities.



Verdict: *This is undoubtedly a comprehensive and useful book for those interested in the liberation of Europe.* ***JC***

Exercise Tiger

The D-Day Practice Landing Tragedies Uncovered

Author **Richard T Bass**
Year **2008**
ISBN **978-1-90833-612-5**
Binding **Softback**
Pages **263**
Size **150 x 230mm** (5.75x9in)
Price **£14.95**
www.tommiesguides.co.uk

The disaster that befell American GIs at Slapton Sands in Devon during their training for the D-Day landings is well known. Debate, argument and allegations of an official military cover-up have persisted ever since and an air of mystery surrounds the events. This book revisits that time. It has been painstakingly researched using new evidence and includes heart-rending testimonies from the survivors. The author explores some of the controversies over the death toll and the number of allied ships sunk.

Officially, 749 were killed and missing in action, a figure based on an assessment made only hours after a seaborne convoy was attacked in the English Channel by German E-Boats, but it is a number that US military sources maintain is correct. It looks at evidence that the death toll may have been much higher and that documents might have been altered or rewritten to maintain that official figure. This includes the records of burials for casualties that don't equate with testimony from witnesses who carried bodies from an English seaport to the cemetery; examination of service numbers and names reveals that some service numbers weren't issued and names don't match numbers. The tables of appendices offered as supporting evidence to the author's conclusions take up a third of the book.

Verdict: *A thorough analysis reinforced with facts and data, somewhat overwhelming at times. Raises as many questions as it answers.* ***VT***

Panzer-Regiment 1

1935-1945

Author **Wolfgang Schneider**
Year **2017**
ISBN **978-3-93510-705-1**
Binding **Hardback**
Pages **112**
Size **300 x 215mm** (8.5x 11.75in)
Price **£24**
www.casematepubishers.co.uk

The oldest Panzerregiment of the Wehrmacht has remained thus far little documented in military literature. The new edition in both German and English finally charts the history of this unit from its first years before the war, (including the need to train initially in open-topped tractors as there was a shortage of tanks), then to the campaign periods in the Sudeten, in Poland, Belgium, France, Russia, Greece, Italy and in Hungary. Included are detailed inventory tables, campaign maps and unit structure organograms.

The photo story shows the different vehicle markings throughout the war - almost all of the 300 photos taken from previously unpublished veteran albums.

This book will be of interest to the panzer historian but also to the modeller who can see in the plentiful photographs, lots of detail on the early tanks and get diorama ideas as the tanks are shown on rail flats, bridging and in service in a variety of settings throughout Europe.

It is a little odd to have the original German text alongside the sometimes clumsy English translations but at least this way, with minimised production costs, the information is brought to the widest possible audience.

Verdict: *An interesting study containing personal and contemporary photographs providing a unique introduction to the regiment.* ***VT***

Exercise Tiger

Casualty Cover Up Revealed

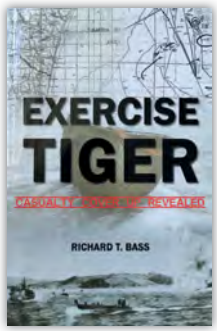
Author **Richard T Bass**
Year **2017**
ISBN **978-1-99989-003-2**
Binding **Softback**
Pages **102**
Size **150 x 230mm** (5.75x9in)
Price **£10.99**
www.tommiesguides.co.uk

Looking specifically at the casualties of the ill fated D-Day training exercises 'Tiger' in Devon in April 1944, this book examines the discrepancies between the official recorded history and the first hand narratives of survivors.

It is, as the author himself states, a "part-dramatisation of actual events and recollections of those who were part of the event and following actions". Consequently, while reading this book, one must remember that the story told may not have happened in the way that it is revealed. However the author has utilised pertinent primary sources to help him to create the narrative and his speculative tale may not be far from the truth.

The picture painted is one of wartime chaos; the scale of the exercises, the number of personnel involved, the complexity of communications and the speed with which the situation changed, all contributing to a sense that this piece of history may never be truly known.

How the unfolding events were recorded at the time is in part responsible for the uncertainly and has no doubt contributed to the speculation as to a deliberate cover-up. This was all exacerbated by the panic of the aftermath, the recording of the dead and the treatment of the bodies. This book explores the concept that the recorded casualties from the Tiger exercise were somehow, for political reasons, intermingled with the records of the men who died in action on D-Day and that the true number of casualties in Devon may have been up to 1,500.



Verdict: *Intriguing presentation of arguments that feeds the imagination and does little to undermine the conspiracy theory. Great for anyone who likes uncertainties and shades of grey.* ***VT***

words Craig Allen pictures archive

Timeless Design

The Denison smock, first worn during World War Two, is still a firm favourite among airborne forces

The Denison Smock has a long and distinguished history as the signature dress of British Airborne Forces, although from its early beginnings in World War Two it was widely worn by the Commandos, SAS and other Special Forces. The first parachute smocks were essentially faithful copies of the Fallshirmjager 'bone sack'. These early smocks in grey-green denim featured a 'walk in' design as per the German originals. Soon however a purely British type was developed by Major Denison utilising a 'tail' that fastened between the wearers' legs for parachuting.

This 1st pattern smock was produced with a half zip and knitted cuffs in a windproof cotton material. Cut generously to go over battledress and equipment it featured a camouflaged scheme which utilised broad green and brown stripes in a brush stroke pattern over a yellowish sand base.

While the original version was worn for the campaigns in Tunisia and Italy, in 1944 a 2nd pattern smock was produced. This featured economy measures such as replacement of the knitted cuffs with buttoned tabs and removal of the cloth cover over the chest zip. The tail piece was also now retained by two brass press studs when not in use. The camouflage pattern was modified to one featuring a light olive base with dark green and reddish brown overlay, better suited to the European theatre.

For parachuting, a sleeveless over-smock of green denim was worn covering both the Denison Smock and webbing equipment. This featured a full-length zip which was often removed by unit tailors to modify the Denison smocks themselves. It was also common practice to add knitted cuffs to the 2nd pattern as can be seen from many wartime photographs. An officers' version was also produced featuring a more luxurious angora wool lining to the collar and fitted with the full-length zip. This was popular among senior officers and General Montgomery was pictured wearing such a smock in the wake of the D-Day landings.

A classic image of paratroopers in Denison smocks clearing houses in Oosterbeek during the Battle for Arnhem

'During the war the Denison smock had been worn by numerous foreign and commonwealth units attached to British forces'

Paratroopers in Normandy shortly after D-Day wearing a mixture of 1st and 2nd pattern Denison smocks

During the war the Denison smock had been worn by numerous foreign and commonwealth units attached to British forces. In this way it was soon in widespread use far beyond these shores. There are pictures of Denison smocks being worn in Korea and by French paras at Dien Bien Pheu. The design was widely copied and Belgian and French para smocks from the 50s and 60s closely follow the Denison design, as does the Canadian version.

The South African Parabats were also to adopt a jump smock strongly influenced by Denison's design, not so surprising as they were originally trained by British instructors from the

MAIN IMAGE: ***A first Pattern Denison Smock, this is a reproduction, originals are now changing hands for serious money***
BOTTOM: ***IWM three sergeants from AFPU, (Army Film & Photographic Unit) pictured shortly after their return from Arnhem and still wearing their 1st pattern Denison smocks***

Parachute Regiment.

Post-war, the original Denison became a favourite with fishermen, stalkers and other outdoor folk while still on issue to the military.

In the late 1950s a new version appeared featuring a less baggy cut with a full-length zip, knitted cuffs and a new camouflage pattern. This used a yellowish sandy base overlaid with more clearly defined strokes of dark green and red brown well suited to the retreat-from-Empire postings prevalent at the time.

This version survived into the late 1970s and was a common sight on the streets of Northern Ireland in the early days of the troubles. The gradual introduction of disruptive pattern material clothing (DPM) through the 1970s eventually spelled the end for the original Denison smock much to the dismay of many users.

A friend once told me a tale of accompanying a consignment of old smocks to the central depot at Thatcham only to be informed they were to be burned. Mortified at this he had braved the colour sergeant's wrath and kept hold of his own precious smock.

All was not lost however as the new 'smock parachutists' in DPM which replaced it was firmly based on the original Denison design and was to soldier on for the next 35 years.

With the recent adoption of multi-terrain pattern (MTP) clothing for the military there was a suspicion that this classic garment would finally be dropped in favour of newer designs of windproof smock. In the event the 'smock parachutist' is still being produced alongside the newer types of clothing. Now in the MTP camouflage scheme the current pattern closely follows the DPM versions even to the use of the same type of cloth. It is still widely worn as I recently discovered on a photographic trip to Sennybridge in Wales. There I saw the smock in use by soldiers of the Parachute Regiment, Para Engineers and Royal Marines. In addition individual soldiers often acquire para smocks privately appreciating its timeless design and practical features. So the Denison story goes on in the form of these modern versions and there is no sign of the old warhorse retiring just yet.

2018
April

19 Fenland Militaria Fairs
Ivy Leaf Club, Whittlesey, PE7 1AP. New to the East Anglia region. Easy to find with free parking. A good cross-section of dealers and traders, Terry Edge - 01733 576422

21-22 17th Annual MV Show and Swapmeet
Sussex County Fairgrounds, Augusta, New Jersey, USA
Vehicles, re-enactors, vendors
www.MTASwapMeet.com

22 Northern Military Expo
An indoor show at Newark County Showground, NG24 2NY.
Military vehicles, books, manuals, vehicle parts, uniforms, 40s fashion, radios, medals, models, guns, accessories and much more.
Admission £5 per person.
Display or sell your vehicle
For more information call 07889 516401 or
email jeep.promontions@btconnect.com
www.northernmilitaryexpo.co.uk

28 Tiger Day
The Tank Museum
Bovington, Dorset, BH20 6JG Wareham, Dorset
www.tankmuseum.org

30-2 May Cotswold Airport Easter Extravaganza
Celebrating the centenaries of both the end of World War One and the founding of the RAF. Includes a vintage car and bike show.
Kemble, Cirencester GL7 6BA01285 771177
jo@cotswoldairport.com

May

5-7 Llandudno Transport Festival
Bodafon Fields, Llandudno, Conwy County, North Wales, LL30 3BW
www.llantransfest.co.uk

6-7 Wartime Wheels
Caldicot Castle and Country Park
Church Road, Caldicot, Monmouthshire, NP26 4HU
www.visitmonmouthshire.com/caldicot-castle

10-12 45th East Coast MV Rally
Aberdeen, Maryland, USA
Vehicles, militaria, autojumble
wacbgmvt@yahoo.com
www.washingtonbluegray.com

12 Carry on Culty
Live music and dancing, guided tours, living history displays, vintage vehicles, militaria and vintage stalls, games, competitions and the Scottish Military Vehicles Group
Cultybraggan Camp, Cultybraggan Camp, Comrie, PH6 2AB
www.eventbrite.co.uk/e/carry-on-culty-tickets-42707047930
Enquiries to Phil Mestecky, tel: 01764 670769
email: phil.mestecky@comriedevtrust.org.uk

12-13 Temple at War
Military & Vintage Show Essex, supporting charities Help for Heroes, Walking with the Wounded and Support our Paras
Cressing Temple, Witham Road, Braintree, CM77 8PD 07907 594307
www.templeatwar.co.uk

12-13 The Gaydon Land Rover Show
The British Motor Museum, Gaydon, Warwickshire CV35 0BJ 10am-4pm
www.britishmotormuseum.co.uk

18-20 The Wartime Village
The Village Church Farm, Church Road South, Skegness, Lincolnshire, PE25 2HF
Tel: 01754 766658
info@churchfarmvillage.org.uk

18-20 Findlay Show
Hancock County Fairgrounds, Findlay, Ohio, USA
Vehicles, displays, militaria. Marking 50th Anniversary of US involvement in Vietnam
www.findlaymilitaryshow.org

19-20 Militracks
A great event for everybody interested in military technology of World War Two, particularly German.
The War Museum, Museumpark 1, 5825 AM Overloon, Netherlands
info@oorlogsmuseum.nl
www.militracks.nl

26-28 Overlord Show
The Lawns, Denmead, PO7 6HS
Hundreds of military vehicles and re-enactors from the Great War through to modern day. Organised by Solent Overlord Executive Military Collectors Club.

26-28 Chipping Steam Fair
Green lane Showground, Chiping, Preston, Lancashire, PR3 2QT
01995 6186
www.chippingsteamfair.com

June

1 Great Central Railway 1940s Weekend
Great Central Road, Loughborough, LE11 1RW

2-3 Devon D-Day
Marking the 75th anniversary of the opening of the US Assault Training Centre, Cobbaton. Combat Collection and Devon Area MVT will host this weekend's activities.
Cobbaton Combat Centre, Chittlehampton, Umberleigh EX37 9RZ
info@cobbatoncombat.co.uk
Nigel Worth 07881868289, nworth2006@aol.com
www.assaulttrainingcenterfriends.co.uk/75th-anniversary-2018

3 RAF Kenley Aerojumble and Autojumble.
RAFA Club, Victor Beamish Way, RAF Kenley, Caterham on the Hill, Surrey. Doors open 9am
email: Acebellaviation@aol.com

8 Wicksteed at War
The show is free to enter, features an action packed arena, hundreds of re-enactors and vehicles on the show grounds as well as aircraft flyovers.
Barton Road, Kettering, Northamptonshire, NN15 6NJ
www.wicksteedatwar.co.uk

9-10 Dig for Victory Show
Portraying a uniquely British scene depicting the home front during the war encompassing all aspects of that time from vehicles, re-enactors, music, farming and fashion
North Somerset Showground, Bristol
James Shopland 07968274480
www.digforvictoryshow.com

14-16 43rd Annual MVPA International Convention
Kentucky Exposition Centre, Louisville, Kentucky, USA
www.mvpa.org

16-17 Wartime in the Vale
A family show with a mix of military and vintage civilian displays at a World War Two camp
Ashdown Farm, Badsey, Nr Evesham, Worcestershire, WR11 7EN
Amy Jelfs 07899 025091,
amy@ashdowncamp.com
www.ashdowncamp.com

16-17 Mapledurham at War
Held in the grounds of Mapledurham House and Watermill. Authentic land and water battles, see Old Phyllis, the Sherman tank featured in Fury with Brad Pitt and fly past of a Lancaster
Mapledurham Estate, Mapledurham, Reading RG4 7TR 0118 972 3350
www.mapledurham.co.uk

23-24 IMVG 12th Annual Military Vehicle and Re-enactment Show
Military vehicle displays, battle re-enactments, living history displays, militaria stalls and moving vehicles

Naas Racecourse, Tipper Road,
Naas Co Kildare.
Adult, €10 Children, €5 Euro and Family €20
www.facebook.com/IrishMilitaryVehiclesGroup

29-1 Tankfest
The Tank Museum, Bovington, Dorset, BH20 6JG
www.thetankmuseum.org

30-1 Vale Vintage Machinery Club show
Vintage vehicles, steam rally and craft fair.
Ty Ucha Farm, Pen Y Cefn, Caerwys, CH7 5BQ
10am-5pm both days. Admission £4
Contact Maredudd Davies - 07921719084
valevintagemachineryclub@gmail.com

July

1 Military Pageant and World War One Centenary
The Shuttleworth Collection, Old Warden Aerodrome, Nr Biggleswade, SG18 9EP
www.shuttleworth.org

6-8 Yorkshire Wartime Experience
Now in its seventh year, this show is the north's largest military vehicle and re-enactment show
Hunsworth Lane, East Brierley, Bradford BD4 6RN, 10am-5pm 07748-604461
www.ywe-event.info

7-8 Woodhall Spa 1940s Festival
Woohall Spa, Lincolnshire
General enquiries
email: grahamkeegan@btinternet.com For vehicle enquiries email: **classiccars1940@mail.com**

7-8 Capel Military Show
Held in support of the Help For Heroes charity at Aldhurst Farm, Temple Lane, Capel, Surrey, RH5 5HJ
www.capel-military-vehicle-show.com

7-8 World War Two Military vehicle weekend
Devil's Porridge Museum, Stanfield, Annan Road, Eastriggs, DG 12 6TF 01461 700021 or
email manager@devilsporridge.org.uk

8 Dallas Digout
Car boot for unwanted parts and militaria
Cold Ash Farm, Long Lane, Cold Ash, Thatcham, RG18 9LT
admin@dallasautoparts.com

14-15 Camp Jeep
The fifth annual Camp Jeep event gathers members of the Jeep Owners Group (JOG) and fans from across Europe. July 5 is an important date for the Jeep brand; the anniversary of the signing in 1941 of the agreement to supply the US Army with the unstoppable Willys-Overland MA, this event will mark the heritage. 01753 511431
www.ownersgroup.jeep.com
www.facebook.com/jeepownersgroup

24-28 War & Peace Revival Show
The world's largest military show held over five days at Hop Farm Show Ground, Maidstone Road, Paddock Wood ,TN12 6PY
Set in more than150 acres, it's a full five-day historical spectacular.
Jamie Wells 01258 857700
or 01258 858448
www.warandpeacerevival.com

31 - August 7 Water Week
A week-long camping and swimming event for amphibious vehicles. Gr√§nna, Sweden
www.facebook.com/amphib2016

August

4-5 Nostalgia Festival
Large classic vehicle display including military vehicles from all eras.
Croft Circuit, West Lane, Dalton On Tees, North Yorkshire, DL2 2PL 01325 721815
www.croftcircuit.co.uk

11-12 Armourfest
Norfolk Tank Museum, Forncett St Peter, NR16 1HZ
www.armourfest.co.uk
info@norfolktankmuseum.co.uk

11-12 Wings and Wheels
Urselseweg 183A, 9910 Ursel, Oost-Vlaanderen, Belgium
www.wingsandwheels.be

18-19 Lytham 1940s Wartime Weekend
Wartime entertainment, battle re-enactments, historic vehicles, Spitfires, music, song and dance. Military charities and vintage stalls
Lytham Green, Lytham St Annes, FY8 5ZLB
Email: **1940s@fylde.gov.uk**
Web: **www.discoverfylde.co.uk**

18-19 Combined Ops Military Spectacular
Headcorn Aerodrome near Maidstone, Kent
www.headcornspecialevents.co.uk

25-27 Military Odyssey
Living History Event, Kent Show Ground, Detling, Maidstone. Under new ownership, this enormous event includes multi-period living history and re-enactments, collectors' market and indoor fair. Public camping available but must be booked in advance.
James Aslett 07595 511981
www.military-odyssey.com

words **John Carroll** pictures **Ian Clegg**

The despatch riders, organiser Denny Thompson to the right

Opening Shots

This winter has been characterised by a series of late but vicious snowfalls so it was inevitable that this year's Northumbria and Tyne Tees MVT Coquet Safari would encounter snow somewhere in the hills of Northumberland. The early spring off-road event for light 4x4 military vehicles is an annual event, often the season opener, which is always booked to capacity and, regardless of what the weather was likely to bring, this year was no exception. In the event the weekend was sunny and clear but snow still lay on the hills necessitating plenty of warm clothes especially for those in open Jeeps.

The convoy stops to view the scenery of the Simonside hills. The event took place over a cold but sunny March weekend

The nature of the event - much of it on open moorland with the land owners' permission - is also at the mercy of the weather because no one wants to do any damage. This means that the start of the route on Saturday morning from the public car park in Rothbury can be changed at the last minute. The participants, regulars and newcomers, understand this and accepted instructions from organisers Denny Thompson and Duncan Glen without complaint because wherever we drive and whatever the weather does, the event will be a great drive out. These are the ingredients that make this event so good: like-minded company, a great selection of military vehicles, great scenery and a few chances to engage low box.

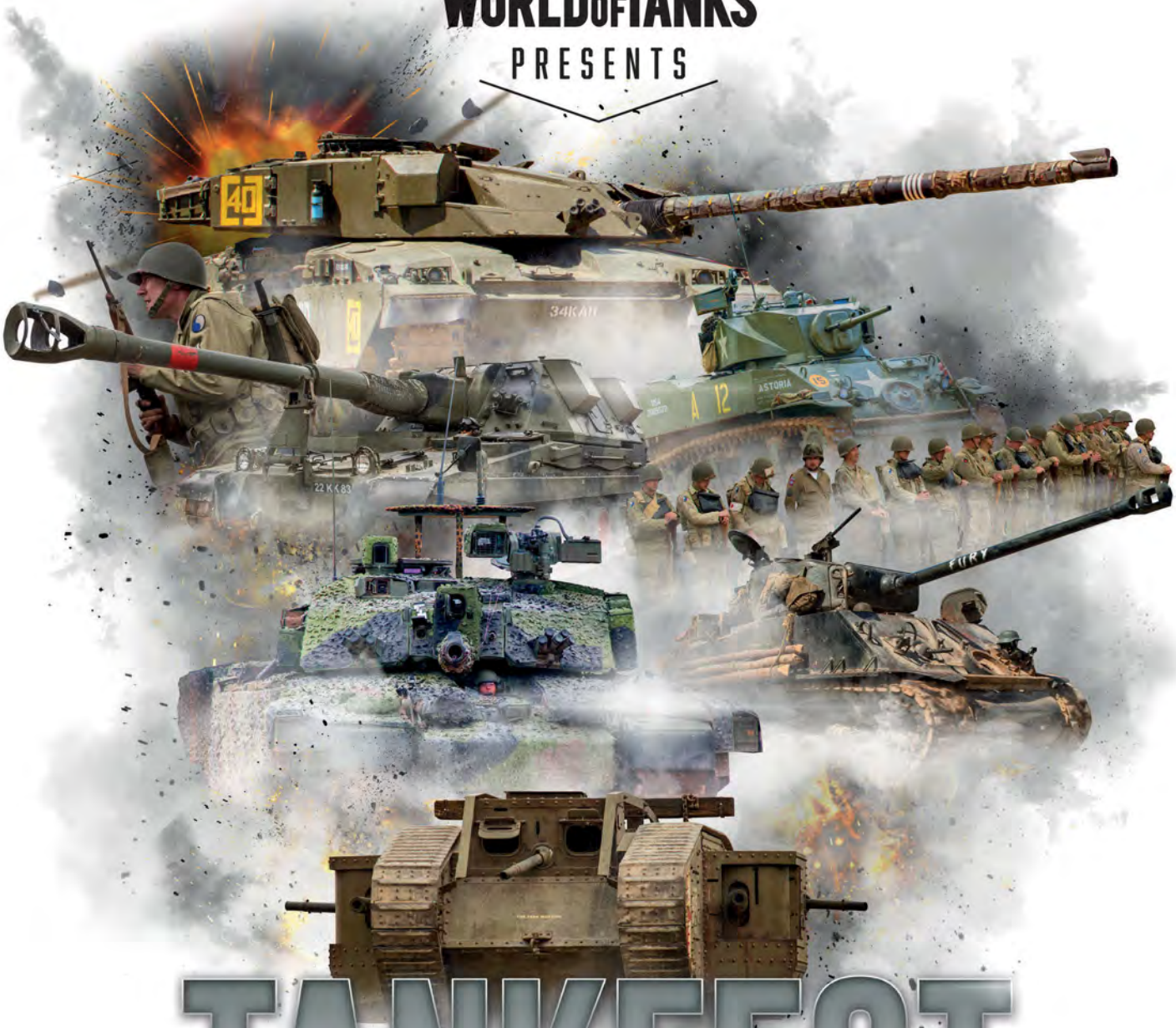
A couple of dozen vehicles and crews made the rendezvous this year: World War Two Jeeps made up the majority of vehicles but other eras and nationalities were represented by an Austin Champ, an M38A1 Jeep, a GAZ, a Kübelwagen, a smattering of Land Rovers and a trio of CanAm motorcycles for the escorts. This year's route took us out through the Simonside hills and along forestry roads before emerging onto the Otterburn Ranges where, at a coffee stop, we were entertained by a live firing exercise and watched the impacts from a safe distance. After a long day in the cold air, it was a tired but happy bunch that chatted in the warmth of the Queen's Head in Rothbury until closing time.

