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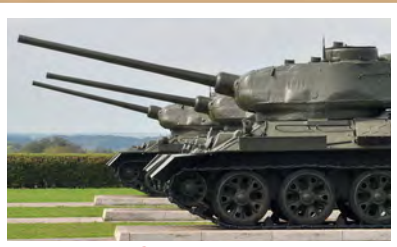
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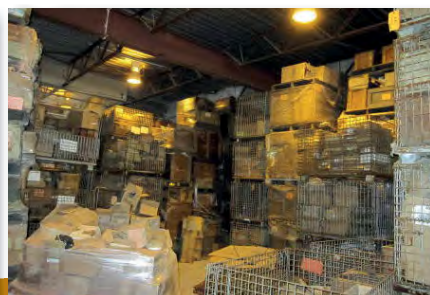
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Spring in our steps

There's always a sense of relief when an issue of CMV goes to press and generally, writing this page means that another issue is almost done. This month however, there's another reason to be glad for finishing the magazine; spring is coming on and this coming weekend sees one of the first weekends to get out in preserved military vehicles, the annual Coquet Safari, an off-road event in Northumberland for military vehicles.

After a winter in the office, the prospect of driving through the Cheviot Hills on little used tracks and back roads, regardless of the weather, is something I'm looking forward to. It's also the beginning of the first season of shows since the magazine's comprehensive redesign so, from this magazine's point of view, it will provide a chance to speak to vehicle owners and organise photo features on vehicle restorations.

This is, of course, something that we'll be doing at numerous other



A Jeep off-road in the Cheviot Hills during the 2016 Coquet Safari in Northumberland

shows and events - big and small - throughout the year so if you have a vehicle that you'd like to see here in CMV, please get in touch.

In the meantime, enjoy this issue and enjoy driving those green machines but spare a thought for those who

were caught up in the Falklands War, that started 35 years ago.

John Carroll

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John Carroll

Editor John is longstanding 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 new CMV team and the production of the magazine. She's also the owner of a classic 1960s Land Rover



Michelle Toner

Ad Sales Executive Michelle is the person to contact with regard to advertising in CMV. She's happy to discuss companies' specific advertising needs



Steve Donovan

Chief Designer Steve has worked with Designer Dave Robinson in redesigning the magazine to produce CMV's fresh, new look for 2017



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Archive photography of military vehicles. This month 1961