Snow still lay on the hills and wasn't really melting

Coffee and live firing on the Otterburn Ranges

WORLD OF TANKS

PRESENTS



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Paddock Wood, Kent, TN12 6PY

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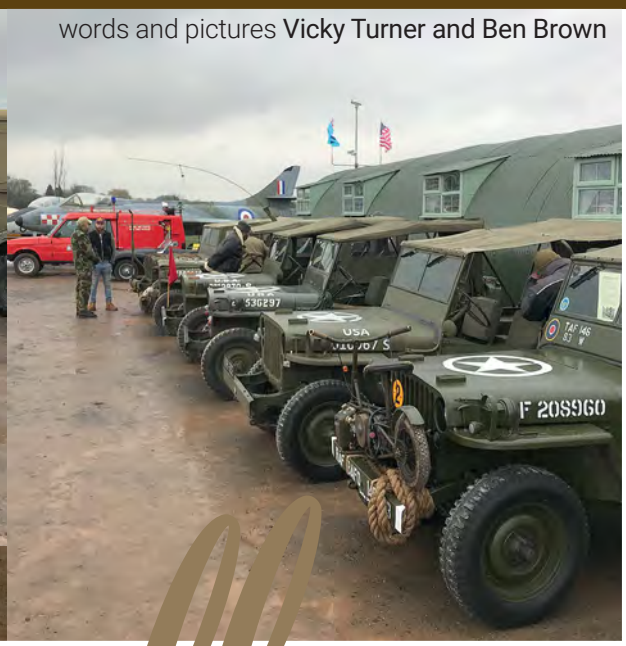
www.**warandpeacerevival**.com

words and pictures **Vicky Turner and Ben Brown**



ABOVE: ***1937 Plymouth four-door sedan car with a Dodge WC alongside***
RIGHT: ***Between 25 and 30 military vehicles put in an appearance over the day despite the weather - the red of the Range Rover TACR2 was the only brightness around***

Sywell Museum Opening

March 31 saw the Sywell Aviation Museum based at Sywell Aerodrome, Northants, opening for the 2018 season. As this year marks the 100th Anniversary of the RAF and 90 years since an aerodrome was established at Sywell, a large collection of military vehicles and re-enactors gathered at the museum for the presentation of a plaque by 378 (Mannock) Squadron Air Training Corps to commemorate the occasion.

The aerodrome opened in 1928 but during World War Two it was known as RAF Sywell. It was used as a training facility for Tiger Moths and later an important centre for the repair of Wellington bombers and extensive sheds from this time still remain on the site.

The museum originally consisted of three Nissen huts, dismantled at the now-closed RAF Bentwaters and erected on site at Sywell. The buildings themselves are artefacts having been used as bomb fusing sheds at Bentwaters by the USAAF during World War Two. The museum has since expanded to include two new Nissen huts, formerly POW camp huts from Snape Farm, Derbyshire.

The day was miserably damp but this didn't deter around 800 visitors turning up to enjoy the village fête atmosphere, celebrate the venue's history and admire the assorted military vehicles on display. There were a number of re-enactors and others in wartime costumes as well as vintage songbird May Blossom to add to the 1940s feel, even Lillian Love put in an appearance, which brought a touch of stylish glamour to the event.

Michael Fowler's 1978 ex-military Saviem TP3, a diesel about to be converted into a campervan

Vintage songbird May Blossom singing songs from the 40s to cheer up the crowds

Jeeps in front of the museum buildings, one in British markings, as it is an ex-RAF vehicle

DAF 66YA, 0.4ton utility vehicle designed and built in the 1970s for the Netherland's army

Sywell Aviation Museum

Sywell Aerodrome, Sywell, Northants, NN6 0BN
For more information please visit www.sywellaviationmuseum.org.uk/
Email ***sywellaviationmuseum@gmail.com***
or call Museum secretary Ben Brown on ***07968061708***

The museum is open Saturdays and Sundays from Easter Saturday to the end of September from 10.30am to 4.30pm and on Tuesdays and Wednesdays between noon-4pm

Free admission (donations welcomed) with free parking
The museum welcomes the donation of artefacts, model kits, die-cast models and military or aviation books. Sywell Aviation Museum (SAM) is a voluntary, non-profit-making organisation that aims to preserve the history of Sywell Aerodrome and Northamptonshire's rich aviation heritage.

Most readers will, I am sure, be familiar with the TV Series MASH which portrays the story of the fictitious 4077 Mobile Army Surgical Hospital during the Korean War. The origin of the MASH actually goes back to World War One, but at that stage they were known as just a mobile hospital or mobile surgical units and could be found as part of a larger unit known as the divisional sanitary train.

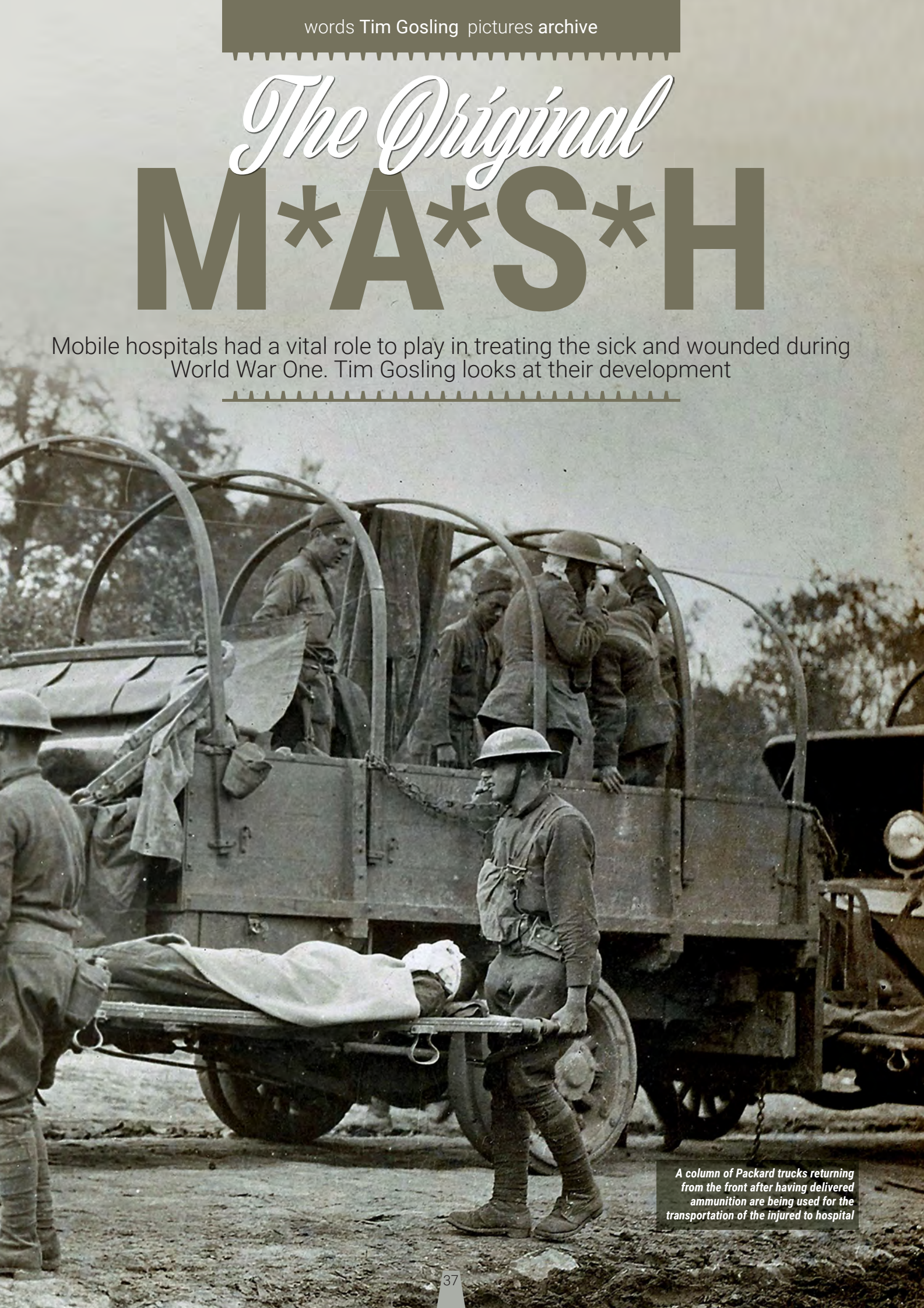
The initial goal when assisting wounded is to stabilise the patient and evacuate them to a place where they can be treated and recover. The first step of this journey was the regimental aid station where new patients were received by stretcher bearer and then stabilised. They were then evacuated to a mobile hospital where they would be treated before moving again to an evacuation hospital (usually located about 25 miles behind the front lines) where they would remain until they could be moved by ambulance or hospital train to a specialised base hospital for further treatment and eventually to a convalescent hospital. In some cases if the patient was too ill to be moved to an evacuation hospital they would be moved from the mobile hospital to a nearby field hospital where they would remain until they were stable enough to be evacuated. The whole process entailed a complicated system of movement sometimes in the worst possible conditions, where the ambulances might come under artillery fire, gas attack and the drivers might have to undertake a round trip taking 72 hours.

The supporting elements of each division were broken down into horse drawn wagon 'trains'

words **Tim Gosling** pictures **archive**

The Original M*A*S*H

Mobile hospitals had a vital role to play in treating the sick and wounded during World War One. Tim Gosling looks at their development



A column of Packard trucks returning from the front after having delivered ammunition are being used for the transportation of the injured to hospital

Of very light construction the Model T was the ideal machine for collecting the wounded from the first aid posts near the front

ABOVE: ***A new GMC ambulance having been crated for delivery to France. Interestingly the whole chassis has been loaded inside the body to best utilise space***

Looking like a medieval torture device this very well equipped mobile dental surgery is transported in the AEC Y Type truck parked behind it

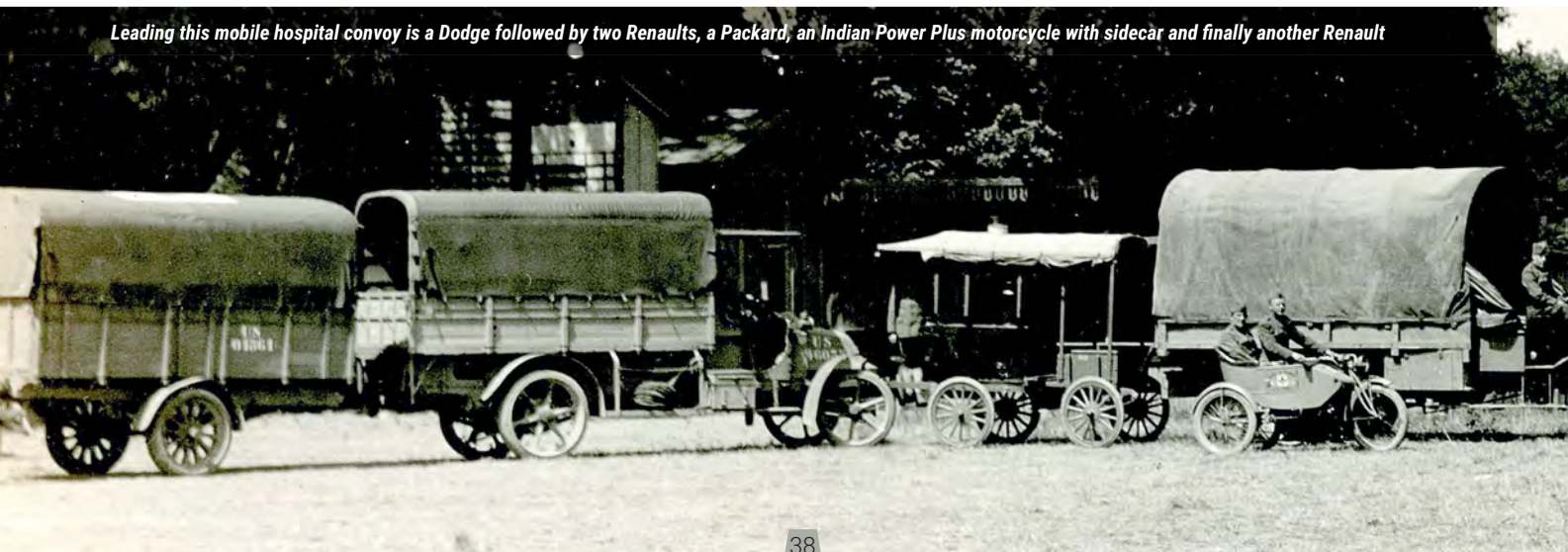
A GMC Ambulance is leading an AEC Y Type as a rather heavily camouflaged sanitary train is described as being on the move

with the term train still being used after the move had been made to motor transport. An infantry division would, for instance, have an ammunition train, supply train, engineer train and a sanitary train. A sanitary train comprised two battalions, each of which had two hospital and two ambulance companies, half of which would be motorised and the other half drawn by mules. As the supply of ambulances and trucks began to increase, some of these companies were converted from mules to motorised. There were numerous occasions however where the muddy conditions at the front left the motorised ambulances stuck and the mule drawn ambulances the only alternative to evacuate the wounded.

Military wagons and carts were built across the United States by approximately 250 different manufacturers (including such well-known names as Reo, International Harvester and Studebaker) and although these ambulances had room for an orderly to tend to the patients on their journey and were comfortably sprung, the writing was on the wall for these ponderous vehicles. Of the 3,339 ordered during the war just 507 were shipped across to Europe.

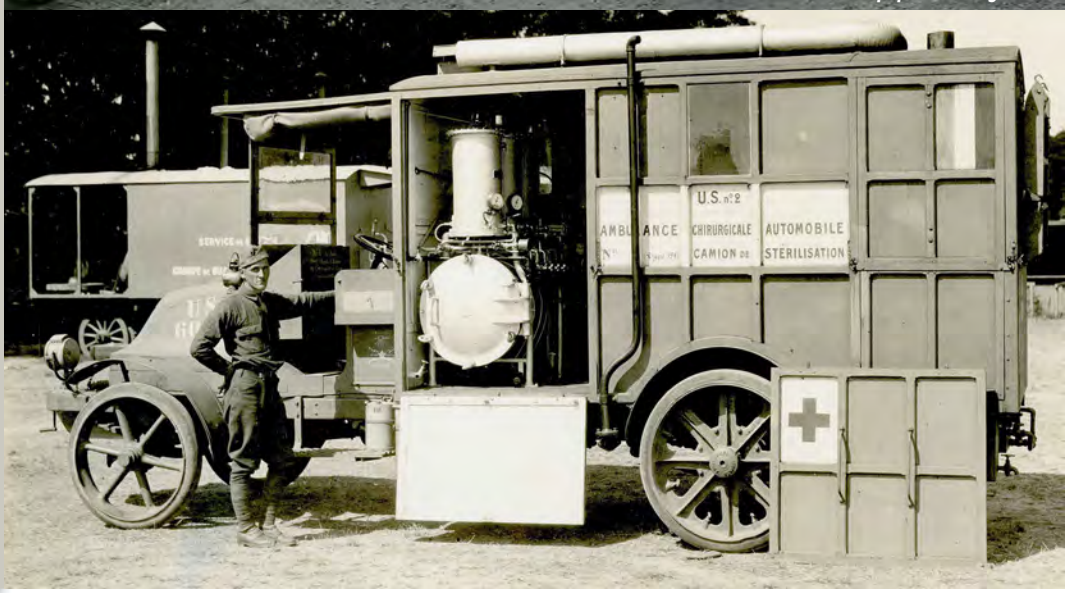
Each of the motorised ambulance companies had 12 ambulances, three trucks, two cars and three motorcycles. The trucks were used to carry the company equipment, field kitchen, spare parts for the ambulances and personal baggage, while the cars were used by officers and the motorcycles were used for carrying messages and to help direct the company ambulances. The United States' first experiment with a motorised ambulance took place in 1906 with a steam-powered White: kerosene was burned in a boiler to create steam to power the car. This was followed by internal combustion powered ambulances built by Autocar, White, Cadillac, Stewart, Buick and Reo with the Buick being the first motorised ambulance to be used in an overseas

Brand new horse-drawn ambulances connected together in a long line leave the factory being towed by a civilian Packard truck on pneumatic tyres



Leading this mobile hospital convoy is a Dodge followed by two Renaults, a Packard, an Indian Power Plus motorcycle with sidecar and finally another Renault

ABOVE: ***Sitting outside a hospital is a GMC with an early-style ambulance body sitting between a Liberty and Model T van and then two Pierce Arrows.***
BELOW: ***Carrying US and French markings this Renault Model EP is fitted with a sterilisation-type body which would sterilise medical equipment using steam***



SPECIFICATIONS

Make **Ford**
Model **Model T**
Nationality **United States**
Year **1917**
Used by **United States, Great Britain, France**
Production Run **1909-1927**
Engine **Four-cylinder**
Type **In-line**
Fuel **Petrol**
Displacement **2,900cc**
Power **20bhp**
Transmission **Planetary gear**
Type **Manual**
Gears **Two-speed and reverse**
Suspension **Leaf springs**
Brakes **Drums rear**
Wheels **Steel spoke**
Tyres **30x3.5in rear, 30x3in front**
Crew/seats **Two plus four stretchers**
Dimensions(overall)
Length **134in**
Width **134in**
Wheelbase **100in**
Weight **1,200lbs**

campaign during the American Punitive expedition into Mexico. The campaign in Mexico also demonstrated the need for more medical personnel to support an army in the field and the importance of field sanitation to reduce the outbreak of disease, knowledge that would prove to be very useful as the United States put together an expeditionary force to despatch to France.

The very first American ambulance drivers to go to war were enthusiastic volunteers who had joined the American Field Service. This volunteer organisation served with the French army from 1914 to June 23, 1917 when the volunteers transferred across to the US Army Ambulance Service. Their experience in driving a mixture of Fiat, Peugeot and Model T Ford ambulances held some sway when selecting transportation for the US Army Ambulance Service. Despite being under-powered and having a poor braking ability the Model T had been a very popular machine as it could cope with all but the very worst conditions and was light enough to be manhandled out of the mud if it did become stuck.

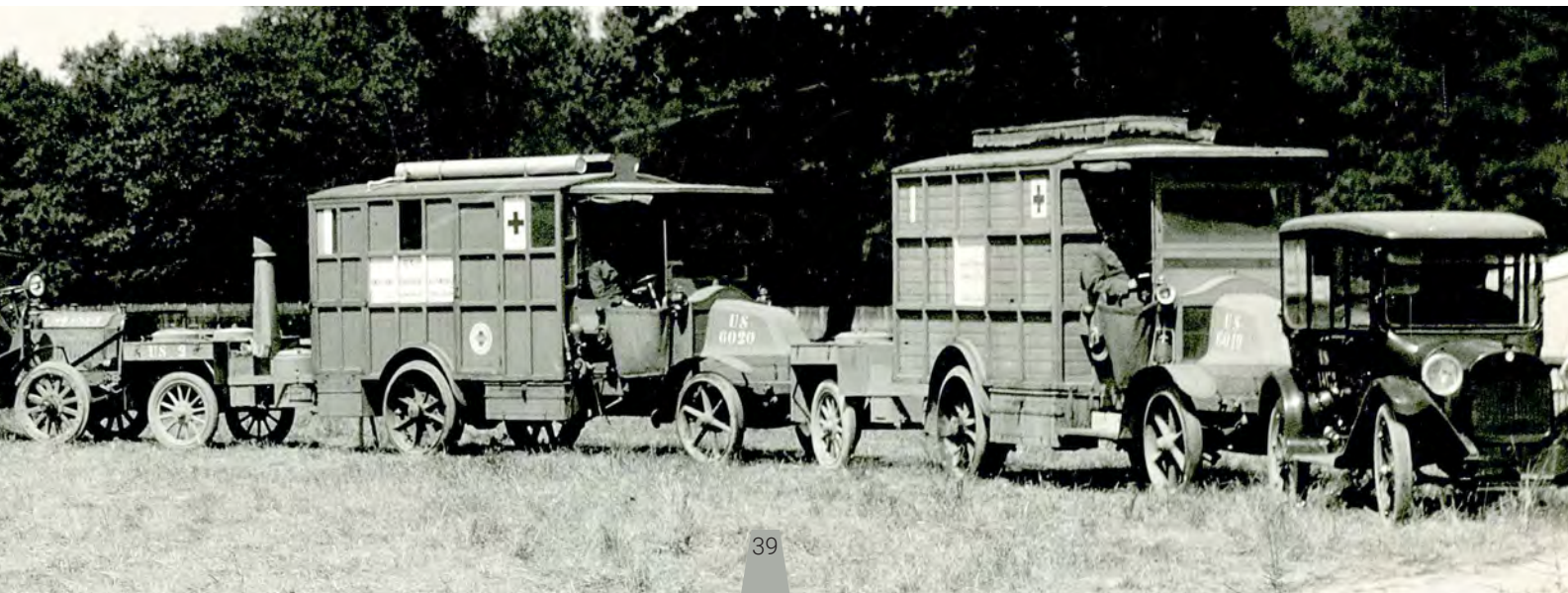
The ambulance service placed an order for large numbers of the Model T from Ford with 3,805 being shipped to France by the war's end. The Ford was ideal for collecting casualties from the regimental aid stations near the front but for subsequent evacuation a more robust ambulance was required.

Observing the success of the Buick in Mexico, the General Motors Corporation (GMC) approached the US Army Medical Department in April 1917 with the plans and specifications of their new Model 16 ambulance. This machine weighed 4,450lbs (significantly heavier than the Model T) but could comfortably carry four passengers laying down or eight sitting up. Records state that 3,070 of these GMC ambulances would be sent France, in most cases partially knocked down to be reassembled at the Medical Department assembly workshop which was staffed by three officers and 60 men at St Nazaire in France.

With so much medical equipment being shipped across to France, spare parts were always in short supply. The 117th sanitary train ruefully considered the 24 Ford ambulances which they had received from another company. "None of the machines had brakes, many of them had no reverse, a few of them had no low gear and some had no gear except high". The author went on to say that "they were started by the simple process of pushing them down hill until the power would take hold in high".

In January 1918 the 117th were operating in treacherous icy conditions and occasionally one of the "brakeless and three-lunged whoopies" would leave the road and collide with a tree. With a complete lack of any tools it took a great effort to keep the Fords on the road and by the end of that month they were all fit for scrap. The following month the 117th, to their great relief received 36 new GMC ambulances and some freshly assembled Pierce Arrow trucks for carrying the company equipment.

The motorised hospital companies were each equipped with 11 trucks, two cars and two motorcycles. To establish a hospital in the field re-



A rather handsome looking GMC ambulance which displays the markings of the 42nd 'Rainbow Division' is being loaded with wounded at a Regimental aid post

An unusual sight is this American-built Peerless TC4 truck which has been fitted with a medical department laboratory body in Britain

This Pierce Arrow truck is towing a mobile laundry trailer, vital equipment to help prevent the spread of disease within the mobile hospital

With 18,018 examples built by December 1918 the Indian Power Plus was the most numerous motorcycle used by the US Army during World War One

quired an enormous amount of equipment, and to pack all of this and the personnel to operate it into a few trucks must have proved very challenging.

On the plus side the front lines did not move very often so relocation was not a problem that would occur very often. The trucks of the sanitary train do not appear to follow any particular type or model and photographs show them with a diverse mix of Pierce Arrow, Packards and Locomobiles as well as having trucks supplied by their allies, most notably AEC from the British and Renault from the French.

The medical vehicles supplied by the French Army were particularly well thought out and included specialised trucks fitted out as surgical theatres, x-ray and sterilisation units and also trailers fitted out as laundries and field kitchens. There was a severe shortage of ambulances and the French provided 30 Schneider and De Dion buses from the streets of Paris as well as many hundreds of ambulances to assist with the evacuation of wounded during one particular campaign. Operating a diverse fleet of vehicles would have created a challenging situation for the sole mechanic assigned to each hospital or ambulance company.

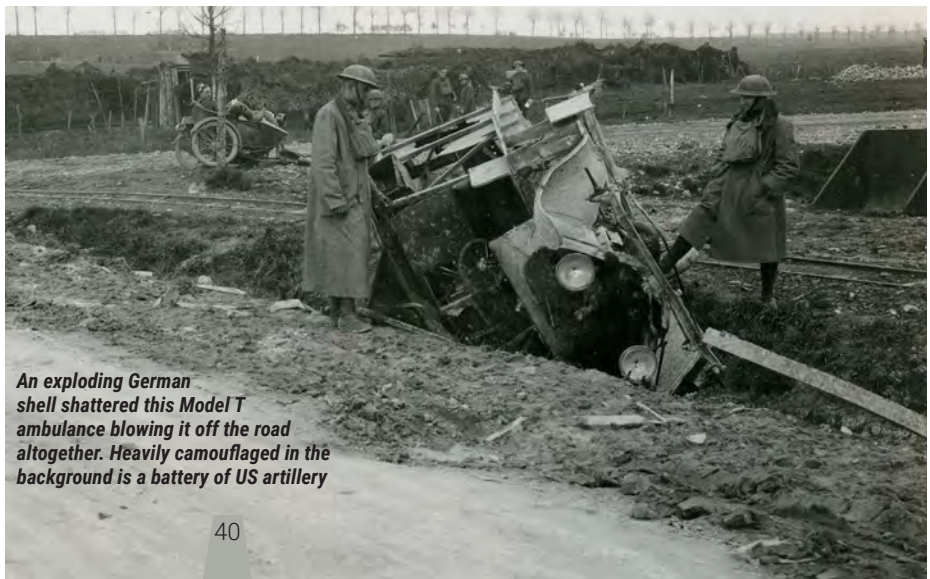
Experience with the spread of infectious diseases gathered while in Mexico established a further vital role for the sanitary train in trying to prevent diseases from spreading. The sanitary train was responsible for vaccination, education, evacuation and the quarantine of those who showed the symptoms of disease.

To help identify and combat the spread of disease

Approximately 1,100 Schneider and De Dion buses were taken off the streets of Paris for military work. This one has been converted into a mobile operating theatre

the divisional medical supply depot operated mobile laboratories. Photographs show them to be American-built Peerless trucks which had been fitted with a laboratory body provided to them by the British War Department.

By the end of the war the US Medical Department had increased from approximately 1,000 personnel at the start of 1917 to approximately 350,000. Advances in medical care and evacuation procedures gave the United States the lowest mortality rates of the wounded or sick than in any previous conflict and it was firmly believed that the medical care provided to the US Soldiers far exceeded that which was given to their allies. Possibly an exaggeration but it is true that the organisation of the medical department during World War One helped create the modern medical service which still operates today.



An exploding German shell shattered this Model T ambulance blowing it off the road altogether. Heavily camouflaged in the background is a battery of US artillery

August 1943: A Jeep in front of a US 8th Air Force - 'Mighty Eighth' - B17 Flying Fortress which is undergoing maintenance

The large battery box between the crew seats contains two very beefy batteries to accommodate the 100amp charging system

The stowage which sits behind the cab on each side is a military addition

Roger has added a US-specification fuel Jerrycan and petrol filler while behind the rear fender pioneer tools would be fixed to the pick-up body

The M715 replaced the Gladiator's familiar Jeep-style angular wheel arches with very tall military specification fenders that can accommodate up to 38in tyres

'The M715 was running, though was missing many of its military fittings'

words and pictures Louise Limb

Kaiser Chief

The Kaiser Jeep M715 first saw action in South East Asia and **Roger Jerram** has added one to his collection of Vietnam-era vehicles

The M715, in US Army nomenclature 1¼ Ton, 4x4, M-715, WO/WN also known as the 'Five Quarter', saw its first action in Vietnam and the Korean DMZ. It was the first US military vehicle to be developed directly from a civilian pick-up, with the aim of saving money on production costs. The M715's production run lasted only two years with an approximate nine years in service and while KIA are still building an M715- type vehicle under licence from the US government for the South Korean military, the Kaiser M715 was a short-lived experiment.

The M715's immediate predecessor was the Dodge M37, the three-quarter ton successor to the marque's World War Two WC Series. Under the bonnet and through the drivetrain, the M37 shared much with the civilian Dodge Power Wagon and importantly, replaced the older rear platform with a conventional pick-up load bed which simplified production.

However, by the late 1960s, the M37, though solid and dependable was seriously out-dated and the US government looked elsewhere for inspiration. A civilian pick-up, the Jeep Gladiator provided the platform for the M715, the vehicle the US Army would put in place of the M37.

Willys Overland already had a thriving four-wheel drive pick-up in production from 1947 and based on their other success, America's first all-steel station wagon. These sheet-metal models survived the Kaiser buy-out in 1954 until the introduction of the radical new, streamlined shape SJ Wagoneer station wagon in 1962 for the 1963 model year.

Willys (to become Kaiser Jeep Corporation in early 1963) also introduced the J Series Gladiator with up to two tons payload. Sharing the same frame architecture and front end as the Wagoneer, the Gladiator came in four options; cab and chassis, stake bed with wooden framework and rated up to 8,600lb, wrecker and as chassis-mounted campers with extended wheelbases. Gone was the familiar boxy Jeep truck styling but more importantly, there was engineering innovation.

Independent front suspension came as an option, instead of the usual solid front axle, on the four-wheel drive half-ton Gladiator trucks. Unfortunately, after it proved delicate and didn't sell well, the option was withdrawn in 1965. Military trucks require simplicity and proven components so the M715's axles were both solid.

As involvement in another war on the Indochinese (now South East Asian) peninsula

‘Roger bought a full set of replacement canvas to return the truck to its original specification’

ABOVE: ***Roger found that the chassis was sound with some welding required only to sills and the floor pan at the rear of the cab***
BELOW: ***Approximately 33,000 made between 1967 and 1969 and had nine years in service but few remain***

SPECIFICATIONS

Make **Kaiser Jeep Corporation**
Model **M715 also known as ‘Five Quarter’**
Nationality **United States**
Year **1967**
Used by **United States**,
Production Run **1967-1969**
Engine **Jeep Tornado 230**
Type **In-line six cylinder**
Fuel **Petrol**
Displacement **3,785cc**
Power **132.5bhp @ 4000rpm**
Torque **210lb/ft (280 N/m) @ 1750 rpm or 199lb/ft (270 N/m) @ 2400 rpm**
Transmission **Borg-Warner T98**
Type **Synchronised manual**
Gears **Four-speed**
Transfer Box **Two-speed, NP200, 1.91:1 low range**
Suspension **Leaf springs front and rear**
Brakes **Hydraulic, four-wheeled drum**
Wheels **Steel disc combat split rim**
Tyres **9.00x16 bar grip**
Crew/seats **Two**

Dimensions(overall)
Length **with winch 220.75in Without winch 209.75in**
Width 85in
Height **at bed** (with cargo cover installed) **87.7in At cab 75 in, reducible to 59in**
Wheelbase **126in**
Weight **5,180lb unladen**

became inevitable during the early 1960s, the US government became increasingly concerned about money so there was a need to reduce costs while still presenting a world-leading modern force.

The M715 would share parts with normal production-line trucks to produce a one-and-a- quarter ton tactical vehicle for military use.

By 1965, design and development began on the M715. Trialled by the Armor and Engineer Board of Fort Knox, Kentucky during late 1966 as the XM 715, the main visible modifications were to the cab, requiring a re-shaped door top and the cab roof. The windscreen was hinged to fold down over the bonnet just as on an older Jeep and the canvas top set over the cab was removable, facilitating an open cab. Other additions included a military dashboard, 24-volt lighting systems, sealed ignition and an optional winch. The forward fenders were re-sized to accept military grade road wheels. Underneath, a Dana 60 front axle and Dana 70 rear axle were shaft-driven indirectly from the heavy-duty Borg-Warner T98 transmission. With a the addition of a compound low gear the truck’s final drive gear ratio was a very low 5.87:1. While the transmission was simple and successful, the M715 was let down by its Tornado 230 overhead-cam straight-six engine.

Designed in 1960 by Willys engineer A C Sampietro for the 1962 Jeep Wagoneer, the lower end of the Tornado 230 was based on the preceding Super Hurricane straight-six but with a hardened crankshaft. Unfortunately, despite improvements for military service it suffered from oil leaks and resultant cam and cam bearing wear. It was also

Roger had a new exhaust fabricated, replaced the rear lights with correct ones for the year and runs his Jeep with 9.00x16 bar grip tyres on combat split rims, checking his wheel nuts regularly

The tailgate leaves us in no doubt this is a Jeep; Roger has replaced all the canvases and hoops on the Kaiser M715

tricky to maintain.

In 1960 the Tornado engine had been innovative but by the time Kaiser Jeep installed it in the first M715s in 1967 the engine was virtually obsolete. It was neither reliable nor sturdy enough for relentless punishment from the military and it was overwhelmed by the extra weight of a fully laden 5,180lb 4x4 military truck. Although the Tornado 230 performed reasonably in the cargo version it was under-powered in the guise of the ambulance and maintenance truck. As a result, the M715s sent over to Vietnam and Korean DMZ likely saw little action and were more often kept as base vehicles.

Between 1967 and 1969 approximately 33,000 M715s were produced at Kasier Jeep's Toledo, Ohio, plant. The series consisted of variants including the M715 cargo/troop carrier, the M724 cab/chassis, M725 ambulance and the M726 telephone maintenance vehicle which resembled a civilian US telephone service personnel's truck . The M715 lasted in service for a mere nine years. The US military replaced the Kaiser Jeep M715 with the Dodge M880 Series from 1976 onwards, the latter a pick-up truck that really did come 'off the shelf' as part of the US government's COTS (Commercial Off The Shelf) concept to produce the M715's successor, the Commercial Utility Cargo Vehicle (CUCV).

Roger Jerram's Kaiser Jeep M715

Between his work as an electrical contractor and taking the Saigon Days re-enactment group on the road, preserving his Vietnam and Cold War era collection of military vehicles keeps Cornwall-based MVT member Roger Jerram very busy. As well as the replica M35 gun truck the Red Baron featured in CMV a couple of months ago, Roger also runs among others, a Kaiser Jeep M715 . While authentic, the Jeep M715 arrived without traceable military provenance and Roger has presented it in a style in keeping with the rest of his Vietnam collection.

Roger acquired his M715 in 2001 from a retro clothing dealer who used the Jeep to promote his wares and lifestyle, which included painting a mural of Charlie Brown and the slogan 'Strike Two' on the driver's door.

He also owned an M37, decorated correspondingly with Strike One and a similar mural. Roger has retained the mural as it is keeping with the Red Baron.

The M715 was running, though was missing many of its military fittings. Roger's first task was to replace the whole braking system including master cylinder, wheel cylinders and hoses and refill with silicone fluid. He also fitted rear indicators and rewired them so they worked independently of the brake lights, also replacing the rear lights to ones appropriate to the year of manufacture and fitting a blackout stop light. This completed the immediate work to get the truck running while he obtained an age-related registration for the truck.

The truck came without its rear woodwork or bows for a rear canvas and Roger bought a full set of replacement canvas to return the truck to its original specification. He also acquired a set of REO M35 rear seats and bows, modifying them to fit the M715.

After running the M715 like this for some time, Roger decided that the truck needed some TLC so it went into the workshop. He said: "As usual more is always needed than expected, but it was not in really poor condition just requiring some welding to the sills and floor pan at the back of the cab.

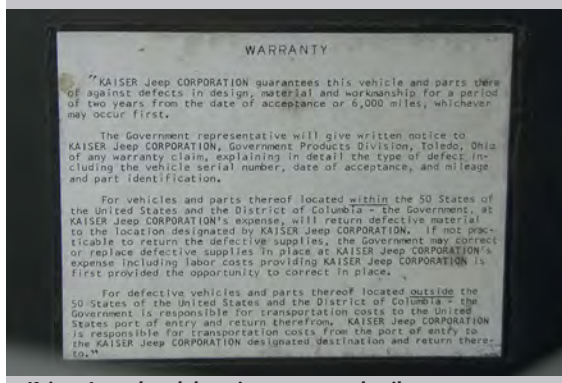
"My friend also fabricated a new battery box which sits between the two front seats while I removed the rear bed and fuel tank so I could get at the chassis for cleaning and painting. The whole thing was reassembled and painted and a new exhaust was fabricated from scratch for a good fit."

Everything ran smoothly until 2009 when Roger managed to partially seize the engine, which resulted in an engine rebuild including reground crank, big ends and new pistons along with all gaskets and hoses. As Roger said: "I found out at this time both how expensive and hard to find some parts are for the M715; for example a

While Roger has fitted correct rear lighting arrangements to his M715 the headlamp and military side and indicator lights are original. Note the large rectifier as this is a 100amp M715

The militarised cab includes a folding windscreen, a feature on other smaller military Jeeps plus removable canvas roof

The military display shows less than 14,000 miles on the clock since the late 1960s



WARRANTY

"KAISER Jeep CORPORATION guarantees this vehicle and parts there of against defects in design, material and workmanship for a period of two years from the date of acceptance or 6,000 miles, whichever may occur first.

The Government representative will give written notice to KAISER Jeep CORPORATION, Government Products Division, Toledo, Ohio of any warranty claim, explaining in detail the type of defect including the vehicle serial number, date of acceptance, and mileage and part identification.

For vehicles and parts thereof located within the 50 States of the United States and the District of Columbia - the Government, at KAISER Jeep CORPORATION's expense, will return defective material to the location designated by KAISER Jeep CORPORATION. If not practicable to return the defective supplies, the Government may correct or replace defective supplies in place at KAISER Jeep CORPORATION's expense including labor costs providing KAISER Jeep CORPORATION is first provided the opportunity to correct in place.

For defective vehicles and parts thereof located outside the 50 States of the United States and the District of Columbia - the Government is responsible for transportation costs to the United States port of entry and return therefrom. KAISER Jeep CORPORATION is responsible for transportation costs from the port of entry to the KAISER Jeep CORPORATION designated destination and return thereto."

Kaiser Jeep placed the written warranty details inside the cab by the steering wheel

Roger replaced all the canvas in the M715 and had a new battery box fabricated

In keeping with other military Jeep dash designs a glove compartment is provided; note the three-way control beside the steering wheel and sufficiency of data plates
BELOW: ***Roger Jerram is the proud owner and restorer of several Vietnam-era US vehicles***

gasket set $200, big ends $230, spark plug wire set $275." It was eventually finished and back on the road and has run reasonably well ever since.

However, Roger found one odd thing after the engine rebuild and was that the truck seemed to lack power, especially on hills. He tried everything; a fuel pump rebuild resulted in slight improvement, followed by fitting an electric pump, then a new distributor, all gaining slight improvements but the truck was still not quite right and as Roger said: "It had now been going on for so long I could not remember what it was like originally."

Having moved to Cornwall where flat roads are few and far between the problem needed to be sorted so despite trying everything suggested by anyone and everyone he could find locally the problem was still there. "I had almost given up when the modern pick-up I use for work started doing the same thing on hills. A trip to the garage and plugging it into a computer showed nothing. In desperation, while gazing at the engine on the pick-up and prodding and poking items I no longer recognised I removed the cover from the air filter to find it had sucked itself inside out; problem solved!" After this eureka moment, Roger removed the air filter in the truck and it ran as it should. The moral being, always check the simple things out first.

Of the different guises in which the M715 was produced, Roger thinks his may have originally been a maintenance truck as it is fitted with a chunky 100amp charging system. He also thinks it was probably allocated to the US Air Force where it would have spent much of its time on a base and when Roger acquired the truck the warranty mileage had not been reached. The original warranty decal still sits on the dashboard and was valid for 14,000 miles.

Roger has marked the truck as one serving in Vietnam with the 9th Infantry Division but he says this is probably a bit of poetic licence as not many were sent to Vietnam. Those he has seen pictures of appear to be navy or air force and were mostly used as base vehicles. As Roger has discovered, many were sent to Germany while Vietnam mostly relied on the aging M37.

'The M715 was let down by its Tornado 230 overhead-cam straight-six engine'

The Jeep Gladiator's chrome grille has been replaced with military protection, its secondary headlamps with military side and running lights

Further Information

www.m715zone.com *is a useful resource for current and prospective owners of Kaiser Jeep M715 models, featuring forums and galleries including in-service shots.*
A link from the M715 zone active service gallery leads to fascinating web pages written in 1998 by Craig Houghtaling, a Vietnam War veteran who drove an M715 in the Korean DMZ in the late 1960s. He describes in engaging narrative style life with his 'four-wheeled friend', 'defending freedom's frontier' and relates some fascinating anecdotes as well as sharing photos of his time in Korea. His insights into the experience of driving and repairing the M715 are very useful. The links below will take you to his M715 web pages.
https://preview.tinyurl.com/yczaxdyy
https://preview.tinyurl.com/y858tv6x

words John Teasdale pictures US National Archives

On Vietnam's Roads

John Teasdale continues his history of road travel during the Vietnam War

The US Marine Corps' 3rd Marine Division established its forward headquarters in the Marine Compound at Da Nang Air Base on May 6, 1965. As the division's infantry battalions arrived in theatre, they were dispersed southwards and westwards across the country to defend air bases and ancillary facilities, and to take the war to the Viet Cong guerrillas.

The infantry battalions were, for the most part, moved to the camps from where they would operate by the trucks of 3rd Motor Transport Battalion (hereinafter Third Motors); the same trucks would then supply such as food, water, fuel and ammunition.

Because the infantry was widely dispersed, so too were Third Motors, and because it could not cope on its own, platoons and companies from other motor transport battalions were attached.

Third Motors' headquarters was established at Da Nang; as of June 1965, Headquarters and Service Company, A Company and 2nd Platoon, B Company were also based there. The other platoons of B Company were at Phu Bai Combat Base. C Company, plus C Company First Motors and a platoon from C Company Ninth Motors were at Chu Lai Combat Base. 2nd Platoon, C Company, First Motors was at Qui Nhon Combat Base.