World War One: a French medical unit with their Fiat lorry. Read more on page 44

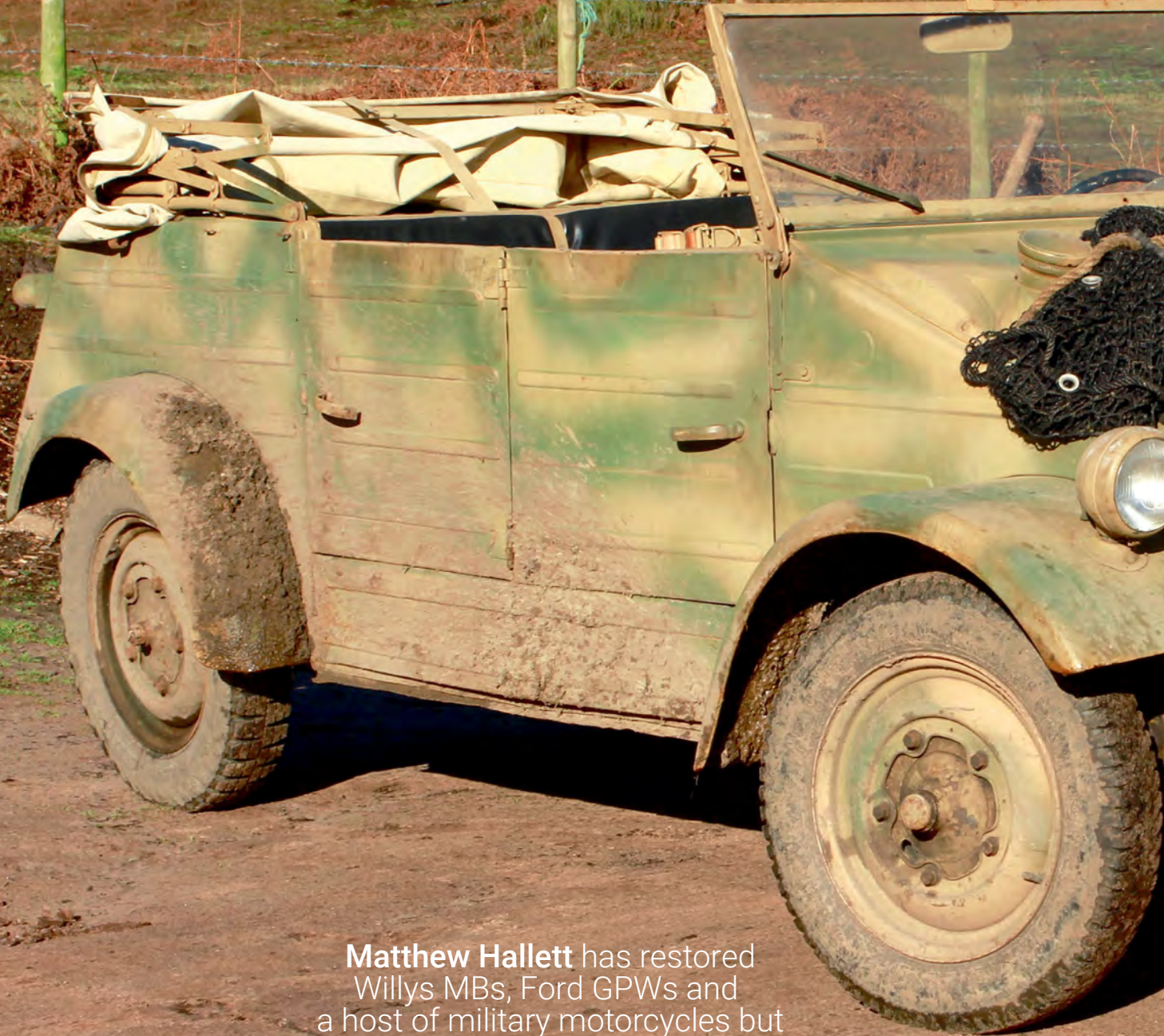
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55 Competition

A chance to win a copy of 'The Tank Book' – we have ten copies to give away





Matthew Hallett has restored Willys MBs, Ford GPWs and a host of military motorcycles but always hankered after a T82 Kübelwagen



A replacement petrol tank had been fitted post war in Czechoslovakia and achieved by cutting the original narrower neck and welding on a later, wider one in situ

Through the later style steering wheel spokes can be seen the gearbox layout with 'Nieder drücken' instructing 'press down' for reverse gear. The wiper motor is a modern Japanese item



Matthew's replica dash has a Kübelwagen-style clock face distressed to look appropriately aged while genuine Bakelite controls are from a 1950s Beetle and are slightly smaller than those found on the Kübelwagen



Bucket List



The distinctive lightweight ridged body of Matthew Hallett's Kübelwagen or 'bucket car' dates from 1941 and sits on a 1944 chassis, both spending time in Czechoslovakia

Matthew has fitted a post-war Volkswagen Typ 122 1,192cc air-cooled petrol engine though the fan housing dates from the war years



In the late 1970s, unable to afford a Jeep, Matthew Hallett stencilled a white star on the bonnet of an olive painted - and at £100, a much more affordable - Land Rover Series One 80in. Setting aside his treasured Dinky toys, which included a Kübelwagen, Matthew began building and collecting real military motorcycles. He had been gathering a miscellany of militaria from around the age of nine and through his late teens had been glued to every episode of M*A*S*H, paying particular attention to the various models of Jeep the cast drove.

Busy with the spanners on his British motorcycles, North Wales-based Matthew paid a visit to the Malpas Vintage Rally in the late seventies on a BSA and saw what owners could do with old Jeeps. Proudly driving his smart Land Rover with its Allied Forces white star, Matthew grew desperate to get his hands on a proper World War Two Jeep.