In due course, Third Motors would always have one of its platoons at sea with a battalion landing team, ready to support amphibious operations. This wide dispersal of Third Motors and the units attached to it made the administrative and vehicle maintenance tasks of Headquarters and

The 1st Force Service Regiment, US Marine Corps, deployed from California to Vietnam in February 1967, though detachments had been in theatre since 1965. The regiment established itself at Camp Jay K Books, part of the Red Beach Complex at Da Nang. One of the tasks allocated to it was third and fourth echelon maintenance of vehicles belonging to marine units serving in the field. This was undertaken by the Maintenance Battalion's Motor Transport Maintenance Company. The view here is of the company's workshop, photographed on December 1, 1967 *(6004129)*

Service Company more difficult. The allocation of companies to the various combat bases would change over the years, but the battalion would usually remain widely dispersed.

Truck drivers had a difficult task to perform too. They had to drive long distances over poor roads under fire, and with the ever-present danger of landmines.

Average personnel strength of Third Motors in September 1965 was 11 officers and 304 enlisted men; five US Navy enlisted men served as medics. Typical of the daily workload during the month, the battalion despatched from Da Nang: eight M35 trucks to 1st Battalion, 1st Marines (1/1 Marines); eight M35 trucks to 2/3 Marines; eight M35 trucks to 1/9 Marines; three to five M35 trucks in general support of 3rd Marine Division. Some 35% of the battalion's vehicles were deadlined due to want of spare parts.

As well as routine re-supply work, Third Motors also supported infantry in field operations. For example, when 2/3 Marines took part in search and destroy Operation Red Snapper in October 1965, the eight trucks of Third Motors' 2nd Platoon, A Company provided transport as required.

All units in Vietnam were required to aid to local civilians. Third Motors did this in part by despatching its medics on regular visits to nearby villages, and by assisting when civilian vehicles broke down on the road, were involved in collisions or were

Sergeant Larry Don Stock of the 1st Motor Transport Battalion carries out routine engine maintenance on an M35 series truck on September 19, 1967. The engine is multi-fuel/diesel, making the truck either an M35A1 or an M35A2 *(SERGEANT RP CURRY / 26393805)*

'Average personnel strength of Third Motors in September 1965 was 11 officers and 304 enlisted men'

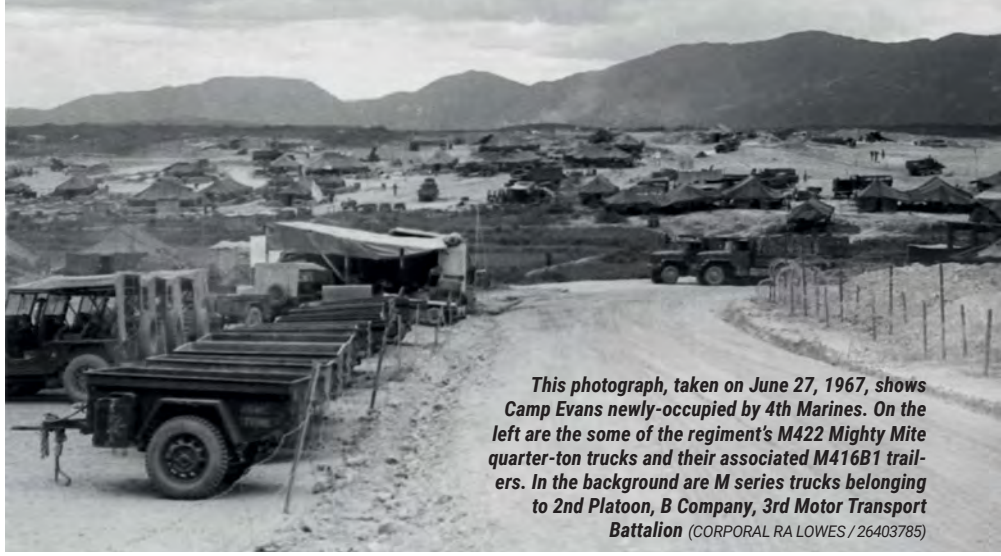
Members of 7th Motor Transport Battalion mull over a problem with the multi-fuel/diesel engine of an M54 series truck. The photograph was taken some time in 1969 *(SERGEANT CURTIS / 26393928)*

On July 24, 1966 US Marine Corps Private First Class Pablo Saez stops an M35 series truck at one of the road blocks protecting access to the base of Marine Aircraft Group-36. All vehicles entering and leaving the base are checked by sentries such as PFC Saez (PFC COWAN / 26403757)

'All units in Vietnam were required to aid local civilians'

The 1st Force Service Regiment deployed a large number of trucks to deliver such as food, fuel, water and ammunition to marines deployed in the field. Maintenance personnel had to deal with an average of 50 punctured tyres every day. Here we see Corporal Raymond T Bruton on December 23, 1968, training a Vietnamese civilian employee on how to deal with a punctured tyre (CORPORAL JOHN S KRILL / 26393781)

Private First Class George Kreiner, a member of C Company, 9th Motor Transport Battalion, checks the oil level of an M series truck (26403691)



This photograph, taken on June 27, 1967, shows Camp Evans newly-occupied by 4th Marines. On the left are the some of the regiment's M422 Mighty Mite quarter-ton trucks and their associated M416B1 trailers. In the background are M series trucks belonging to 2nd Platoon, B Company, 3rd Motor Transport Battalion (CORPORAL RA LOWES / 26403785)

stranded by flooding.

Unfortunately, the battalion's Command Chronologies – the monthly reports to the Commanding General, 3rd Marine Division – do not give the totals of trucks operated by Third Motors. What is known is that when the battalion arrived in Vietnam, its cargo trucks were mostly M35 and M36 (the long wheelbase version of the M35) two-and-a-half tonners, with a small number of M54 five tonners.

When the battalion first arrived in Vietnam, it increased its cargo-carrying capacity by towing M105 one-and-a-half ton trailers. However, it was quickly found that on poorly-made roads these rattled themselves to pieces when empty. The trailers were therefore used sparingly, and mostly to carry the battalion's kit when relocating from base to base.

The battalion also operated M422 Mighty Mites, M151 Jeeps, M37 three-quarter ton trucks, M543 five-ton wreckers and M49 two-and- a-half ton fuel tankers; these were used by the battalion to sustain its activities in the field.

In November 1965, selected personnel began operational and first echelon maintenance training on the amphibious M76 Otter (see On Campaign with the Otter, CMV Issue 198, November 2017). When the vehicles themselves were issued to Third Motors, they were operated by the Headquarters and Service Company's Otter Platoon. All of these vehicles were fuelled by petrol.

Consumption of petrol was prodigious. For example, Third Motors supported the four infantry battalions undertaking Operation Harvest Men over the period December 8 -20, 1965. The trucks moved infantry battalions from both Chu Lai and Da Nang out into the field. That task completed, the trucks then began running re-supply convoys. These convoys were escorted by Ontos anti-tank vehicles, road bridges in many cases being too insubstantial to take the weight of tanks. Traffic on the roads was busy with civilian traffic, and several convoys were sniped at by Viet Cong guerrillas. Fortunately, only one truck ran over a landmine, and the resulting injuries were slight. During the operation, Third Motors worked 54 convoys, moved 7,400 infantrymen and 1,400 tons of cargo, drove 50,000 miles and consumed 8,327 gallons of fuel, equating to around 6mpg.

Rough Rider Convoys

The Command Chronology for February 1966 gives more details of how convoys were worked. Each convoy, known as a Rough Rider, was thoroughly planned before it turned a wheel, and all personnel were fully briefed. Each convoy was protected by Marine Corps or army infantrymen riding in trucks. Additional firepower was provided, depending upon circumstances, by Marine Corps tanks and Ontos anti-tank vehicles and army tanks, M42 Duster self-propelled anti-aircraft guns (used in the ground role) and M55 trucks mounting quad .50 calibre machine guns. A strong force of infantry travelled at the head of the convoy, ready to engage the enemy should there be an ambush.

Behind the infantry were one or two trucks from an engineer battalion; the engineers would sweep for mines or repair roads and bridges as required. Then came part of the convoy proper. There were more infantry travelling in the middle of the convoy, ready to intervene if ambushers tried to split it; the convoy security commander travelled in the middle of the convoy. The rest of the convoy followed behind. At the rear were one or more wreckers, plus more infantry. Trucks throughout the convoy were fitted with .50 calibre machine guns, manned by members of Third Motors rather than by the accompanying infantry. In later years, specially-equipped gun trucks would be deployed. Average size of a convoy in early 1966 was 100 vehicles.

Should a truck break down, it was taken in tow by a wrecker. While the tow was being arranged – and the rest of the convoy was rolling on down the road – the operation was protected by infantry.

Air support was provided for each convoy. UH-1E helicopters reconnoitred the route ahead and provided flank security. The helicopters also kept the convoy control officers informed, telling them if the trucks were becoming too spread out on the road, for example. Two sets of radios were used. AN/MRC-38 was used for inter-convoy communications, and AN/PRC-10 was used to communicate with the helicopters. As it became available, the AN/PRC-25 radio was used by the assistant convoy commander riding in one of the helicopters. The use of this radio greatly improved communications, and thus improved control of the convoy.

In August 1966, 3rd Engineer Battalion completed the construction of a road linking Da Nang and An Hoa. Third Motors' A Company provided a convoy in connection with the official opening of the 'Liberty Road'. Commanded by 2nd Lieutenant James O Davis, the convoy comprised: ten cargo trucks; one wrecker; one fuel tanker; several radio-equipped Jeeps and three civilian trucks.

Also in August, Third Motors at Da Nang was first subject to mortar fire and then direct attack by Viet Cong armed with assault rifles and satchel charges. About ten guerrillas succeeded in breeching the perimeter wire. They damaged eight M35 trucks (four beyond repair), three M105 trailers and one M76 Otter. Four of them were killed; there were no casualties among the ranks of Third Motors.

Multi-Fuel

Having a fleet of petrol-powered trucks was by no means ideal in a war zone. The Marine Corps therefore put in train the issue of multi-fuel trucks – these would in practice run on diesel. Third Motors began to put personnel through multi-fuel training courses in September 1966.

The Command Chronology for October 1966 gives a useful breakdown of some of the work Third Motors' trucks were doing. Battalion headquarters was at Da Nang. Working out of the base there were: Headquarters and Service Company; B Company (apart from one platoon); C Company; A Company and First Motors. In addition to the routine work, M35 trucks were allocated in direct support thus: four to 1st Marine Regiment; one to 1st Marine Regiment Post Office; an additional five specifically to 1/1 Marines; an additional four specifically to 3/1 Marines; one to 2/6 Marines; three to 3/9 Marines; one to China Beach; one to 1st MP Battalion; two to 3rd Marine Division Post Office; one to Sub-Unit 3 Post Office; one to 11th Marine Regiment S-4 (S-4 being the regiment's logistics officer). M76 Otters were allocated in direct support thus: three to 1/1 Marines; four to 2/1 Marines; three to 3/1 Marines; three to Hill 55. Third Motors' A Company and a platoon of B Company were based at Dong Ha. The M35 trucks were working in direct support of 4th Marine Regiment.

In February 1967 there was a major re-organisation of the Motor Transport Battalions serving in Vietnam. As they affected Third Motors, it meant that all of the battalion's companies were re-located to Phu Bai. This was the first time in 12 years that all of the companies had been reunited. Third Motors was relieved of operational control of A Company, First Motors, which was restored to the control of its own battalion HQ. Third Motors did not remain reunited long; within a month or so, companies and platoons were again widely dispersed.

As part of a policy of freeing up infantrymen from static defensive roles, Third Motors was given the task of defending a portion of the Phu Bai Defensive Perimeter. Morale within the battalion was good – in B Company, for example, 18 enlisted men volunteered to extend their overseas tour by six months.

The Command Chronology for February 1967 gives a useful summary of what were described as 'task vehicles'. There were on strength: 88 M35 two and half ton 6x6 trucks; ten M36C long wheelbase two and half ton 6x6 trucks; five M54 five ton 6x6 trucks; 15 M76 Otters. As of February 21, 1967, 88% of the task vehicles were available for traffic, and 83% of these were actually committed. During the entire month, the trucks drove 88,305 miles, carrying 6,892 tons of cargo and 20,365 personnel.

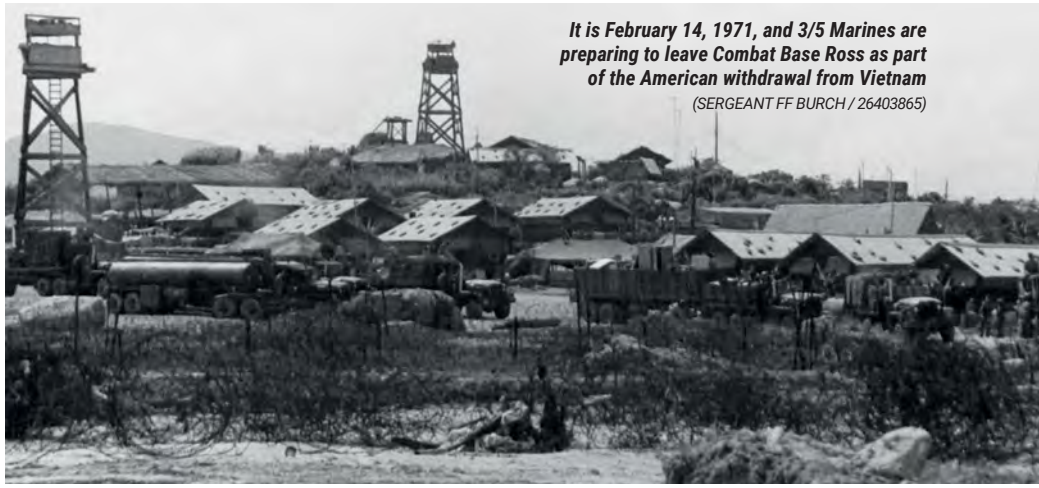
Vehicle Maintenance

The relocation to Phu Bai from Da Nang did have a downside – initially there was no permanent accommodation at Phu Bai, and tents were erected both for living in and for vehicle maintenance. Two portable buildings were obtained subsequently; one was used for storage and the other for vehicle maintenance.

First echelon maintenance of Third Motors' vehicles was performed by drivers and assistant drivers; the men checked such as engine oil levels and tyre pressures, and made minor repairs. Second echelon maintenance was performed by the maintenance sections forming part of each company and Headquarters and Service Company; the work involved routine servicing and minor repairs or replacement of small components such as carburettors and wheel bearings. A recurrent job was the re-lining of brake shoes; mud and dust seeped into the wheel drums of trucks driving on Vietnam's roads, abrading brake linings with distressing rapidity. Second echelon mechanics were allocated M series wreckers so that they could retrieve broken down or battle-damaged vehicles.

Burned out clutches or seized engines were beyond the repair capabilities of Third Motors' mechanics; they had neither the necessary tools nor the spare components. Vehicles requiring major repairs, either due to failed components or to battle damage, were classed as requiring third or fourth echelon repair. They were sent to 1st Force Service Regiment at Da Nang or even to 3rd FSR Okinawa if 1st FSR was busy.

As well as performing major repairs, 1st FSR supplied Third Motors with spare parts and new vehicles as required. Or it did if it had them. During March 1967, for example, there was a critical shortage of new 9.00x20 tyres for the M35s, and of track and heavy-duty inner tubes for the M79 Otters. As a temporary expedient, Third Motors' mechanics robbed tyres from M105 cargo trailers and used standard truck inner tubes on the Otters.



It is February 14, 1971, and 3/5 Marines are preparing to leave Combat Base Ross as part of the American withdrawal from Vietnam *(SERGEANT FF BURCH / 26403865)*

M35A2C Trucks

In April 1967, Third Motors began to be issued with the first of its allocation of 96 M35A2C trucks. (This is earlier than the date I gave in Braving Vietnam's Roads, CMV Issue 198 – my apologies for the error.) The M35A2C was fitted with a multi-fuel engine. The diesel fuel that it ran on was much less flammable than the petrol which fuelled the M35. This was a great advantage. For example, when an M35 ran over a mine with its right front tyre on April 8, 1967, it rolled off the road. Spilled petrol immediately began to burn, and the truck's load of four pallets of 106mm recoilless rifle ammunition soon exploded. The driver survived, though was badly burned. In contrast to petrol, the diesel that fuelled the M35A2C did not readily ignite.

The multi-fuel engine was also more fuel efficient than the gasoline engine. This might have eased the transport requirements of fuel to Third Motors' widely-dispersed companies, as the volume required was reduced. However, many of the battalion's vehicles still ran on gasoline, which meant that two different fuels had to be delivered.

In the normal way of things, each issue of an M35A2C would result in the return to 1st FSR of an M35. However, Third Motors was so busy that the M35s were retained, in the short term at least. In due course though, all Third Motor's M35, M36 and M54 trucks would be replaced by M35A2Cs. During April 1967, the battalion's trucks drove 150,477 miles and conveyed 10,264 tons of cargo and 36,724 personnel.

On May 2, 1967, as usual, a road about to be used by a convoy was swept for mines. It was deemed clear. A few minutes later, a brand-new M35A2C carrying the convoy's security detail ran over a mine. There were no casualties, though the truck was damaged beyond repair. This was the first of many losses of the new trucks to landmines

4/11 Marines leave Camp Muir on March 7, 1970 in M35 series trucks, M151 Jeeps and M37 three-quarter ton trucks. 11th Marine Regiment is an artillery unit, and 4th Battalion is supporting the infantrymen of 1st Marine Regiment who are in the process of re-locating from Camp Muir to a position nearer Da Nang *(CORPORAL GN ZIMMERMAN / 26403713)*

or to ambushes. On July 19, 1967, for example, an M35A2C was destroyed when hit by a rocket-propelled grenade; the driver was critically wounded and the marine manning the truck's .50 calibre machine gun was killed.

After a relatively short time in service, drivers of the new M35A2Cs began to notice failures of the rivets attaching number two crossmember to the frame siderail – there were 37 such failures in May. The failed rivets were replaced by nuts and bolts. As the vehicles began to rack up the mileage, engine head gaskets started to leak; a special team would be sent out from Force Logistics Support Group Alpha to tighten the head bolts of all the battalion's M35A2C trucks.

In order to help Third Motors with its workload, on September 27, 1967 the 1st Platoon of the US Army's 515th Transportation Company was placed under its operational control (OPCON). The platoon was operating 20 M54 five-ton trucks. Soon the entire 515th would be OPCON Third Motors, as, for a short time, would 3rd Platoon, 534th Transportation Company and 2nd Platoon, C Company, 9th Motor Transport Battalion.

In early February 1968 five M35A2C trucks were airlifted to Khe Sanh Combat Base; once there, they provided logistic support for 26th Marines as they helped defend the base from heavy attack by the People's Army of Vietnam. Six of Third Motors' Otters were already at the base, OPCON 26th Marines. In the following weeks, more trucks and Otters were airlifted in. One of the trucks was dropped from 500 feet as the helicopter lifting it lurched violently as it endeavoured to avoid anti-aircraft fire.

Khe Sanh was on Route 9, the major east – west road across the northernmost province of South Vietnam. However, due to constant ambushes and washed-out bridges, the only route in was by air. The battle to defend of Khe Sanh by its marine and army garrison would be named Operation Scotland, and would not end until the end of March 1968.

The attack on Khe Sanh Combat Base by the People's Army of Vietnam was a relatively small part of what came to be known as the Tet Offensive. As part of the response, Third Motors helped in the re-deployment of various units such as the 101st Airborne Division and 1st Air Cavalry; thousands of Army of the Republic of Vietnam soldiers were also conveyed to new locations.

After heavy fighting, the Tet Offensive was beaten back. In the aftermath the roads were relatively quiet. Although Third Motors on occasions lost a truck to a land mine, or came under desultory sniper fire, most of the reports on the Rough Rider convoys include the phrase 'no incidents occurred'. Despite the nominal victory, American confidence in the conduct of the war was lost. When Richard Nixon became the United States' 37th President in January 1969, he would set in train an American withdrawal from Vietnam.

Meanwhile, the war went on. Third Motors' workload was reducing, however. Already, in January 1968, their OPCON of 515th Transportation Company had been transferred to 3rd Marine Division. During June 1968, the battalion's trucks drove 41,033 miles, conveying 2,840 tons of cargo and 19,366 personnel. The battalion's trucks were suffering from wear and tear after the recent exertions during the Tet Offensive, and it began to receive replacements under the R&E Program (a system of stock rotation used to equalise wear across all the units in a weapons system). Sixteen new M151 Jeeps replaced the battalion's M422 Mighty Mites, and an MRC-83 (a radio-equipped M38A1 Jeep) was issued too.

On January 1, 1969, 1st and 2nd Platoons, C Company were reconstituted as 1st and 2nd Platoons, A Company, 5th Motor Transport Battalion. By this time, most of Third Motors was based at Vandegrift Combat Base, though headquarters was at Quang Tri Combat Base and part of B Company was at Cam Lo Combat Base. Convoys continued to be run and operations supported.

In July 1969, A and C Companies left the battalion, and Vietnam, as part of Regimental Landing Team 9. This left Third Motors with only Headquarters and Service Company (itself reduced in size by transfer of personnel, including the Otter Platoon) and B Company. On July 18, 1969, H&S Company joined B Company at Vandegrift Combat Base. Although Third Motors' mission remained the support of 3rd Marine Division, in practice little support was provided to other than the units based at Vandegrift and the nearby Elliott Combat Base. The men and trucks that remained, however, were kept busy. During August 1969, Third Motors' trucks drove 22,874 miles, conveying 2,209 tons of cargo and 30,081 personnel.

Third Motors started the stand-down procedure on September 23, 1969. On September 27, the battalion relocated to Quang Tri Combat Base, at the same time extracting 4th Marines from Vandegrift and Elliott. From Quang Tri, part of B Company and 13 of its trucks re-deployed by air to the United States on October 3. The remainder of B Company joined H&S Company, which formally stood down from operations on October 15. H and S Company drove to Cau Viet, and on October 21 boarded LST Hampshire County and sailed for Okinawa. Third Motors' war in Vietnam was over.