An opportunity finally came with a redundancy payout early in Matthew's working life and in 1980, much to the disgust of a mother anxious to see her son on a steady career path, the £500 went towards a dismantled Ford GPW, which, after much fettling hit the road in 1982. As with his motorcycles, Matthew's project benefitted from the assistance of an enthusiastic father who would do whatever he could to encourage the lad.

Later, Matthew would develop a taste for exclusivity when a rare, early Canadian contract Willys MB came along, the glove box nomenclature plate differing from the US version and still with a working Dyneto electric wiper. These were the sort of interesting details that set the vehicle apart on the show field.

He talks now of the excitement in hunting down a rare and original vehicle and seeing the occasional Kübelwagen at shows, there was the nagging hope that one day he might secure a genuine one for himself. They were always twice the price of a Jeep so much work would have to be undertaken to find and fund the best deal.

Fast forward to 2011 and Matthew's eldest son, Fletcher needed a car to learn to drive in. Amazingly, only a classic Volkswagen Beetle attracted vaguely affordable insurance premiums. The search now switched to finding his son a cheap Beetle and while a local VW enthusiast couldn't help with the runabout, he did know where a rather tired 1951 split rear window Beetle was languishing.

This was the catalyst Matthew needed and he



SPECIFICATIONS

Make Volkswagenwerk GmbH/Ambi-Budd
 Model VW T82 Kübelwagen
 Nationality Germany
 Year 1944 with 1941 body
 Used by Wehrmacht, Waffen-SS and later the Allies used captured vehicles
 Production Run 1940-1945
 50,435 units across all body types and variants
 Engine Volkswagen
 Type Air-cooled flat-four
 Fuel Petrol
 Displacement Initially 985 cc from 1943 1131cc. This vehicle 1192cc
 Power 23.5bhp then 25bhp. This vehicle 28bhp
 Transmission Volkswagen
 Type Manual
 Gears Four-speed
 Transfer Box Self-locking differential
 Suspension Independent to each wheel; torsion bar to rear front via torque rods and frame heads
 Brakes Drums front and rear
 Wheels Steel disc
 Tyres 5.25 /16
 Crew/seats Four

Dimensions (overall)

Length 347cm (147in)
 Width 160 cm (63in)
 Wheelbase 240 cm (94in)
 Weight 715kg (750kg operating weight)

ABOVE: *rolled edges and supports underneath strengthen the mudguards which in turn house the headlamps. The unusual Notek blackout headlight sits to the right of the spare wheel*
 BELOW: *Driving layout is convenient, based on the Beetle. The steering wheel is of a later pattern with finer spokes and a horn button in the centre. Rectangular fuse boxes sit on either side of the early pattern instrument panel*
 OPPOSITE TOP: *A Czech replica rear protection pan is the only recent addition to an otherwise original body and is of a later design than the narrow one which would have been fitted up to 1942. The oval rear light on the right is incorrect, awaiting a correct one*
 OPPOSITE BOTTOM: *Matthew has found the post-war engine he has fitted and soft suspension give a ride similar to a more modern Beetle and the weather protection vastly more effective than his Jeeps*

thought he might settle for a German Army Beetle instead of a Kübelwagen. Meanwhile, he eventually found a cheaper, more recent model for the learner driver, snapping up the 1951 Beetle for himself.

Later Matthew was visiting Beltring, a regular diary entry in the round of shows he attends, when he discovered four original Kübelwagen doors and two of the ridged side panels. The Beetle would be moved aside and the Kübelwagen project was back on. A front axle, a couple of wheels and a gearbox followed but there would still be a long haul before Matthew could turn the key and drive a Kübelwagen around the leafy lanes of North Wales.

While a hood frame and rear body panels joined the pile, all the assorted parts requiring

refurbishment, Matthew still had a major stumbling block. For his Kübelwagen to feel genuine, it needed an original chassis. Good replica Kübelwagen can be built on later Beetle chassis using bodies recreated in Czech Republic.

These need the necessary modifications to lift the chassis to give the higher ground clearance seen with both the T82 Kübelwagen and the T82E military Beetle which was built in small numbers on the Kübelwagen chassis.

A piece of good fortune came when a Dutch friend, Erik brought the welcome news that an Australian acquaintance based in Czech Republic knew of two Kübelwagen chassis for sale, one restored and another unrestored. The long business of acquiring the unrestored one-

from Czech Republic began. By 2013, Matthew was gathering the finances to make sure he would eventually have everything necessary to reach his goal of a genuine, working Kübelwagen.

Having sold an Airborne Jeep for £10,000 in September 2014, Matthew was on his way to Arnhem with his beloved Canadian Jeep on a trailer, all set to commemorate the famous World War Two battle and with a view to filling his trailer with another ready for restoration and resale. He would drive the Jeep home to North Wales, a mate towing the trailer.

The Czech deal was still ongoing and Matthew was preparing to view what turned out to be an overpriced Jeep when news came of a genuine, unrestored and complete Kübelwagen for sale in a museum in Arnhem. The alignment of circumstances could not have been more fortunate. Matthew had £10,000 in his pocket and a vacant trailer.

There was, however, one rather important hiccup. The Arnhem Kübelwagen was not on the correct chassis. Instead of a 1941 Kübelwagen body it was sitting on one donated by a KdF Beetle, a rare enough beast itself. Matthew discussed his options with Joe, a friend from Prestatyn, the





The Arnhem museum Kübelwagen once off the trailer; previous attempts had been made to commence restoration



Subsequent Czech welding to the 1941 body had distorted the rear crossmember and the engine cover did not line up. An Acrow prop acts as a temporary brace while Matthew works to replace the crossmember



'Matthew has added a few modifications to keep the vehicle going on current roads'



The 1944 chassis fits neatly into another Volkswagen, collected from Duxford in Matthew's T25 Syncro van



Work progresses at Matthew's workshop and a coat of 'Dunkel Gelb' is applied to the red oxide finish with which the body arrived



guard of the later model. However, as Kübelwagen were often salvaged down to the last nut and bolt following damage during the war, it would not be unusual to find a mixture of parts from different variants on every vehicle. Matthew has added a few modifications to keep the vehicle going on current roads. The ZF limited slip differential was showing its age and before he drove the Kübelwagen to France in 2016, Matthew replaced the gearbox with a smoother one from the 1951 Beetle. Because of this and the adjustment Matthew has given



ABOVE: The white tactical recognition sign Matthew has painted denotes the 9th SS Panzer Division, a German Waffen-SS Armoured division who were actively involved at Arnhem in 1944. This postage stamp is part of a set glorifying Nazi Germany's armed forces (FROM A COLLECTION COURTESY THE AUTHOR)

TOP LEFT: Red and amber rear lights become convoy lights when the hinged cover is flipped down to reveal a row of four dim green lights. Cleverly, if following vehicle can see four it is too close, one is too far away and two mean just the right distance apart.

LEFT: A small number of military T82E vehicles with a Beetle body were assembled on Kübelwagen chassis and re-used by the Allies, as were Kübelwagen; here a line of them provides a backdrop for a relaxed snapshot in Belgium in 1946 (PHOTO ESTATE OF GEORGE ROBERTSON)



The Kübelwagen has many clever design features like the front and rear doors which share the same hinges, hung from tubular door posts which in turn connect to a transverse tubular rail for strength, all designed for space and weight saving
BELOW: Proud owner Matthew has achieved what at one time he considered a vain hope; a working, authentic Kübelwagen

latter urging Matthew to go ahead with both deals. Such opportunities are rare indeed and he even lent Matthew a spot of cash to ease the deal along. Hence, after much work, Matthew was able to unite a genuine 1941 body with an equally authentic 1944 chassis. Picking the Czech-sourced chassis up from near Duxford late in 2014, Matthew found it refreshingly solid and in much better condition than had been described. Matthew was able to obtain a certificate from Volkswagen showing that it had been delivered from its Wolfsburg factory on August 12, 1944 to a location in Czechoslovakia. As with all surviving German military vehicles, the Kübelwagen had then been used as a civilian runabout after the war. Initially, work to refurbish the 1941 body with its early dashboard featuring the large-size speedometer progressed at snail's pace over a year until a request came from a film company to hire the vehicle as a prop. The prospect of celluloid

fame prompted a swift acceleration in the pace of Matthew's work on the Kübelwagen and it was finished in early March 2016. Unfortunately, this was too late for the production company's deadline but at least the Kübelwagen was complete and ready for a journey to France that summer. To the scrutinising eyes of the purist there are inconsistencies such as the short back mud-

the torsion bar to accommodate two heavy rear seat passengers, the vehicle sits slightly lower at the rear than usual. On a fine day with the hood and windscreen down, this fighting companion to the original VW Beetle gives an exciting ride on or off road and despite only having two-wheel drive can certainly give his Canadian Jeep a run for its money. ◀