TOP: ***Marines of A Company, 3rd Engineer Battalion, sweep for mines before the first truck column of the day uses the road. The photograph was taken west of Ca Lu on August 19, 1968*** *(CORPORAL RL BRUMFIELD / 26393528)*

LEFT: ***On July 13, 1969, 1/9 Marines depart by truck for a nearby airbase; from there they will be flown to Da Nang, and then shipped out of theatre to Okinawa. The troop movement is part of President Nixon's plan to gradually withdraw US troops from Vietnam*** *(CORPORAL DL RANDOLPH / 2640381)*

RIGHT: ***Sometime in 1968, marines prepare to leave a battalion command post in order to relieve comrades in a perimeter outpost. The figure 8 on the M35's bumper is the bridge classification number*** *(26403847)*

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The Russian V-2 Rocket

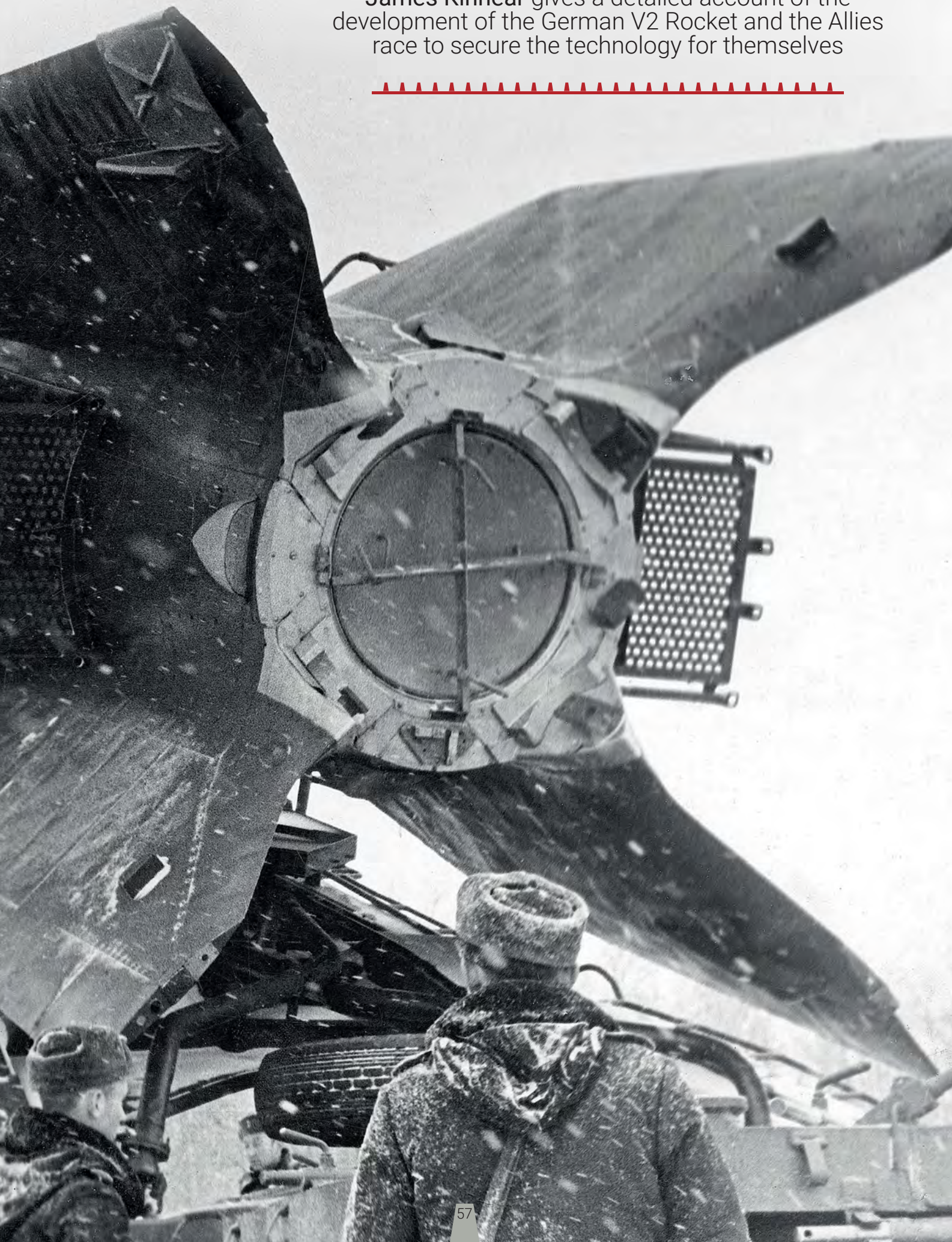
This rear view of an R-1 rocket clearly shows the distinctive tail fins of the V-2, and now Soviet R-1, rocket

One of the relatively untold stories of World War Two is the Allied race to capture German rocket technology at the end of the war - technology that would ultimately be used by both the United States and the Soviet Union to boost their respective indigenous rocket programmes.

From a Cold War perspective, the use of German rocket developments in the latter stages of World War Two, particularly the later Aggregat-4 (A-4), better known as the V-2, was the swansong of the relatively short wartime service of a potent military technology, but only the beginning of a second lease of life 'under new management'. Soviet and American post-war developments of the mobile strategic weapon launch site principle developed in wartime Germany for launching the V-2 rocket would become evident in the years of the Cold War.

And the most recent all-terrain mobile strategic rocket system in the Russian nuclear arsenal can also be traced back to the early post-war development of the German origin V-2 rocket system.

James Kinnear gives a detailed account of the development of the German V2 Rocket and the Allies race to secure the technology for themselves



Wartime German Use of the V-2 Rocket

Germany began its first V-2 rocket attacks against London and Paris on September 8, 1944, with some 3,172 V-2 rockets ultimately being launched against London and other European cities in the final months of the war. The V-2 represented a major technological development even compared to the radical V-1 'doodlebug' flying bomb that preceded it.

The V-1 was in of itself the ultimate terror weapon, with the rocket engine cutting out and the rocket falling silent as it began its descent to its target. But the V-1 required a static launch ramp, and was relatively slow flying. Given adequate warning, the pilots of Allied fighter aircraft such as the British Spitfire and Hurricane could intercept V-1 rockets in flight before they ran out of fuel and began their deadly descent. By contrast, the V-2 had a flight speed of 5700km/h - nearly five times the speed of sound - and it re-entered airspace from a maximum altitude of more than 80km. As such it was not possible to intercept the rocket with conventional fighter aircraft due to its combination of flying speed, altitude and trajectory.

From a defence perspective, though originally intended for static launch, the V-2 was ultimately deployed on trailer mounted 'transporter-erector-launcher assemblies towed by tractor vehicles, which moved in convoy to any given launch site and could prepare for launch within a couple of hours.

As such, the launch sites were themselves quite literally a moving target and thereby difficult to eradicate. The range of the new V-2 rocket (approximately 250-350km) was such that eradication of the launch sites required bomber aircraft sorties, assuming the temporary launch site could be located and had not moved in the interim.

ABOVE LEFT: ***The Soviet successor to the V-2 in firing position on the Russian steppe, without protection from the elements***
ABOVE RIGHT: ***The 8U24 transporter-erector trailer for the R-1 was a basic assembly intended for limited distance travel only. Note the conventional truck-type leaf-spring for shock absorption***

German Rocket Technology - The Spoils of War

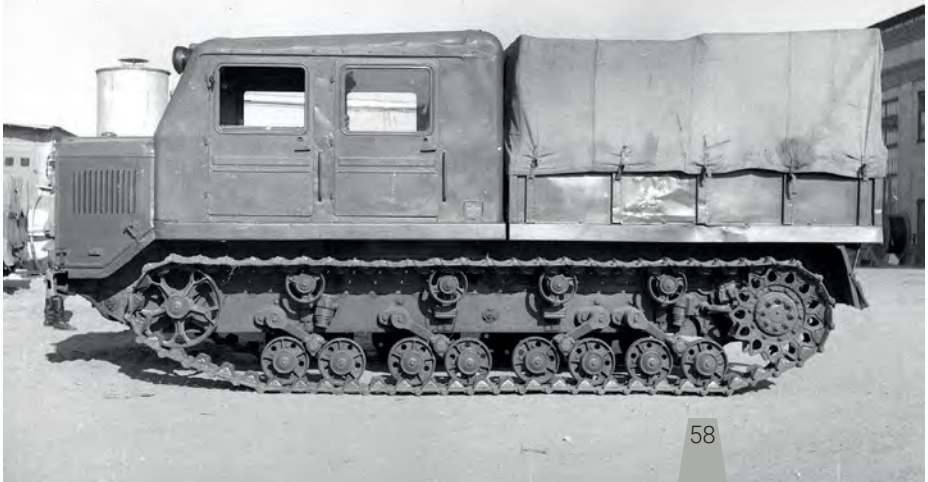
Though the V-2 had a relatively short career in Wehrmacht service, the wartime German V-2 rocket developments would be particularly relevant to the development of missile technology in the post-war era, in both the Soviet Union and the United States. The ability to quickly assemble and relocate mobile launch sites would become a predominant feature of Soviet mobile rocket development. It would also in turn lead directly to the development of ever more sophisticated military vehicles required to move these increasingly large rocket systems. The current road mobile Yars intercontinental ballistic missile mounted on its massive MZKT-79221 wheeled chassis is from a development viewpoint the latest chapter in a story that began with the ultimate fate of the German V-2 rocket, its engineers and its production facilities in the spring of 1945.

In the closing days of World War Two, as the Red Army pushed towards Berlin, a specialist team headed by the Russian rocket engineer Sergei P Korolov was dispatched to Germany. Although Berlin was the primary political target of the Red Army, the city had initially been circumvented rather than being directly stormed and as the political geography of post-war Germany became defined, Berlin would remain well inside the Soviet sector defined by the Allies.

What had not been bypassed by the Red Army on the final drive to Berlin was a coastal location approximately 200km due north of the city, called Peenemunde. There were secondary agendas to both the Soviet and the American operations in the final days of World WarTwo, and they concerned the post-war future and not the final days of the Third Reich.

The Peenemunde facility on the northern Baltic

ABOVE: ***The AT-S medium artillery tractor was developed to replace the wartime Ya-12 and post-war M-2. The vehicle could accommodate a six-man gun or rocket crew in addition to the driver***
BELOW: ***A side view of the same vehicle, with its twin-cab and rear cargo area. The tracked AT-S and AT-T tractors and the wheeled 6x6 ZiS-151 were all used to move R-1 and R-2 rockets on their transport-erector trailers***



The Russian RS-24 Yars road-mobile

coast captured by the Red Army in 1945 had been the original V-2 development and production site, from which series V-2 production had been relocated to Nordhausen and Ebensee after Allied bombing raids in 1943.

At Peenemunde, the Red Army in the spring of 1945, nevertheless captured the original V-2 rocket assembly and test facilities, together with a significant inventory of V-2 parts. It also captured the rocket designer Helmut Gröttrup and approximately 250 of his engineers to assemble them. The storming of Berlin by the Red Army was the defining moment that marked the end of the war in Europe. The almost unremarked upon capture of Peenemunde was however a major Red Army priority during the same operation.

As the Red Army began its final assault on Berlin, the United States Army meantime captured the German town of Kleinbodungen approximately 250km to the south west, wherein was located the Nordhausen main rocket assembly plant that had been relocated from Peenemunde. As with the Red Army at Peenemunde, the United States Army captured the V-2 assembly site at Nordhausen, together with the leading German rocket engineer Wernher von Braun and more than 100 of his development team.

As part of its Nordhausen scientific treasure-trove, the United States captured enough components to produce 80 V-2 rockets, which would together with the captured scientists also jump-start the post-war strategic rocket programme in the United States. Nordhausen fell within the pre-determined Soviet sector of post-war Germany however, and the facility was handed over to the Red Army soon after the end of hostilities, albeit after the removal of the aforementioned rocket components, which made their way across the Atlantic Ocean.

Peace, and Planning for War

The United States and the Soviet Union had both developed field level rocket technology during World War Two, and the Soviet 'Katyusha' multiple rocket launcher was synonymous with such developments. But it was German technology that predominated in the development of long-range rockets. The captured German scientists and the V-2 rocket designs and components liberated in the spring of 1945 would be a fundamental part of post-war strategic rocket developments in both the de-facto post-war superpowers, the United States and the Soviet Union.

In the months immediately following the end of the war, the Red Army established Plant №3 on the territory of the former Nordhausen facility, from which location the captured German scientists also originally worked. The first Soviet V-2 rockets were assembled in Nordhausen from liberated parts, with 29 pre-series (Izdeliye-N) rockets (from original V-2 parts) assembled in Germany, together with the first 10 Soviet series production (Izdeliye-T) rockets which were also readied for shipment to the Soviet Union.

By early 1947, the captured V-2 rocket production facilities, components, assembled and part-assembled rockets, together with the German rocket engineers captured in Germany at the end of the war had all been relocated from the Soviet occupied sector of Germany where they had been working, to the Soviet Union.

ABOVE: ***Within ten years of the V-2 rocket arriving in the Soviet Union, the early Soviet R-1 and R-2 rockets had been replaced by the much enlarged and significantly longer range R-5M, as seen here being towed by an AT-S tracked tractor***

ABOVE MIDDLE: ***An R-1 rocket being raised into the firing position during a trial exercise***

TOP: ***The same launch pad and lifting principle used for the R-1 was developed on a larger scale for later Soviet rockets such as the R-5M and the R-12 as seen here. Later even larger rockets would be emplaced in permanent protective concrete silos.***

BELOW: ***An R-2 rocket being towed by a 6x6 ZiS-151 truck at the Kapustin Yar polygon. The standard production ZiS-151 dates the photograph as the very early 1950s rather than late 1940s (early production ZiS-151s produced from 1948 had a partially wooden cab)***

ABOVE: ***The RS-24, 11,000km range intercontinental rocket is mounted on the eight-axle MZKT-79221 chassis. The system is the result of a half-century of further technological development into road mobile strategic rockets, which all started with the V-2 in 1944***

BELOW: ***An R-1 rocket, on display in the village of Znamensk, near the Kapustin Yar test polygon on the open steppe near Stalingrad (today Volgograd)***

On arrival, they worked within the structure of the NII-88 rocket design institute supervised by Korolov who had been sent to Germany in 1945 with the specific purpose of capturing the German rocket technology. The FAU-2 as it was known in the Soviet Union was reverse-engineered at the NII-88 rocket design institute for production in the Soviet Union, with the original Soviet R-1 rocket being virtually a direct copy of the German A-4 original.

The Red Army unit designated responsibility for handling the logistics of what would become Soviet ballistic rocket development was the 22nd Brigade for Special Use of the Reserve of the Supreme High Command (RVGK), which was established in June 1946 by re-designating the 92nd Guards Mortar Regiment previously located in the village of Bad Berka (next to the Nordhausen facility). The V-2 rockets and components located in Germany were moved by rail with this unit to the test polygon at Kapustin Yar in southern Russia, and would be used to develop the first Soviet R-1 ballistic rocket.

Russian Strategic Rocket Trials

Authorisation to develop the R-1 Pobeda (Victory) rocket (also known as the 8A11) on the basis of the captured German technology was given in accordance with a Resolution of the Central Committee of the Communist Party (Bolshevik) and Council of Ministers dated May 13, 1946. The Soviet R-1 was the first Soviet ballistic rocket, the German origins of which have always been credited even in the Soviet era, perhaps as it was widely known that the Americans, the Russians and indeed the British at Ebensee had all made off with near-identical lots of technological 'swag.

The first test launch of an assembled former German A-4 ballistic missile was conducted by the 22nd Brigade at the Kapustin Yar range near Stalingrad on October 18, 1947. There were 11 test launches during the month, five of the original Izdeliye-N series rocket, and six of the Soviet series production Izdeliye-T type.

The Soviet R-1 featured some modifications to the fuel and fuelling arrangements, but was otherwise identical to the original V-2. The first Soviet R-1, with a lift-off weight of 13.43 metric tonnes and a range of 270km was test launched on September 17, 1948, with launches continuing into 1952.

The original German transport and launch systems were also taken from Germany, with the Soviet Union later adapting new transport trailers, towed by the first production ZiS-151 trucks and the AT-T tracked tractor. In the 1950s,the later but distinctly earlier looking AT-S tracked tractor was used - the result of asking a tank plant to design and build a secondary military vehicle.

In the early 1950s the 77th and 90th Brigades were also formed to operate the R-1 (known by NATO as the SS-1a 'Scunner'), while the 54th and 56th Brigades were formed to conduct test launches of the R-2 (NATO: SS-2 'Sibling'), which were also conducted at the Kapustin Yar test polygon on June 1, 1952.

The pace of rocket development in the Soviet Union was such that by 1956, the R-1, which had primarily been used for development and test firing purposes, was already being replaced by the modified and longer R-2 and soon thereafter the R-5M.

By 1960, the R-1 had been formally removed from Soviet Army service inventory. The Cold War rocket race with the United States was underway, with the technology and personnel used by the United States and the Soviet Union having been in both cases inherited from the wartime German V-2 rocket programme.

Bigger Rockets, Bigger Transport Requirements

In the 1950s, Soviet rockets were towed on trailers to static open launch sites, with specialised vehicles used for towing and erecting the rockets on their mobile launchers, including the curious looking MAZ-529 series single-axle tractor vehicles otherwise used for civil engineering applications.

As Soviet rockets grew in size, so too did the vehicles used to tow them. A ZiS-151 6x6 truck was sufficient to tow a 13.5 metric tonne R-1 rocket on its trailer, but the larger R-5M and R-12 rockets introduced at the end of the decade required an AT-S or AT-T tracked tractor even for short distance transits.

By the mid 1960s, the huge and powerful wheeled 8x8 configuration MAZ-535 ballast tractor and MAZ-537 semi-trailer tractors were taking over from the previous generation of tracked tractors. By the mid 1960s, tracked transporter-erector-launcher (TEL) vehicles such as the RT-15 and RT-20P were being developed specifically for land-mobile deployment of nuclear-armed medium and long-range strategic rockets.

These tracked TEL vehicles did not ultimately enter general service as the tracked launch vehicles with their associated speed, range and not least vibration issues were not entirely conducive to transporting rockets with their relatively fragile guidance system circuitry: there were also issues with fuelling complexity. By the mid 1970s, however, the 8x8 MAZ-543 which had already seen venerable service as the 9P117 TEL vehicle for the R-17 Scud tactical rocket, was enlarged as the next generation, five-axle MAZ-543 based TEL vehicle for the RSD-10 Pioneer medium range ballistic rocket.

Today, the latest RS-24 Yars intercontinental rocket, with a lift-off weight of nearly 50 metric tonnes and a range of 11,000km, is mounted on a road-mobile, all-terrain MZKT-79221 TEL vehicle based on the MAZ lineage of all-terrain vehicle designs dating back to the 1960s. These were vehicles developed specifically for providing Soviet rocket systems with mobile launch capability, and which could deliver warheads over a long range while maintaining the ability to move location and avoid either initial discovery or subsequent retaliation.

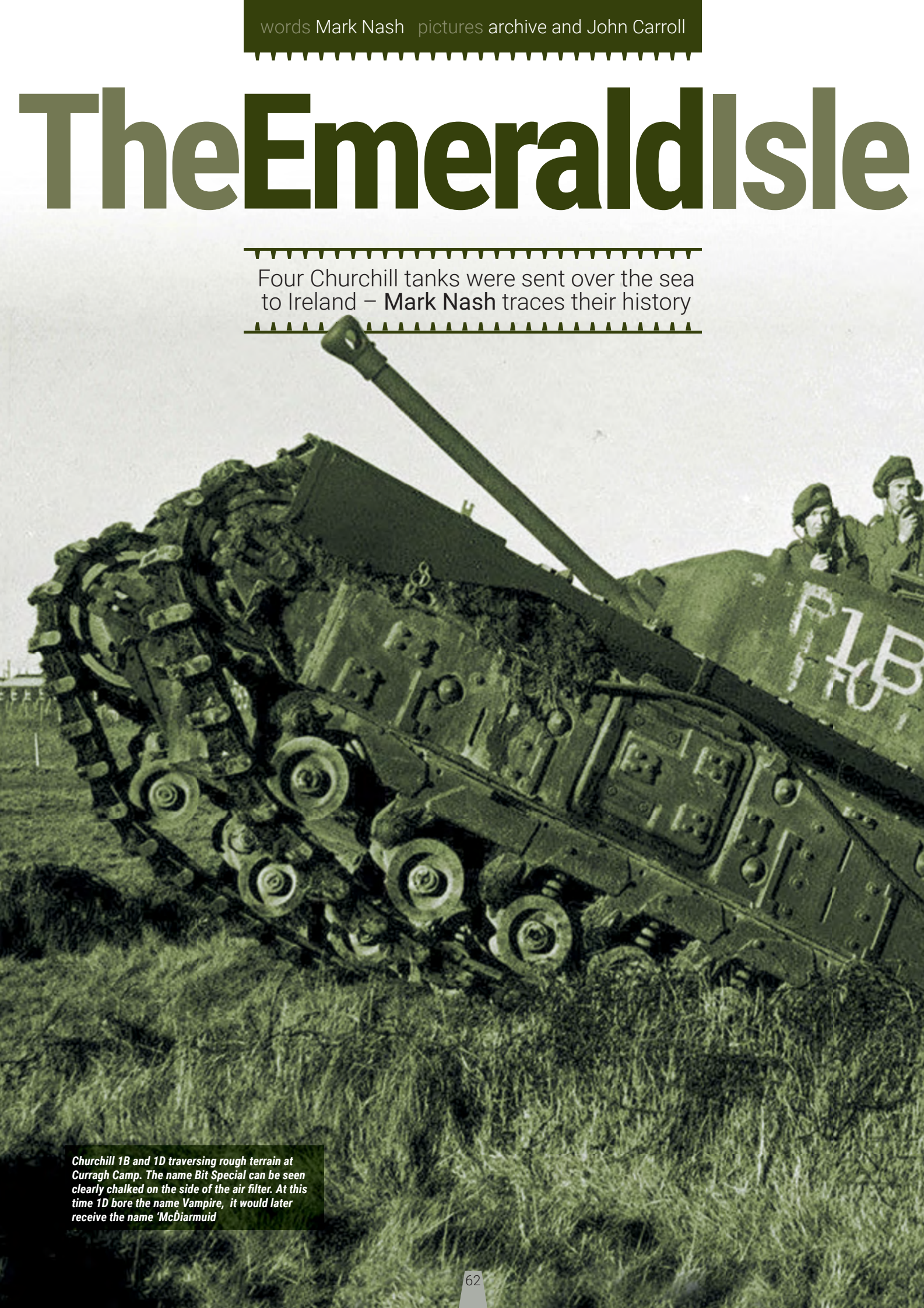
The current Russian RS-24 Yars is the latest development in a long line of Soviet mobile strategic rocket designs. The system employs the very same design principle that was behind the land convoy transport and launch vehicles developed for the wartime German V-2.

An AT-S medium tracked artillery tractor towing an R-1 (8Zh38) rocket across a snowy Soviet landscape

words Mark Nash pictures archive and John Carroll

The Emerald Isle

Four Churchill tanks were sent over the sea to Ireland – **Mark Nash** traces their history



Churchill 1B and 1D traversing rough terrain at Curragh Camp. The name Bit Special can be seen clearly chalked on the side of the air filter. At this time 1D bore the name Vampire, it would later receive the name 'McDiarmuid

Militarily speaking, the Republic of Ireland is officially a 'non-aligned state'. This means that the country is mostly neutral, but will engage an enemy if necessary or if it is threatened. As such, it has remained largely neutral throughout the major wars of the 20th century but has been an active member of United Nations peacekeeping missions such as those in the Congo and Lebanon.

The Republic of Ireland does have military capability in the form of The Republic of Ireland Defence Forces (IDF) which was founded on October 1, 1924. It is divided into three services, the Irish Army, the Irish Air Corps and the Irish Naval Service

Within the army it is the Cavalry Corps which is equipped with the military's armoured units. It didn't have much experience with tanks until 1929 when it acquired a small number of Vickers Mark Ds, a derivative of the Vickers Medium Mk II. In 1935 these were joined by a delivery of two Swedish Landsverk L60 Light Tanks. Prior to this, the cavalry was equipped solely with armoured cars such as Lancia and Rolls-Royce. It continued to acquire various armoured vehicles in the following years.

By the end of World War Two, the British Churchill infantry tank had made a name for itself as being tough and reliable in hostile environments. Wanting to bolster their arsenal, the Republic of Ireland Defence Forces, specifically the Cavalry Corps, set their sights on adopting some of the UK's surplus tanks.

In 1948, following a brief period during which several Cavalry Corps officers trained in England, the IDF rented three Churchill Mk VIs from the British War Office, a fourth tank was delivered in 1949 and they were bought outright in 1954.

The Mk VI Churchill

Officially designated as Tank, Infantry, Mk IV, A22, the Churchill entered service with the British armoured forces in 1941. It was named, contrary to popular belief, after an ancestor of then serving Prime Minister Winston Churchill and not the man himself. It was the last infantry tank to serve in the British military.

The specific model procured by Ireland was the Mk VI Churchill, which was produced from December 1943. It had armour of up to 102mm thick over the frontal arc. The turret was a cast type and mounted the tank's main armament of an Ordnance Quick-Firing 75mm Gun Mk 5. This gun could fire armour-piercing (AP) and high-explosive (HE) rounds. Though the HE round was rather effective, the AP was dismal. It could only penetrate 68mm (2.6in) of rolled homogeneous armour (RHA) at 460m.

Secondary armament consisted of a coaxial and a bow mounted 7.92mm BESA machine gun. The tank was crewed by five men: the commander, gunner, loader, driver and bow machine gunner/wireless operator.

The Churchill was no speed demon. A lumbering beast at approximately 40-tons, its top speed was only 15mph powered by a Bedford 12-cylinder engine producing 350bhp. The tank was supported on a complicated suspension with 11 small wheels per side, each one attached to an independent coil spring. The drive wheel was at the rear with a sprocketed idler at the front. Though it was slow and heavy, the Churchill gained a reputation for being one of the best cross-country tanks ever built and could climb higher gradients or cross more difficult obstacles than most other tanks in service at that time.

Originally, the plan was to rent four Churchill tanks for £5,000 for a period of five years, starting on January 25, 1949. Conditions were drawn up and agreed between the Irish Government and British War Office. The Irish Government would have to meet all transport and freight costs and in-

‘For instance, it is common to find a 1944 tank with a 1943 engine and a 1945 gearbox’

Churchill 1B in a training scenario at Curragh Camp

demnifying the War Office for any loss or damage. There was also an agreement that the tanks would be returned to the UK immediately if requested.

As the tanks remained the property of the British War Office, strict conditions were put in place that would keep the Churchills painted with the standard British Olive Drab paint and retain the War Department numbers painted on the hulls. A thousand rounds of armour piercing (AP), 2,000 rounds of high-explosive and 500 rounds of smoke shells were also ordered separately for the 75mm gun.

The Churchill was considered the perfect tank for Ireland, as defence force heads considered their country unsuitable for tank warfare and always saw the tank as an infantry support weapon; a role that the Churchill was born to fulfil. No two of the tanks were identical and at least one had seen action with the British Army and had been extensively repaired after being knocked out.

The tanks were what are commonly known as REME (Royal Electrical Mechanical Engineers) ‘salads’. The rebuilding process saw vehicles from all units and different manufactures stripped to component parts and reassembled using refurbished parts off the shelf. Once a vehicle has been through a re-manufacturing process it will end up with very few original parts put back in. Finding matching numbers in such vehicles is incredibly rare. When rebuilt the vehicles are brought up to or as close as possible, to the current standard. This will include up-armouring and up-gunning. For instance, it is common to find a 1944 tank with a 1943 engine and a 1945 gearbox.

The tanks served with the 1st Armoured Cavalry Squadron based at Curragh Camp, Kildare. The four tanks were alphabetically organized as follows: 1A, 1B, 1C and 1D. It is reasonable to suggest that the 1 is representative of the 1st Armoured Cavalry Squadron. To begin with, these markings were found as large stencils on the sides and right cheek of the turret. Later, they were made smaller and placed to the left of the gun on the turret cheek. They also gained nicknames, presumably given by the crews, as is traditional. 1A was called Fionn and for a time, 1B was named Bit Special. 1D was originally called Vampire, but this was later changed to McḊiarmuid. The other two were given names, but unfortunately, they are not recorded and the visual evidence we do have is not clear enough to identify the names. The name of 1C appears to be something along the lines of Cothad.

Though the tanks were never used in combat, they took part in training for the entirety of their service. Twice a year, the Churchills drove under their own power to the remote Glen of Imaal in the Wicklow Mountains. Around 5,948 acres of the glen had been used by the Irish as an artillery and gunnery range since 1900 - it remains in use today. Here, the Churchills took part in gunnery, infantry cooperation, and cross-country trials.

Ireland was inexperienced with heavy armoured vehicles such as the Churchill and as such was ill-equipped with recovery and transport vehicles. The need was amplified by an incident that occurred in training at the Glen of Imaal. One of the tanks broke down and became stuck in heavy mud. The military, at this point, had no way to rescue the tank or tow it back for repairs. They elected to abandon the tank and leave it where it stood except for the gun which they were able to take back to base.

For the following years, instead of towing the tank to-and-fro, they simply took the gun to the tank every time it was required for gunnery training. This continued until 1967 when the tank was buried where it stood to prevent public access to it.

Aside from such incidents, there were also issues raised by civilian organisations. Complaints soon arose from the Kildare and Wicklow County Councils, who were displeased at the amount of damage the all-metal tracks of the Churchill were causing to public roads.

Such issues led to the Cavalry Corps buying a World War Two, ex-British Army M19 Tank Transporter. This was the combination of the

OVERTURNED TANK!

ABOVE: ***This Churchill (number unknown) was being transported by the Cavalry Corps’ lone Diamond T Tank Transporter when it overturned between Kilcullen and Dunlavin in 1961***

BELOW: ***The overturned tank is pulled back onto its tracks. The sandbags have been placed to protect the road surface and cushion the impact of the fall***

12-ton 6×4 M20 Diamond T Model 980 truck and a companion M9 12-wheel trailer. American in origin, this transporter was considered one of the best ever built with some still privately used today. They only bought a single vehicle, however, meaning that only one tank could be transported at a time.

In 1954, the British asked the Irish Government whether they would be renewing the lease on the Churchills. The Irish Authorities, instead of offering to renew the lease, offered the War Office the sum of £1,000 for each tank to buy them outright. It is not clear whether this amount was the final one agreed, but nonetheless, the Churchills became 100% Irish Defence Force property.

The Rolls-Royce Merlin

Even before the fourth Churchill arrived in 1949, the Transport Corps, who were responsible for maintaining the tanks, had reported that spare parts for the tanks' engines and other vital components were quickly running out. In an effort to keep the tanks going, a new development was considered.

On February 14, 1955, Captain Collier of the Cavalry Workshops came up with a plan to replace the Churchill's old 350bhp Bedford engine with the powerful 600bhp Rolls-Royce Merlin engine which had been used in many British aircraft. A derivative of the Merlin, the Meteor, had been used on other models of British tanks such as the Cromwell and Comet.

The plan grabbed the attention of Captain Collier's superiors who agreed to the proposal and suggested that it be tested on one of the four Churchills. The Merlin engine was to be procured from the air corps and was previously installed on one of their Vickers Supermarine VS.506 Seafire LF III fighters which were being withdrawn from service. As such, there was a plentiful surplus of spare parts.

Progress on the project was slow and continued into 1956. Tests were carried out with the engine installed. These tests were an apparent success but, for reasons unrecorded, the programme stopped. None of the other Churchills would see the addition of the engine.

Due to the stoppage of the Merlin trials, spare parts for the Churchills inevitably ran out. By 1967, only one Churchill remained in a serviceable condition. In 1959, the Irish tank arsenal was refreshed with the arrival of four Comet tanks, again bought from the UK. A further four arrived in 1960. In 1969, all Churchills were retired: research suggests that two of the Churchills were scrapped, one in 1963, the other in 1967.

The two that were not scrapped still survive today. The one buried in the Glen of Imaal in 1967 was excavated and recovered in 2002-3. It was cleaned and presented to the UK's North Irish Horse Regiment, based in Northern Ireland, as a goodwill gesture. It is on display at Dunmore Park in Belfast and was recently repainted and received the name Castlerobin III.

In 2006, the other surviving Churchill, having been repainted a solid green, became an exhibit (along with a Comet) at the Curragh Camp Museum. It has been refitted with new fenders over the tracks that are not accurate to the original vehicle. These were fabricated locally.

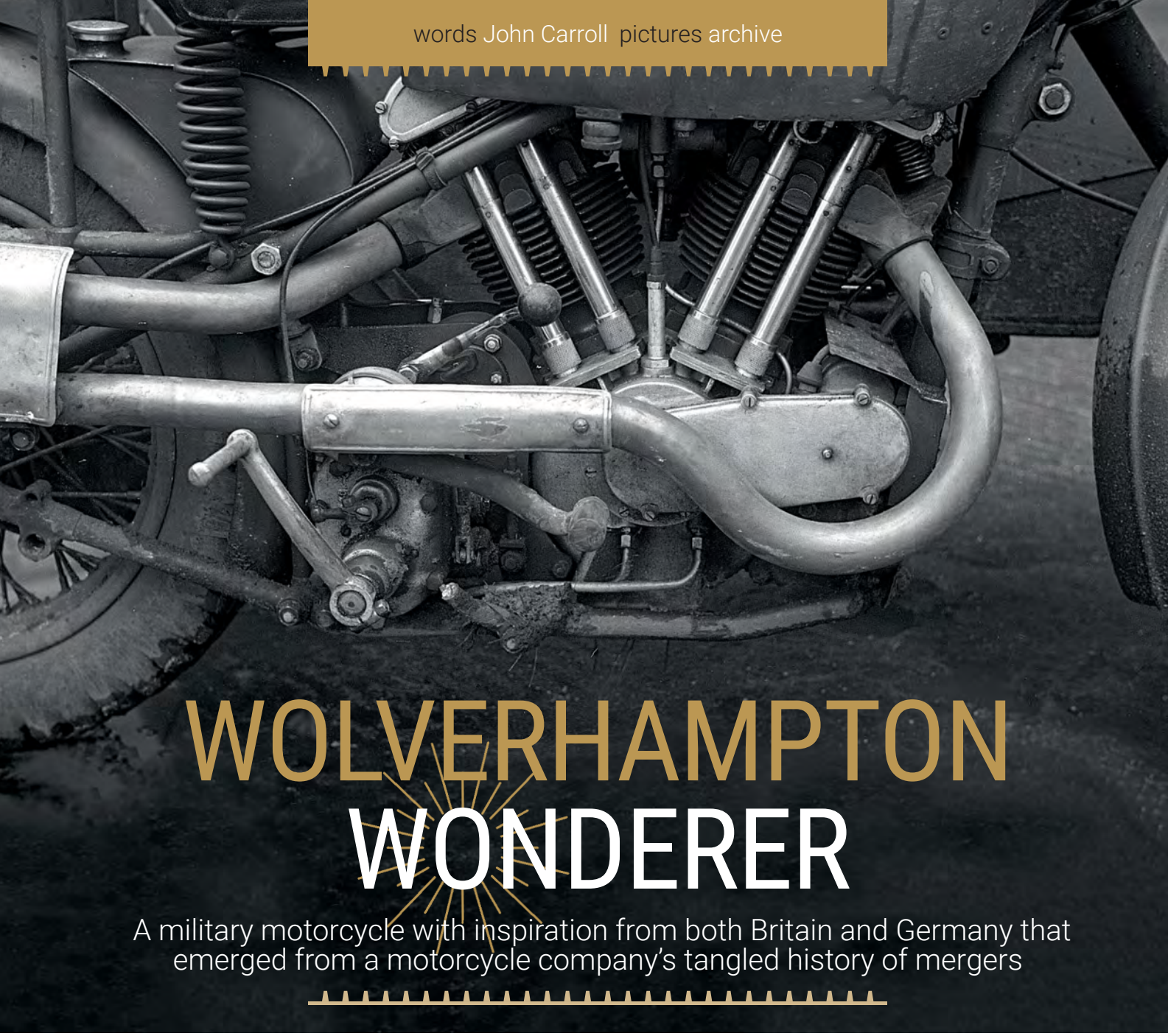
Though it does not pertain to the Irish Mk VIs, there is another restored Churchill on the Emerald Isle. In the north, a Churchill Mk VII has been placed as a monument on the Carrickfergus seafront and is also named Carrickfergus. It stands as a monument to the town's military and industrial links.

The famous shipbuilders, Harland & Wolff, even built the prototype Churchill, the A20, in their factory in the town.

Rear view of the Curragh's Churchill. The Churchill made up for its lack of speed with cross country capability

ABOVE: ***One of the surviving Churchills preserved at the Curragh Camp Museum. It was refitted with new fenders over the tracks that are not accurate to the original vehicle. These were fabricated locally***
RIGHT: ***These tanks were never used in combat, they took part in training for the entirety of their service. Twice a year, they drove under their own power to the remote Glen of Imaal***

words John Carroll pictures archive



WOLVERHAMPTON WONDERER

A military motorcycle with inspiration from both Britain and Germany that emerged from a motorcycle company's tangled history of mergers

When sidecar outfits from World War Two are mentioned, it is likely that the BMW R75s and Zundapp KS750s of the Wehrmacht come to mind. After all, numerous archive photos show the German armies using outfits in prominent roles including combat ones. Machine gun-toting sidecar outfits were often in the vanguard of the Blitzkrieg in the early days of the war as German units swept across Europe and Russia. In contrast, the Allies seem to have kept motorcycles more for, equally crucial, service and communications machines and made more limited use of sidecars.

From the British point of view, the best known sidecar outfit was probably the 633cc Norton Big Four. This machine was developed from a 16H prototype which itself was based on a pre-war trials competition outfit. The Big Four featured a sidecar that was capable of carrying a Bren gun and sidecar wheel drive and a crew of three. Some were supplied to the British Army but they were phased out in 1943 and superseded by the Jeep. There was another, less well known British sidecar outfit designed for military use made by Sunbeam but it never progressed beyond the prototype stage.

Before World War Two, the British motorcycle industry was vast and a plethora of makes and models vied for motorcyclists' money. Not all the companies were successful and while the likes of BSA, Triumph and Norton were thriving, others were forced into mergers to remain in business (a process that would continue until the 1980s), AJS for example was bought by Matchless in 1931.

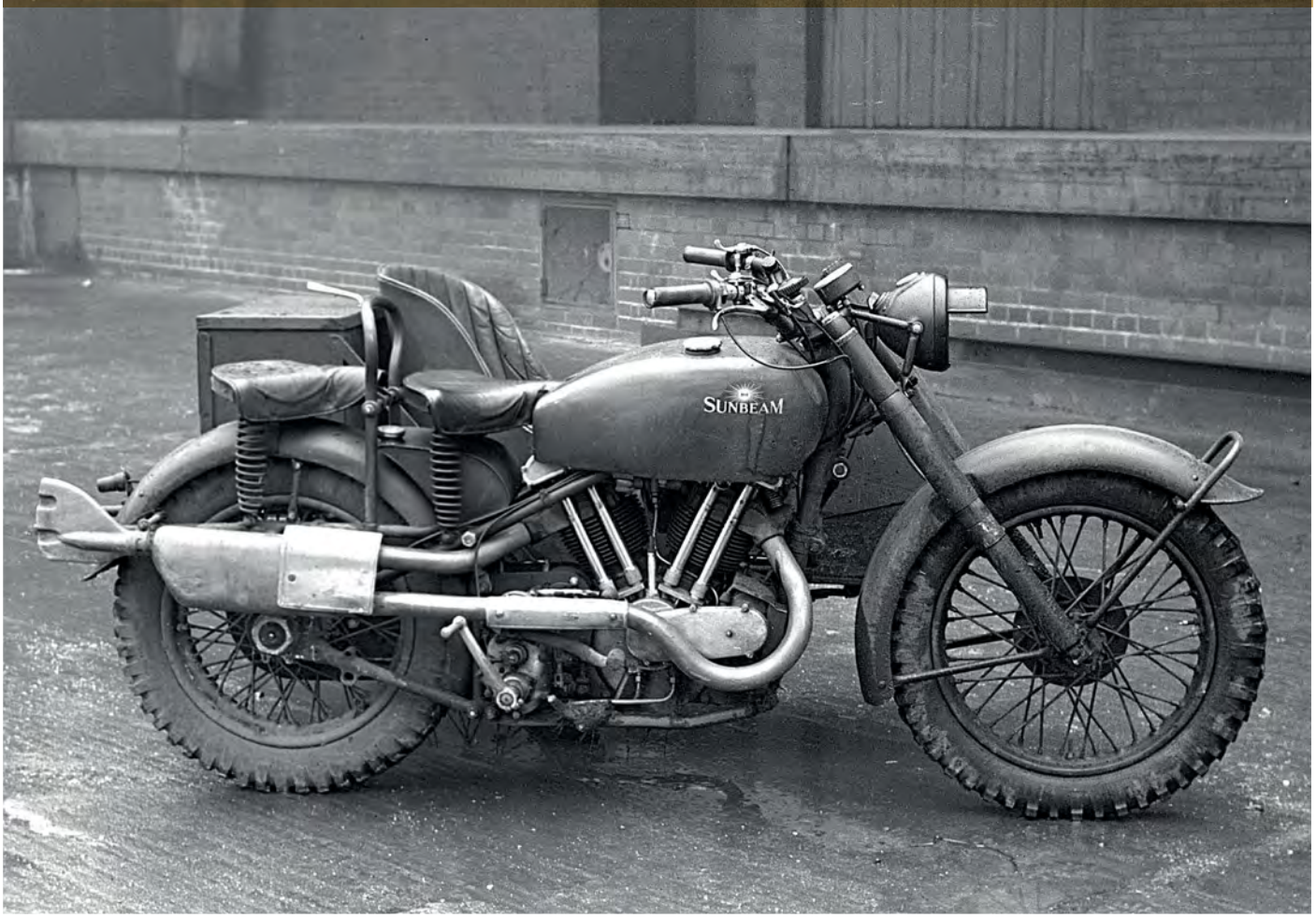
'Through the 1920s and 1930s Sunbeam dallied with military sales culminating in offering the Lion'

Sunbeam Cycles was founded in Wolverhampton by John Marston who started by making bicycles that were noted for their high quality. Following some experimentation the company manufactured cars from 1902 onwards. A subsequent slump saw Sunbeam making motorcycles, for which there was increasing demand, from 1912. Like the bicycles, the motorcycles were made to a high standard.