Thanks
 Matthew would like to thank his friends Eugene Reynolds for sourcing many parts and Ronnie Papaleo for advice, instructional drawings and the loan of his brakes until his own Kübelwagen is finished.

More reading
 Volkswagen Military Vehicles of the Third Reich
 Blaine Taylor Da Capo Press Inc 2004
 Kübelwagen and Schwimmwagen: A Visual History of the German Army's Multi-Purpose Vehicles
 David Doyle Ampersand Publishing Group 2016

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The 1942 Austin Tilly is a genuine and original WW2 Malta Veteran. Comes with all correct details such as foldable rear seats, oil filled air filter, key-less ignition switch, closed wheels, pressed steel grille, foot pump, jack & spanners, canvas etc. Body is restored by a professional top class coach builder.



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Garage Find Bedford Update



Our article, Garage Finds, in April's issue featured a Bedford MW, bought by Tobin Jones. It was sold on after making an appearance at last year's War and Peace and bought by John Ruffhead. He was kind enough to give us an update. It's his first military vehicle so apparently he is on a massive learning curve and loving every minute of it. The vehicle is stored at his home in Kent where he has been working on it since September and most of the major jobs are done for the time being; it is running now and road legal but he claims there is still lots to do. He writes: "It's given me some real dilemmas.

I used to chop and customise motorcycles and old habits die hard. I've really struggled to resist the urge to make bits instead of sourcing originals but apart from a couple of minor transgressions I've been a good boy so far! The truck has a real patina and is in a strikingly original condition in many areas. I spend a lot of time pondering whether to refurbish or restore or simply conserve parts in their existing state. There seems to be a trend towards restoring to factory condition, which is fine up to a point, but can mean the loss of the vehicle's battle scars. I love the 'used look' and vehicles can look strange with new parts

fitted in amongst old ones. I try to remember that if I replace a plank that's been battered by history, the history is lost." He intends doing some re-enacting along with his grown-up sons. His wife may be persuaded to get involved too; she's thrilled he isn't riding bikes any more. When they re-enact or attend shows their theme will be Royal Navy Beach Commando and Combined Operations. This fits well with being by the coast and means John can involve one of his fellow lifeboatmen, who has the full GI outfit. They won't be doing anything too spectacular this year as they're still collecting kit.

War and Peace Revival

Evening entertainment tickets are now on sale. Tickets can be bought individually, or you

can buy a table of ten. There are only 400 tickets available for each evening; 250 individual tickets and 25 tables of ten.

Jive Aces Friday Night £15
Telstar Big-Band Saturday Night
Dinner Dance £25
For all tickets head to
www.tickets.warandpeace.com
[revival.com](http://www.revival.com)

Tiger Tank Models

To mark their 20th anniversary Diverse Images are launching a range of pewter tanks. The first tank, a 1:48 scale handcrafted Tiger I, is made from 36 individual parts weighing 1152 grams. Small items such as the brackets for spare tracks are cast separately but items such as the steel tow cables, cast as part of the main body, are still well defined, which distinguishes these from die-cast versions. All the new tank range comes on a diorama base; this one replicates the famous series of photographs taken of Wittman and his crew after the Kursk tank battles. www.pewteraircraft.com



Clarke Tool Boxes



Always wanted to organise the workshop? Clarke supply professional quality, heavy-duty tool chest and cabinets. They have, as standard, a double wall steel construction, wheels with foot brakes, rubber grip side handles and large side handles for manoeuvrability, drawers with protective anti-slip

drawer liners and ball-bearing runners for smooth running, a 'push-lock' drawer design preventing drawers accidentally opening when tilted and all drawers lock simultaneously when the top lid is closed. They are available in a range of colours and sizes. www.machinemart.co.uk

Tankfest Guest Armour



Every year at Tankfest, The Tank Museum displays some of the finest armour from its collection, alongside guest armour which visitors don't usually have an opportunity to see. This year, two rare World War Two German tanks, a unique French World War One tank and a running Churchill tank will be highlights. The Saint-Chamond, from the Musee des Blindes at Samur, is the last one of its kind in existence. It has recently been restored to running order, in preparation for the centenary of the first use of French armour on the battlefield in 1917.

The Churchill Trust, a charity which encourages the study of science and technology, will be bringing one of its Churchill tanks to Tankfest; the Mk IV and Mk III are the only running ones of their kind in the world. There are only three running Jagdpanthers in the world but this year sees an opportunity to find them



at Tankfest as an arena substitute for Tiger 131, which will not be appearing in the arena displays at this year (Tiger 131 forms part of Tiger Collection exhibition opening this month).

A newly restored Sturmgeschutz is making its debut this year; there are only a handful still running in the world.



At Last: A D-Day Memorial

The United States and Canada both have D-Day memorials but finally, plans are afoot for a British memorial for those who died in the Normandy campaign. It will be unveiled in the French region on the 75th anniversary of D-Day in 2019, be funded in part by a £20m government grant, the contribution coming from Libor fines levied on banks. To top up state funding, the Normandy Memorial Trust, supported by the Royal British Legion, will now launch an appeal. George Batts, former national secretary of the Normandy Veterans' Association, was 18 when he took part in the assault. He said having a British memorial had been the dream of Normandy veterans for many

years. On each of the three British beaches around 1200 were killed but the memorial will also pay tribute to several thousand sailors and airmen who were lost at sea, and those who died from their wounds after being brought back to the UK.

It is hoped that the remaining UK veterans (only 0.3 per cent of the men who took part are estimated to still be alive) and the families of those who fought, will attend the unveiling ceremony planned for June 6, 2019. Prime Minister Theresa May said the memorial would be a 'fitting tribute, which would provide a timely reminder that we should never take our freedom for granted'.

News Briefs

Talking Turkey

The prototype of the Altay, a home grown new-generation tank for Turkey, has successfully passed all acceptance tests. Its builder, Otokar, said the prototype has now completed the tough qualification testing stage, including mobility and endurance testing on rough terrain and climatic conditions, firing tests with various scenarios and survivability testing and they are now confident Altay will soon be one of the best modern main battle tanks in the field.

The Turkish government's procurement agency, the Undersecretariat for Defense Industries will now decide whether it will award the serial production contract, worth billions of dollars, to Otokar or launch a competition.

India Meets Russia over T90

Russia is a major supplier of defence equipment to the India armed forces, with at least 60 per cent of their arms inventory coming from Russia.

Talks for a T-90 upgrade programme began earlier this year but gained pace at a two-day India-Russia industry conference hosted by the Indian Ministry of Defence in New Delhi on March 17 and 18. More than 100 Russian and 150 Indian industry representatives joined the conference, including officials from Uralvagonzavod OAO, the original equipment manufacturer of T-90 tanks. The Indian Army operates the largest fleet of these tanks in the world and under the deal, Russian firms could transfer the tank technology to Indian partners in a bid to shake off the armed forces' over-dependence on Russian supplies. The planned upgrade aims to ensure India's 1,000 strong fleet of battle tanks will fire more accurately, move faster and provide better comfort to the crew.

Arms Deal

State news agency Itar-Tass is reporting that Russian authorities have imposed a three-year suspended sentence on a Muscovite who was trying to smuggle a World War Two tank into neighbouring Kazakhstan. The man apparently obtained a Soviet T-34-85 circa 1945, from a Latvian citizen at for €20,000, but planned to sell it to a buyer in Kazakhstan for more than 10 times that amount.

News Briefs

Abrams Superseded?