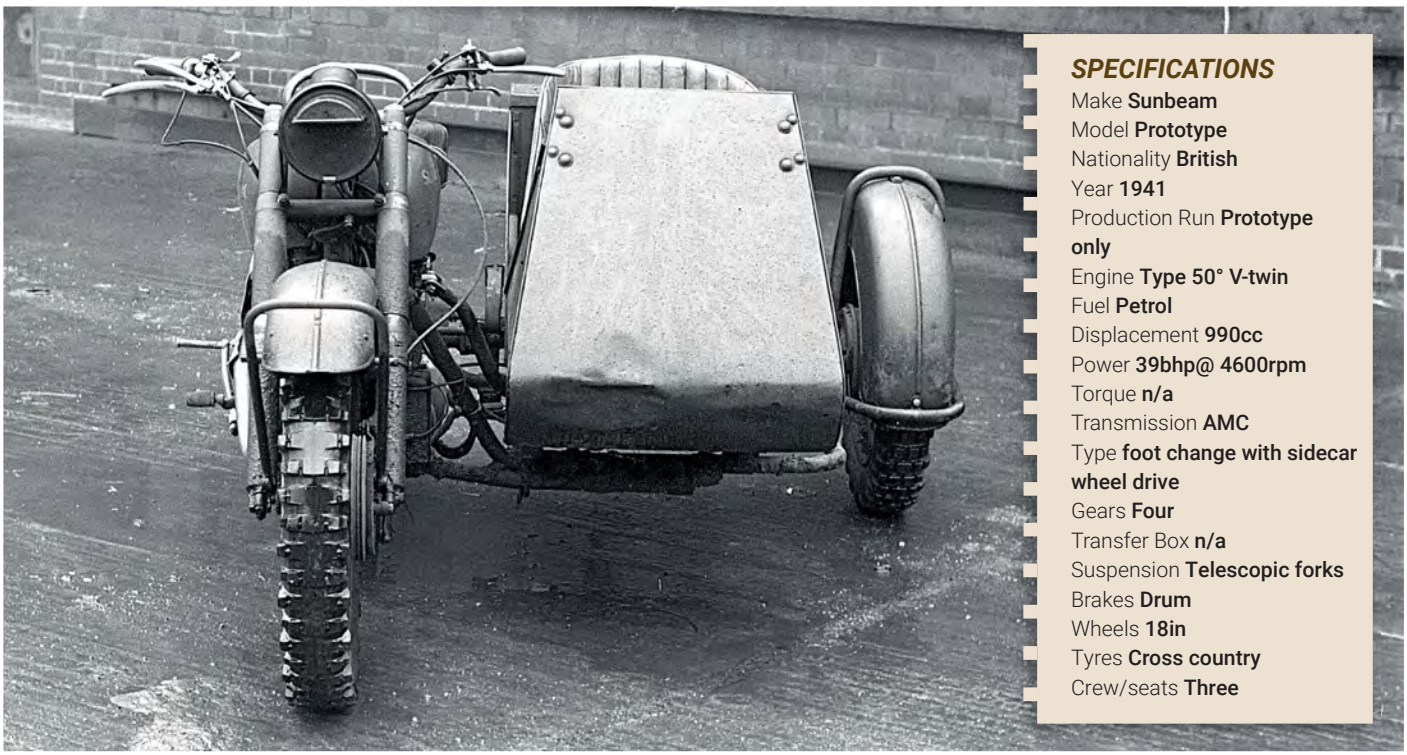
Sunbeam motorcycles achieved wins at the Isle of Man TT Races until 1929. Following Marston's death in 1918, the company was bought by Nobel Industries which later became Imperial Chemical Industries (ICI) following a merger with Brunner Mond Ltd in 1927. Motorcycles were only a small part of this huge organisation and within the decade that arm would be sold off.

Through the 1920s and 1930s Sunbeam dallied with military sales culminating in offering the Lion, a 500cc side valve motorcycle that was similar in design to Norton's 16H. Things got off to a promising

LEFT: ***The Matchless V-twin displaced 990cc and was of a type more usually found in Morgan three-wheeler cars before World War Two***
BOTTOM: ***The sidecar was of a utilitarian design and intended to carry a Bren gun and ammunition and one of the crew. The third member sat on a pillion seat behind the rider***
BELOW: ***The prototype Sunbeam outfit used a Matchless V-twin engine in its rigid frame and was designed to offer cross-country ability in use for a crew of three***

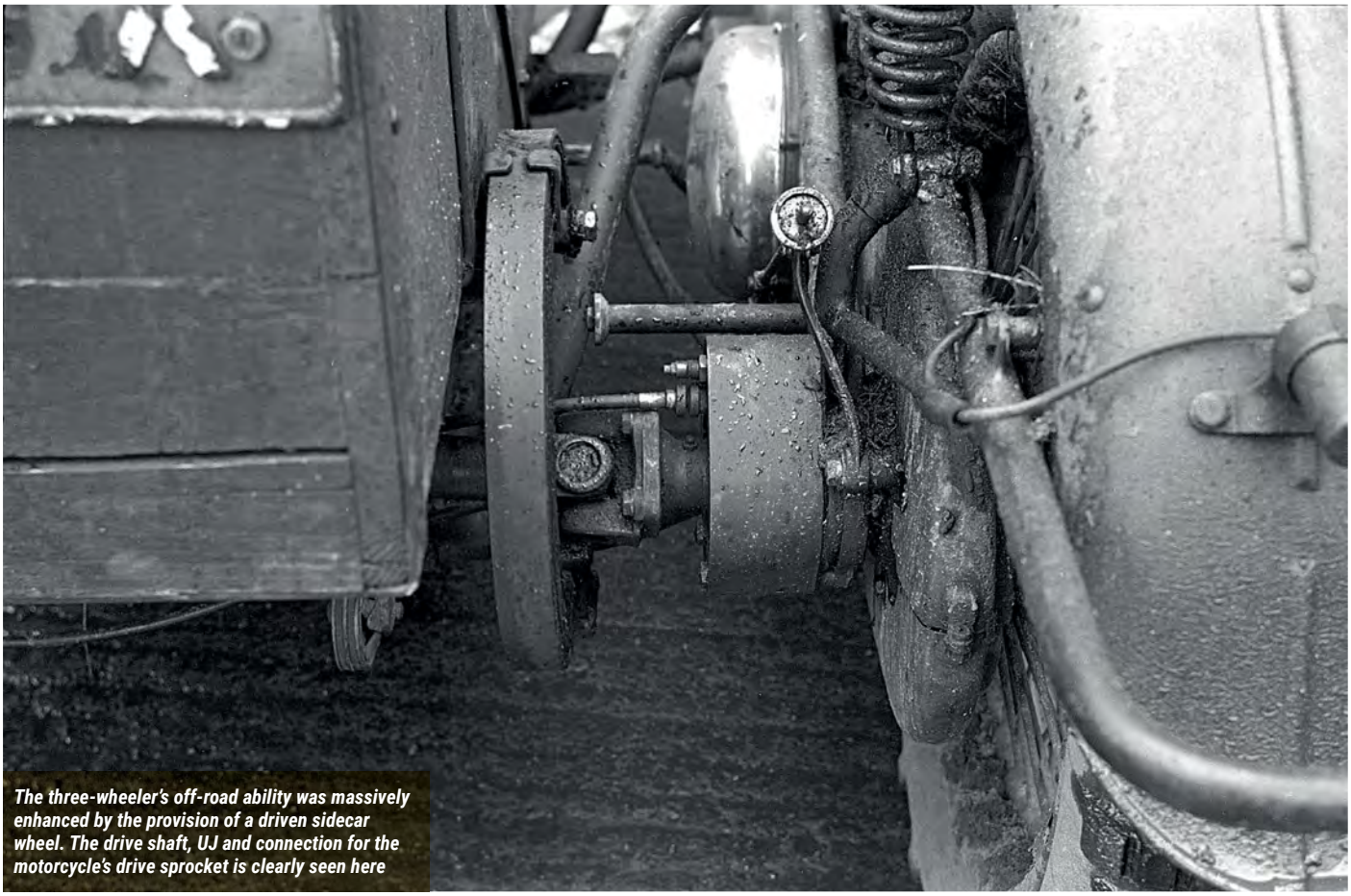


'The machine featured a transmission with a reverse gear and a driven sidecar wheel'



SPECIFICATIONS

Make **Sunbeam**
Model **Prototype**
Nationality **British**
Year **1941**
Production Run **Prototype only**
Engine **Type 50° V-twin**
Fuel **Petrol**
Displacement **990cc**
Power **39bhp@ 4600rpm**
Torque **n/a**
Transmission **AMC**
Type **foot change with sidecar wheel drive**
Gears **Four**
Transfer Box **n/a**
Suspension **Telescopic forks**
Brakes **Drum**
Wheels **18in**
Tyres **Cross country**
Crew/seats **Three**



The three-wheeler's off-road ability was massively enhanced by the provision of a driven sidecar wheel. The drive shaft, UJ and connection for the motorcycle's drive sprocket is clearly seen here

start and testing of the bike started at the Mechanisation Experimental Establishment in Farnborough but a change of ownership intervened. The name of the Matchless company was changed to Amalgamated Motor Cycles Ltd in 1937, the same year as it bought Sunbeam and Associated Motor Cycles (AMC) in 1938. AMC was the parent company of the group of motorcycle manufacturers and would oversee the supply of the Matchless G3 and, later, G3L models to the British Army during World War Two. During the war, Matchless would manufacture 80,000 G3 and G3L models.

Under AMC's control the Sunbeam Lion was forgotten so as not to interfere with G3 sales but the company's engineers were tasked with building something that took its inspiration from the Norton Big Four and the Wehrmacht's outfits.

It was a substantial rigid-framed sidecar outfit with hydraulic forks, powered by a Matchless MX2 V-twin engine that was more usually seen in Morgan three-wheeler cars. It was an overhead valve 990cc 50° V-twin engine and made the outfit capable of 55mph to improve on the Big Four's performance.

The Matchless engine had been designed by Donald Heather and, in order to displace 990cc, had a bore and stroke of 85.5mm x 85.5mm. It incorporated a compact single three-lobe camshaft design with roller-type followers that operated the valves and dry sump lubrication. It had two valves per cylinder set in a hemispherical cylinder heads with a 6.2:1 compression ratio. The engine had exposed double coil valve springs and enclosed automatically lubricated rockers with a single carburettor mounted between the cylinders.

'Its off-road ability and usefulness was made redundant by the increasing availability of the Jeep'

Unnamed testers on the Sunbeam outfit which never went beyond the prototype stage.

The machine featured a transmission with a reverse gear and a driven sidecar wheel however its off-road ability and usefulness was made redundant by the increasing availability of the Jeep which offered greater carrying capacity, matching off-road ability and required less skill to operate in difficult terrain.

Contemporary car and motorcycle magazines featured road tests of motorcycles and Jeeps based on pre-war trials events and venues and marvelled at how the Jeep almost matched two-wheelers off-road. This may have sealed Sunbeam's fate and, in 1943, the company was sold to BSA. In the years after it sold Sunbeam, AMC would acquire Norton, James and Francis-Barnett.

After the war, Sunbeam became noted for its S models that were designed for BSA by Erling Poppe - inspired by a captured BMW R75 - and from 1946 to 1956 manufactured the S7, S8 and S7 Deluxe. They were very expensive and luxuriously styled but offered modest performance which resulted in low sales. The unusual engine layout and German-style shaft drive were their notable features; a 500cc longitudinally-mounted, in-line vertical twin which, through a dry clutch, drove a shaft drive to the rear wheel.

These bikes weren't built at BSA's Small Heath, Birmingham factory but at one in Redditch, Worcestershire. After production of these ceased in the 1950s, the company made scooters until 1964 when it closed and the British motorcycle industry's contraction continued apace. AMC collapsed in 1966 and was merged into Norton Villiers which, within a decade would also fail.

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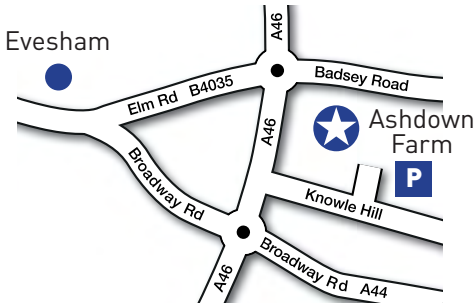

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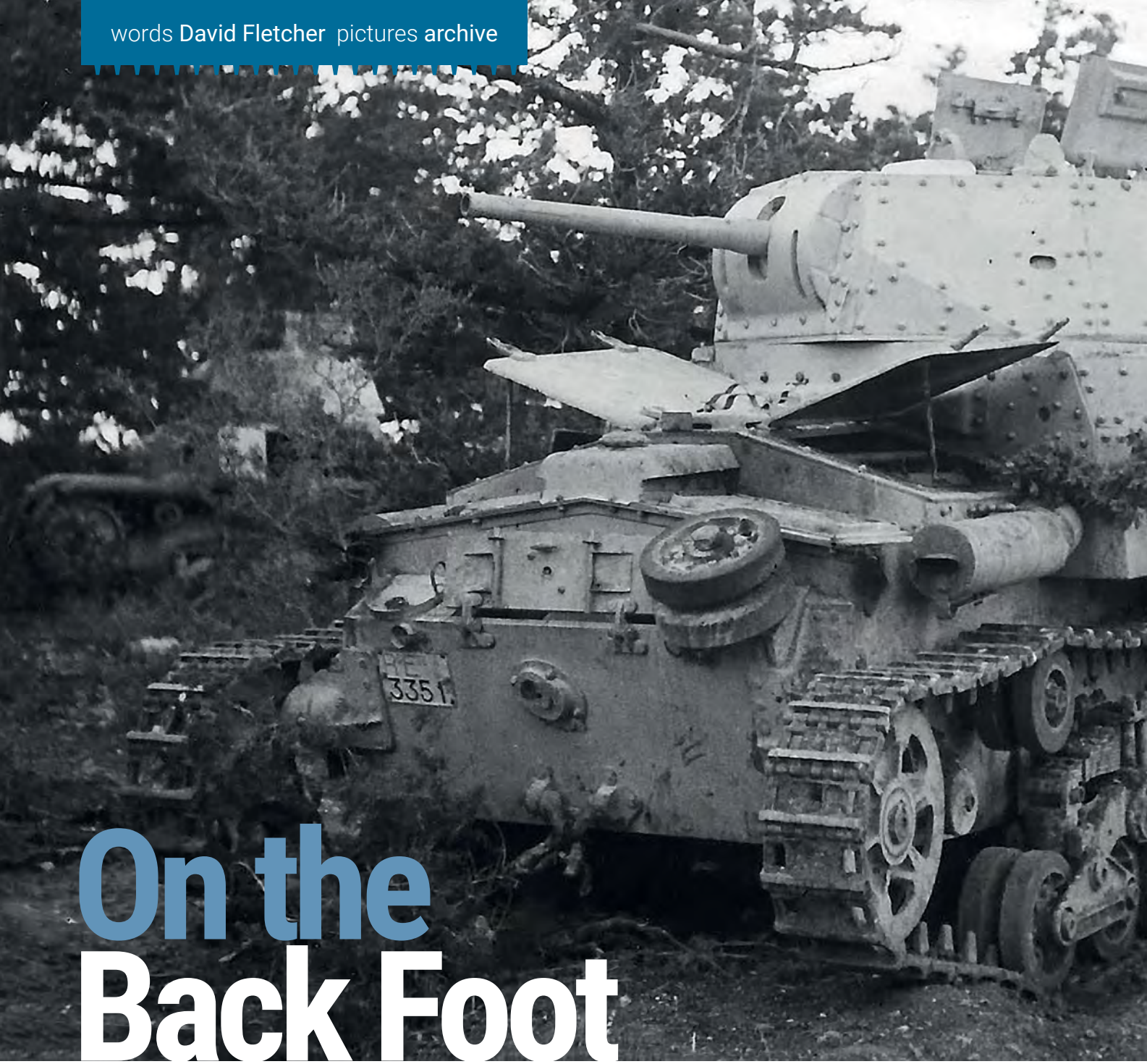


On the Back Foot

David Fletcher, former historian at Bovington Tank Museum, looks at the role played by Italian tanks during World War Two

'In theory an M13/40 weighed 13 tons while an M14/41 weighed 14 tons'

During World War Two, Italian tanks were fought just as bravely as those from Germany or Britain, but being relatively thinly armoured and built from riveted construction, they tended to be more vulnerable and easily knocked out.

Automotively they were very good, but since Italy did not have the sort of heavy industries needed to make tanks they seem to have relied on motor manufacturers who normally built cars or trucks, so they were probably not as good as they might have been.

For the purposes of this article we're focusing on the M14/41, since there is one at Bovington, but will also consider others such as the M11/39 which was still in service at the outbreak of war, although already, by then, on the verge of being obsolete.

The M11/39 was a 1937 design, it was preceded by the eight-ton light tank of 1935 which also had a 37mm gun mounted in the front of the hull on the right, with a turret above and behind which mounted a pair of 8mm Beda machine guns.

Again like the M11/39 it was powered by a water-cooled V8 diesel engine rated at 105bhp although the suspension, based on an earlier design, was complicated and rather dated.

The M11/39 itself is said to have been based on Italian experience in the Spanish Civil War when the lack of a tank-mounted anti-tank gun was felt. Not that the 37mm gun in the M11/39, was anything to write home about. It was a World War One Vickers design, known as the Vickers-Terni, its anti-armour performance was dismal when compared with the American 37mm weapon or the British two-pounder. Its only saving grace, apart from the provision of some high explosive rounds, was the mounting which featured a hydraulic power traverse system. This was quite advanced for its day. On the other hand the turret, located on the left, was a small, one-man thing, manually traversed and mounting a pair of air-

An M13/40, one of two abandoned in some trees

An M15/42 from the other side, showing the new location of the hull escape door

ABOVE: ***Despite a more powerful engine and better gun the M15/42 looks a lot like its predecessors***
BELOW: ***A P26/40 viewed from the front, sloped armour makes it look impressive but it wasn't very thick by infantry tank standards and the method of construction was going out of favour***

cooled machine guns.

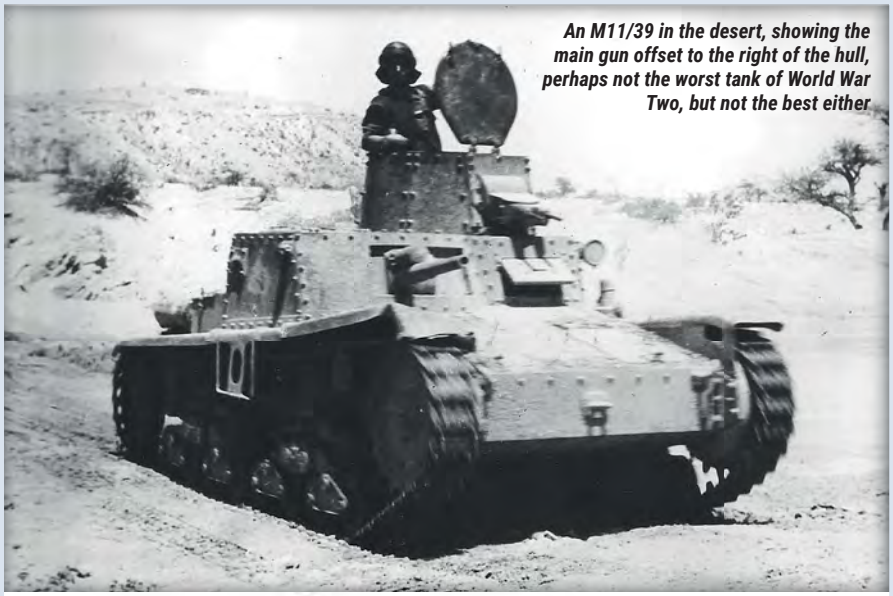
Against that, the fact that the 11-ton tank only had a crew of three was a limiting factor. There was a driver of course, seated to the left of the hull gun mounting, a tank commander in the turret who had to load, aim and fire the twin machine guns and the hull gunner who had to load, aim and fire the 37mm gun. Armour was of riveted construction up to 30mm thick at the front but prone to cracking on being struck.

Although the engine was mounted at the back it drove forwards, through a four-speed, two-ratio gearbox, to front drive sprockets.

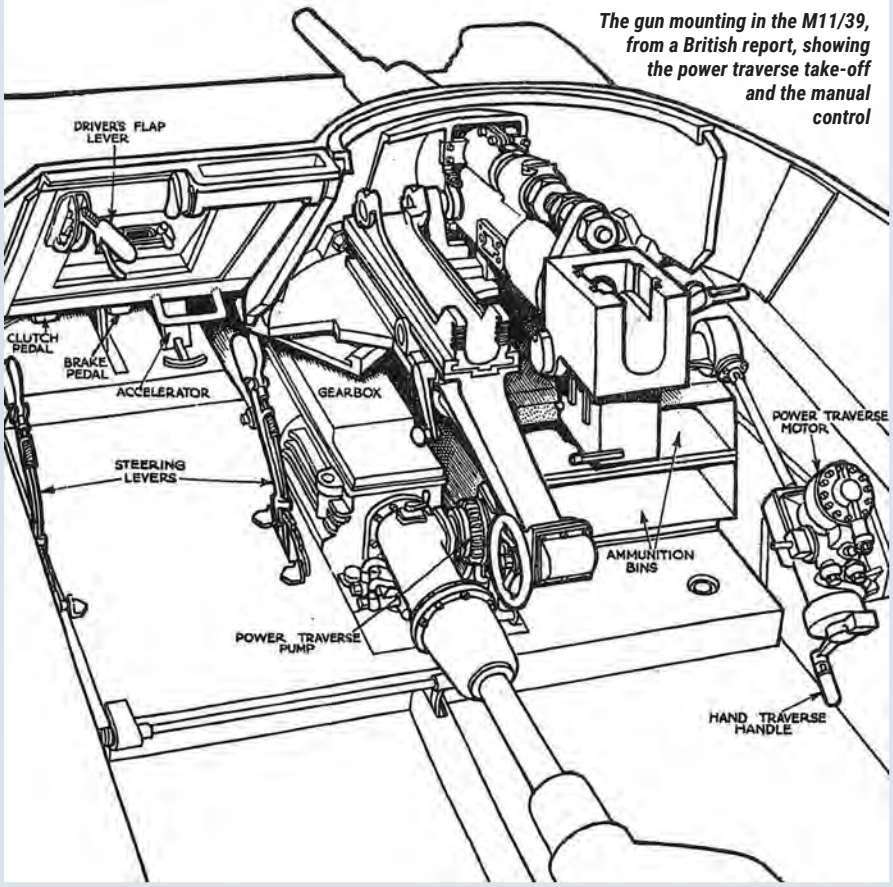
The suspension, consisting of two leaf springs each side, each acting on two bogies, was apparently developed from the Vickers-Armstrong six-tonner of 1928. Italy is said to have bought a six-tonner, the twin turreted version, in secret and used that as the basis for further development. The M11/39 is said to have had a top speed of 21mph, which is quite respectable for the time, and only limited by the somewhat underpowered diesel engine and the nature of the suspension.

In fact the general design and the weak gun made it unsuitable for tank-versus-tank fighting; indeed it is said that the only tank it stood a chance of knocking out was the British Light Mark VI and only then if the target was moving slowly or stopped.

'Of course, by 1943 the desert war was effectively over so the new tank was only supplied for service in Italy itself'



An M11/39 in the desert, showing the main gun offset to the right of the hull, perhaps not the worst tank of World War Two, but not the best either



The gun mounting in the M11/39, from a British report, showing the power traverse take-off and the manual control

A few captured tanks were used by the 6th Australian Divisional Cavalry during the attack on Tobruk. Marked with large white Kangaroos, enlarged from their divisional sign, to make ownership clear, they were better than Universal Carriers, which is otherwise all they had.

The M13/40 or M14/41 in its later guise was probably the most prolific Italian tank of World War Two. The only outward difference between the M13/40 and the M14/41 was in the length of the mudguards on each side. On the M13/40 they only stretched half-way back while on the M14/41 they were full length. However this is not an infallible method of telling them apart since late production M13/40 tanks could be the same.

The Spa V8 Diesel engine was uprated to 12bhp in the M13/40 and to 145bhp in the M14/41 but that is not so easy to see. In any case the engine, transmission and suspension were similar to that on the M11/39 except that the engine was a bit more powerful and the suspension strengthened to take the additional weight.

In theory an M13/40 weighed 13 tons while an M14/41 weighed 14 tons. Hull armour was still 30mm maximum but 40mm on the front of the turret and still of riveted construction although hull side armour was beefed up to 25mm compared with 14.5mm on the sides of an M11/39.

The most obvious difference was the provision of a larger, fully rotating turret to take the main gun, with hydraulic power traverse according to some sources. This was a new 47mm gun capable of firing armour piercing or high explosive rounds although its armour piercing performance was not that good, not even up to the British 40mm gun, the two-pounder.

Even so, it now had the capability to penetrate some of the earlier British cruiser tanks, the A9, A10 and A13. There was a co-axial Breda machine gun alongside the main armament and two more, lower down in the front of the hull, offset to the right side and in a twin mount.

The crew was now increased to four, a commander in the turret, a driver in the hull and two others. One would have been the 47mm gunner, and probably the loader as well, while the other seems most likely to have been the hull machine gunner. And since there is no evidence of a turret basket he was probably free to jump up and help out in the turret when required. Both the British and Australians made use of captured M13 and/or M14 tanks to supplement their own but they didn't do so for very long.

The next tank in the series was the Medium tank 15/42, which appeared late in 1942. Although it looked rather similar from the front it was altered behind the turret because it was now fitted with a Fiat Spa eight-cylinder petrol engine instead of the diesel. A four-speed, two-ratio or five-speed and reverse gearbox was also developed for this new tank. The petrol engine was more powerful although it only increased the speed to 25mph and it seems to be a rather retrogressive step in view of the fact that diesel engines have ultimately proved more suitable for tanks. It was blamed on a shortage of diesel fuel at the time although the Germans had made a point of installing petrol engines in their tanks because they were more powerful.

The new tank mounted a more powerful version of the 47mm gun although by 1943 a 47mm weapon was considered not quite powerful enough for a combat tank. Electric powered

A poor picture, but the only one we have of the Ansaldo 9 ton tank as originally built. It may have been designed by Fosters of Lincoln

Another M11/39 abandoned by a desert roadside. The type did not remain long in front line service

'The M11/39 itself is said to have been based on Italian experience in the Spanish Civil War'

The M14/41 was essentially the same tank with longer mudguards

A well-known shot of an Australian officer commanding an M13/40 - suitably marked

Here a captured M14/41 is being inspected by American troops who are a little wary of booby traps. The reason for the number on the drive sprocket is not known

rotation for the turret was also adopted. Otherwise the tank was essentially the same as its predecessors except that the hull side door was moved across to the right and armour thickness was increased to 50mm on the front of the hull and 42mm at the sides, increasing the weight to 15.5 tons.

Of course, by 1943 the desert war was effectively over so the new tank was only supplied for service in Italy itself. Some 90 were built for service with the Italian Army and when the Italians changed sides, the M15/42 was used briefly against the Germans in Rome. In addition to those tanks they captured, the Germans also found a further 28 incomplete at the Fiat factory which they finished off and took to Yugoslavia where the less powerful gun was not so important.

The next Italian tank, the P26/40 was a strikingly different design, although it still used the same suspension. It was powered by a V12 diesel engine rated at 275bhp, driving through a five-speed transmission.

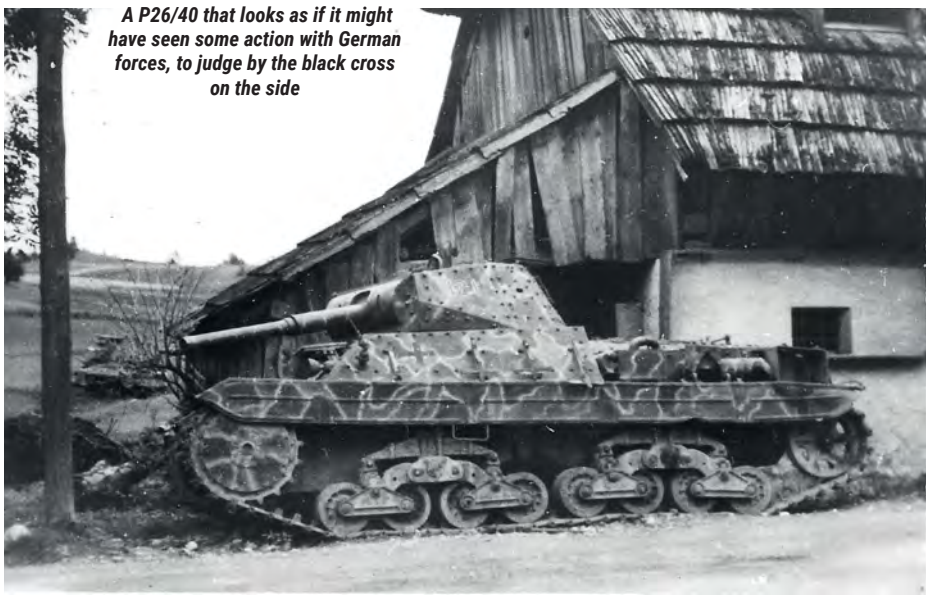
Once again the frontal armour was 50mm but the new design made much more use of sloped armour, which was an improvement, albeit still of riveted construction.

Indeed although it is compared with the early Sherman tank in terms of protection it was still vulnerable to the British six-pounder in its original form. It was armed with a 75mm gun and co-axial machine gun in a fully rotating turret, electrically driven, but it still only had a crew of four and only two of them normally occupied the turret. There was, however, no provision for hull-mounted machine guns, so what the fourth man did isn't entirely clear. The tank commander still lacked any sort of cupola and was therefore unable to survey the battlefield properly without sticking his head outside.

With their existence as an Axis power nearly at an end, and due to the inordinate amount of time lost in the development stage, the P26/40 was almost too late to see action. The Germans took over production although the tank appears to have seen very little active service even then.

It's very difficult to judge tank development in Italy at all dispassionately. They seem to have been behind the curve the whole time and, although moving in the right direction were progressing very slowly.

The Italians were fighting alongside the Germans as well as confronting the latest Soviet and American tanks so they had plenty of opportunity to absorb the lessons of modern tank production. Likewise classing the P26/40 as a heavy tank, when by all foreign experience, it weighed the same and had the mobility of a medium tank is not that easy to explain.



A P26/40 that looks as if it might have seen some action with German forces, to judge by the black cross on the side

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words John Teasdale pictures Photographic Section of HQ, No 285 Reconnaissance Wing

John Teasdale has delved into the archives of an RAF photograph section involved with enemy reconnaissance in 1942

In the fighting that surged back and forth along the North African coast during World War Two, all the armies made extensive use of motor vehicles to transport men and materials. The Royal Air Force did too. The photographs reproduced here were taken by a member of the Photographic Section of HQ, No 285 Reconnaissance Wing when it was on the move westwards in late 1942 after the Second Battle of El Alamein. The personnel of a photographic section processed film exposed by cameras mounted in reconnaissance aircraft, and distributed the resulting photographs to both air force and army headquarters where they were used to plan further offensive operations. The presumption is, that the section (or perhaps just a detachment) was advancing behind the victorious 8th Army from Egypt into Libya to a succession of aerodromes recently wrested from the Axis air forces. For the rapid distribution of photographs to those who required them, it was obviously most useful to have them printed as close as possible to the relevant headquarters.

An RAF Photograp

Western D

Here we see a good quality road through the Egyptian desert running westwards towards the border with Libya; location is west of Charing Cross (a road junction south-west of Mersa Matruh). No straying from the road though – there is a minefield on the right-hand side

hic Section in the Desert 1942

According to the caption on the rear of this photograph, the section has stopped 'for leg stretching'. A different Fordson Sussex is now towing mobile darkroom I.4. Overall, the lorry is painted an indeterminate sand colour, and the windscreen has been partially obscured by either paint or mud in order to reduce reflections by the powerful desert sunshine. (It is not at all warm though – several men are wearing their greatcoats.)

Paint colour may be Middle Stone, mandated for the army in the Middle East in 1939. By 1940, vehicles arriving in theatre were painted Light Stone or Portland Stone. In August 1941, the RAF formally adopted the army's colour schemes for vehicles in the field. However, the section may well not have re-painted its vehicles in the later colours. Ownership of the lorry is indicated by the lettering RAF in black on the body's dropsides. This is unusual – lettering on the cab doors is the norm. The bridge plate is painted in black on the right-hand wing (as viewed from the driving seat) and the RAF roundel is on the left-hand wing. This latter was mandated from January 1942, and assisted in the traffic control of convoys.

Beyond the Sussex (and mostly hidden by it) is a three-ton Canadian Military Pattern lorry fitted with a No 12 cab and painted in a two-colour camouflage scheme. Behind that is an unidentified lorry with a generator on its loadbed – perhaps this is Sussex I.3. Beyond is a Bedford OY three-ton lorry. Beyond to the right is a cluster of lorries and an unidentified motorcycle. From the left, these lorries are: a 1.5 ton Chevrolet; another Bedford OY; a 1.5 ton Ford E018T

This print is marked 1 in pencil on the rear, though it is not at all certain that the photographs are numbered in chronological order. It may indeed be the case that this photograph was taken when the section was about to begin the advance that would take it into Libya. The tall sandbag wall on the right of the photograph, and the accumulation of junk, does indicate a semi-permanent camp next to a forward aerodrome in Egypt, rather than a temporary camp set up during the advance.
The lorry facing the camera is a Fordson Sussex three-ton 6x4. It has a civilian-pattern numberplate as required by British military vehicles in Egypt until the requirement was waived in 1941; this has WD and the registration number on the left, and the registration number in Arabic script on the right. The Fordson has been roughly painted with the identification I.3 and is coupled to a mobile darkroom type J identified as I.4. Loaded on the back of the lorry is a mobile generator.
Behind is a Fordson WOT1 3 ton 6x4, I.2, loaded with a mobile generator and towing mobile darkroom type J I.5

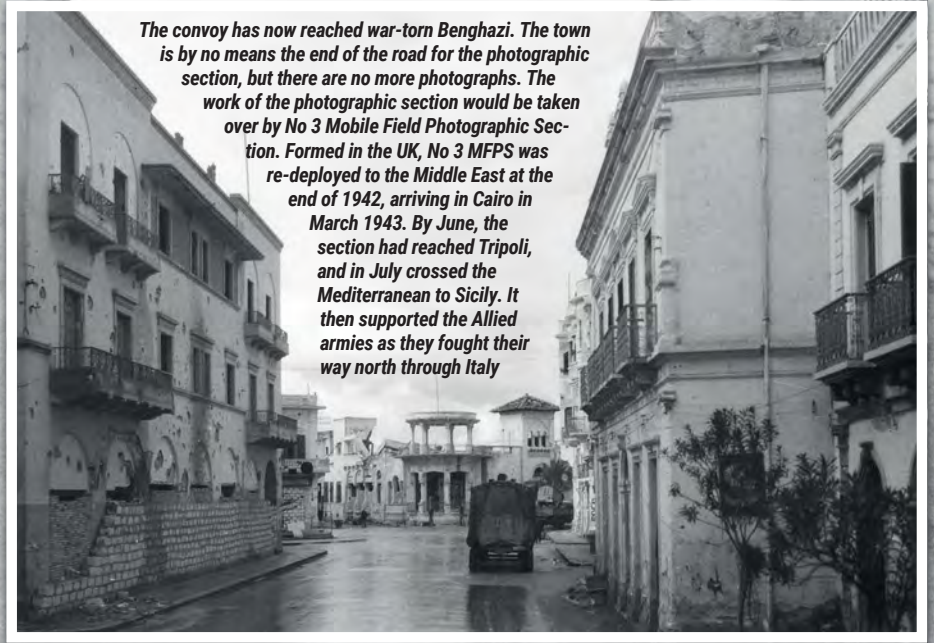
MAIN IMAGE: ***In the vastness of the open desert, the convoy comes to a halt for an overnight stop***

The convoy has stopped and is setting up camp for the night in Libya. The Bedford OY in the foreground has an unusual paint scheme. The cab roof and bonnet are painted a dark colour, upon which is painted a light-coloured longitudinal band. The reason for this is not known. The two vehicles in the background are both Chevrolets

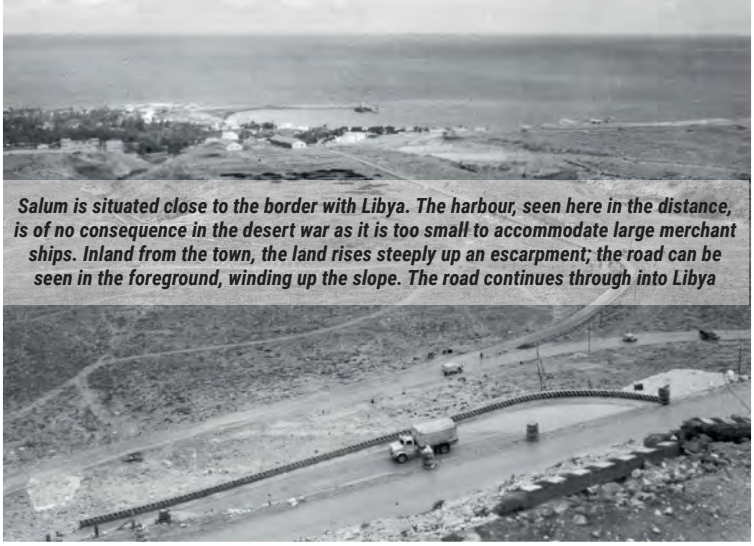
For the passage through the mountainous terrain of the Wadi El-Kouf, the 6x4 Fordsons have been unhooked from the mobile darkrooms and replaced by 4x2 lorries: a Dennis AM 30/40 cwt (as seen here) and a Chevrolet. A likely reason for this is that the 6x4s provided better traction in the sands of the desert, and that the 4x2s will provide better braking in the mountains. The Dennis was built specially for the Air Ministry, and has a two-speed transfer box and a vacuum brake pipe to the rear allowing it to work a trailer's brakes. The Chevrolet may not have the vacuum brake pipe, but unlike the Fordsons which have mechanical brakes, it has powerful servo-assisted hydraulic brakes

Before the war, the Italians occupying Libya had constructed a surfaced road running from the Tunisian border in the west to the Egyptian border in the east. In 1940, the Italians extended this road some 60 miles into Egypt. However, the photographic section has turned off this high-quality road and is driving on into Libya via an unsurfaced track

Fordson Sussex I.3 tows one of the mobile darkrooms over a wet, unsurfaced track – several of the convoy's vehicles bogged down on this track and had to be man-handled or towed free. Note that the generator on the back of the lorry is now facing the other way to that seen in earlier photographs. It has evidently been off the wagon and – presumably – been in use



The convoy has now reached war-torn Benghazi. The town is by no means the end of the road for the photographic section, but there are no more photographs. The work of the photographic section would be taken over by No 3 Mobile Field Photographic Section. Formed in the UK, No 3 MFPS was re-deployed to the Middle East at the end of 1942, arriving in Cairo in March 1943. By June, the section had reached Tripoli, and in July crossed the Mediterranean to Sicily. It then supported the Allied armies as they fought their way north through Italy



Salum is situated close to the border with Libya. The harbour, seen here in the distance, is of no consequence in the desert war as it is too small to accommodate large merchant ships. Inland from the town, the land rises steeply up an escarpment; the road can be seen in the foreground, winding up the slope. The road continues through into Libya

Despite the dust thrown up by Fordson WOT1 I.2, the photographer must have been in a good mood as he has captioned this photograph "On to victory!". The reason for loading a mobile generator on a lorry's loadbed instead of towing it behind another vehicle in the convoy is not known for certain, but a couple of possible reasons come to mind: a generator would have a smoother, less damaging ride on a lorry than it would behind a tow hook; when towed, the narrow track of the generator would render it prone to rolling over on rough terrain

The first part of the advance through Egypt along the coast was on a surfaced road, but here we see that the road has now deteriorated into an unsurfaced, dusty track

Fordson WOT1 I.2 has coped well enough on the flat, but has broken down on this incline. The nature of the breakdown is not known but it evidently was not terminal as the lorry appears in subsequent photographs. Looking at the road as it stretches away into the infinite distance, it is interesting to see that there is no other traffic upon it apart from the RAF convoy

MAIN IMAGE: During one overnight stop, this camel train passed through the camp. Note the tents in the right centreground

Acknowledgements

Many thanks to Ted Angus and other members of the Historic Military Vehicle Forum for their assistance in identifying various vehicles and commenting upon operating procedures

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The original caption reads, 'Over the top. Down a 160-foot incline on the sand dunes at Cape Henry, a Jeep car from Fort Story makes the descent with ease during manoeuvres training drivers to handle these vehicles over all types of terrain. Should American soldiers see service in desert land, the training these men receive will be of great value.'

The place now known as Cape Henry in Virginia, USA was named by the English sailors who made landfall there in Chesapeake Bay in 1607 and planted a wooden cross. Very soon afterwards they established the first permanent English colony in North America at Jamestown. From here, less than two centuries later, citizens of the colony watched the British naval fleet lose a sea battle with the French fleet of Admiral Comte deGrasse. The French victory sealed the fate of General Cornwallis at Yorktown leading to his surrender and thereafter the end of the American Revolutionary War.

Fort Story at Cape Henry became a military installation in 1914 when the Virginia General Assembly gave land to the US Government in order 'to erect fortifications and for other military purposes.' The War Department called the place Fort Story after General John Patton Story. During World War One, Fort Story was integrated into the Coast Defences of Chesapeake Bay then, in 1925 it was designated a Harbour Defence Command. As World War Two approached, Fort Story was extensively developed and by September 1944, it became more important as a convalescent hospital for casualties returning from overseas service. By the time the hospital closed on March 15, 1946, it had accommodated more than 13,472 patients.

'The dune systems of the Commonwealth of Virginia are considered 'a unique and valuable natural resource'

Also to be found at Cape Henry are naturally-occurring sand dunes formed by the accumulation of sand as a result of the interaction of wind and waves along shorelines. Sand deposited on the beach during periods of relatively low wave energy is moved landward by the action of onshore winds. As in many places, the dune systems of the Commonwealth of Virginia are considered 'a unique and valuable natural resource' so the primary dunes and beaches of existing shore systems are now protected by legislation. It wasn't always this way as this photograph from April 22, 1942 shows as these GIs descend one of the dunes in a slat grille Willys MB.

Additional Information

Joint Expeditionary Base Little Creek

At the end of World War Two, Fort Story's use changed again; amphibious training began in 1946 with the arrival of the 458th Amphibious Truck Company and its DUKWs. Fort Story was officially transferred to the Transportation Training Command, Fort Eustis. It was designated a transportation corps installation for use in training amphibious and terminal units in the conduct of 'Logistics-Over-The-Shore' operations and declared a permanent installation on December 5, 1961. In 2009, the Joint Expeditionary Base Little Creek-Fort Story was established, the first joint base in Hampton Roads.

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The M51

The supreme Sherman

The M51 Super Sherman was originally delivered as a M4A1(76)W HVSS E8 featuring the casted hull, a 76mm gun and the HVSS (Horizontal Volute Suspension System) combined with wider tracks. The history of the M51 is difficult to trace, but most of them have been delivered by France to Israel. France has always been an important ally in the formation of the State of Israel. This began almost immediately with the founding of the State of Israel and initially ran until the Suez crisis (also called Second Arab-Israeli War) in 1956. This war was mainly a conflict about the possession of and access to the Suez Canal, which was for Israel unavailable at that time. It led to a war in the Sinai between Egypt on the one hand and Israel, the United Kingdom and France on the other hand.

Initially, the M4A1 (76) of the Israeli was called the 'Super Sherman M1', in contrast to the 75mm Sherman variants called M3. In 1961, however, Israel decided to implement a major renovation to cope with the ever-growing weapon arsenal of the surrounding Arab countries. They decided to cooperate again with the French to develop an even more heavily armed version of the Sherman. A very powerful 105 mm gun was ordered in France, which was derived from the AMX (shortened version). To accommodate this gun a substantial rebuild of the tank was required; the inside and outside of the tower had to be changed drastically, a new turret traverse system was added and the engine was replaced by the far more reliable and easy to operate Cummins V8 of 450 hp. As the Sherman tank has a relatively limited engine space, this resulted in a large number of adjustments.
In total only 180 tanks were converted to M50 and M51, which makes them extremely rare and highly collectable. The official presentation of the 'M51 HV Sherman' was during Independence Day in 1965.

During the six-day war of 1967, both the M50 and the M51 proved to be exceptionally effective at the Golan Heights and the West Bank as well as in the Sinai. During the Jom Kippoer War in October 1973 (Egypt and Syria unexpectedly attacked Israel at the Jewish 'Great Day of Atonement', Jom Kippoer in Hebrew), they faced far more powerful opponents which resulted in considerably more losses. Despite that the M51 tank crews eliminated significant numbers of T-54/55 and T-62, partly due to the use of the so-called HEAT grenades.

BAIV is being asked to refurbish this unique masterpiece of Military History before its shipment to the USA later on this year. Do you need help or support in finding and/or restoring an historical armored vehicle, please let us know. BAIV can realize your dream.

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