The US Army admits the Abrams, which reigned supreme on battlefields for decades, no longer has 'overmatch' against potential adversaries, particularly Russia and that a number of foreign tanks are equal or nearly equal to the M1 Abrams main battle tank. In testimony to the Senate Armed Services Committee, Lt Gen John M Murray, deputy chief of staff for financial management, listed a number of tanks he thought were as good as the M1 Abrams. The list included the Israeli Merkava IV, British Challenger 2, and Russia's T-90A and T-14 Armata main battle tanks. Of course this could be politics at play as President Donald Trump has made it clear that he wants to invest in military might.

Indigenous Iranian Tanks

Iran's Fars news agency is announcing that the country has unveiled a domestically manufactured tank and has launched a mass-production line. Defence Minister Hossein Dehghan is reported to have said 'the tank has the capability to fire missiles and precisely guide them'. Fars says the tank named Karrar is equipped with an electro-optical fire control system and laser range-finder and is capable of firing at both stable and mobile targets day or night. Dehghan also says the tank can compete with the most advanced tanks in the world in the three main areas of power, precision and mobility.

Melting Mortars

Laser weapon researchers at the UK's Defence Science and Technology Laboratory say that their developmental system is already able to destroy a mortar bomb, with a full demonstrator anticipated within two years. In a video posted by DSTL on the UK government's web site, the laser weapon is shown quickly melting a hole in the thick metal casing of a static 8mm mortar bomb. These early test demonstrations come after the UK's Ministry of Defence confirmed late last year that it had awarded the 'Dragonfire' development programme to a consortium led by the missile systems company MBDA Systems. These weapons could be used to bring down hostile drones, detonate fuel tanks, or cut through the hulls of aircraft, ships, and armoured vehicles, and if their development continues successfully, be operational

Driven to Extremes



Following the success of their Siberia Challenge, on which three injured ex-soldiers joined members of the expedition company Max Adventure on a life-changing 12,000 mile overland vehicle expedition to far eastern Russia, the company has just launched their next programme Driven to Extremes to help more veterans suffering from PTSD.

The first expedition is to Europe's highest village, Ushguli in Georgia. This 6,000 mile trip sees veterans tackle the Caucasus Mountains in September, before returning via Stalingrad and Moscow. The Driven to Extremes initiative was announced winner of the BFGoodrich Tyres' Good Project award 2016. Fundraising for these life-changing adventures includes a 4x4 Rally in which participants will drive their own vehicles to the most extreme northerly point of the UK: Skaw in the Shetland Islands. Two of the veterans from the Siberia Challenge will be acting as support crew.

This 10-day driving adventure through the Scottish Highlands, Orkney and Shetland Isles will be a mixture of stunning landscapes, incredible roads, military

history, ancient archaeology and warm hospitality. John Coghlan Status Quo drummer and owner of a Simca Marmon Bouquet is their ambassador and says: "I am very happy to support and encourage this adventure and am overwhelmed with admiration for the bravery of the participants, in their lives with the forces and the new challenges they must face so bravely. As an avid enthusiast of military vehicles and 4x4s, I know that a challenge like this, with like minded pals, is a life-affirming adventure".

The event will be from Thursday 18–Saturday May 27, with the adventure beginning at Glencoe. To take part it's £995 per vehicle including two drivers, insurance, branded clothing and all ferries to and from the Shetland Islands.

Extra drivers and passengers incur extra costs. This trip is to raise funds for PTSD suffering veterans, so you've also to raise a minimum sponsorship of £750. For further information call Mac Mackenney, MD of Max Adventure on 01404 830 096 or 07764 600 601, email mac@maxadventure.co.uk <http://www.maxadventure.co.uk>

Reactive Armour

Tank and maintenance crews from the 1st Battalion, 66th Armor Regiment billeted at Grafenwoehr Training Area, Germany, are giving their M1A2 Abrams main battle tanks a buffed-up look that improves the tanks' overall defensive capabilities. The Abrams Reactive Armor Tiles are placed on both sides of the hull and turret to prevent penetration by various weapon systems, such as rocket-propelled grenades. The ARAT system adds protection while not inhibiting tank speeds.

Beefing up US armor serves as a deterrent to acts of aggression against NATO nations as the combat team rolls out stronger tanks to conduct training with allies throughout Central and Eastern Europe "Depending on what terrain you're in, whether rural or urban, the purpose of angled tiles is for a blast to go down or upwards, allowing the impact to deflect outward rather than at the tank crew," said Army 1st Sgt. Ryan Dilling, senior noncommissioned officer of Bravo Company, the first unit to install the tiles. The design enables the tiles to be repositioned depending on the situation. Dilling explained that if you have dismounts on the ground

and they're working in close proximity to the tank, you'd want to angle the tiles down so if there was a blast, it would go out and down to minimise the effect against soldiers nearby. But if you were in an urban environment and you had adversaries shooting from second or third storeys or rooftops and the tiles were activated, the blast would push out and upwards towards the threat.





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Spartan CVRT Dieselised APC, Fitted Cummins BTA 5.9ltr Turbo diesel engine, Engine power 195 hp, David Brown TN15d Epicyclic Semi-Automatic Gearbox with Neutral turn capability, Max road speed 72 km/h, Range 750 km, Manoeuvrability, Gradient 60%, Side slope 35%, Vertical step 0.5 m, Trench 2m, Fording 1m etc, Ex condition, **Guide price from £19,995 (3 Available)**



Alvis Stormer Tracked Armoured Recon Vehicle, Fitted Perkins 6-litre, 6-cylinder, Crew: Driver, Commander plus 2 pax, year 1992, low mileage, Excellent condition, **Guide price from £12,500 (6 Available)**



Alvis CVRT Shielder, Tracked Armoured load carrier with flat bed platform, flatbed can be adopted for a wide range of roles such as logistic carrier, bridge layer repair/recovery & towing. Built to a high spec the vehicle hull is composed of aluminium armour to protect the crew etc, Mileage from 500, Ex condition, **Guide price from £15,000 (4 Available)**



Land Rover Defender 110 Tithonus Hard Top RHD, Fitted 2500cc NAD engine LT77 5speed gear box, Transfer box with Hi Lo ratio & centre diff lock, 12 Volt electrics, Wolf style wheels, Disc brakes, Soft type steering wheel, mileage from 60,000 km, **Guide price from £6,250 (10 Available)**



Wolf 130 Battlefield Ambulance RHD, Fitted 300Tdi engine, 5 speed R380 gearbox, Hi/Low transfer box with centre diff lock, PAS, front and rear disc brakes, heavy duty chassis and axles, Goodyear G90 tyres, spare wheel, low mileage, Year from 1997, runs and drives well, Very good condition, **Guide price from £15,000 (5 Available)**



The DAF 4x4 Truck, Cargo capacity of 5000kg, Fitted Cummins 5.9 ltr Turbo Diesel, permanent 4x4, Hi Lo Ratio with Diff Lock, PAS, Air brakes, Nata style rear hitch, Engine power 145hp, Maximum road speed 89 km/h, Range 500 km, Year from 1994., **Guide price from £4,500 (40 Available)**



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May

5 Chelmsford Militaria Fair

Marconi Social Club, Beehive Lane, Chelmsford
www.chelmsfordmilitaria.com

6 Military Motorcycle Ride

Sponsored military and vintage motorcycle ride
Theale to Hungerford, Berkshire for the ABF/
Soldiers Society.
Peter 07748 310996
www.soldierscharity.org/events/ve-week-
end-vintage-motorbike-rally

5-7 Classic Land Rover Show

Austin Champ and Gipsy owners invited.
British Motor Museum, Gaydon, Warwickshire
www.britishmotormuseum.co.uk/events/the-
classic-land-rover-show

6-7 Historic Military Weekend.

Historic military vehicles and living history
displays.
Open 11am-4pm. Free entry.
Caldicot Castle, NP26 4HU
Info: sewalesmvt@yahoo.com

14 Chatham Fair

Historic Dockyard, Chatham, Kent. ME4 4TZ
www.chatham-militaria-fairs.co.uk

18-27 Driven to Extremes, Shetland

A Max Adventures fund raising event, part of
the 'Feel Low, Drive High' project aiming to help
sufferers of PTSD. Ten days of driving through
the highlands. You need a 4x4 and a sense of
adventure. For more info
www.maxadventure.co.uk

19-21 Haworth's Annual Nostalgic Weekend

Commemorating special forces and the 75th
anniversary of the Cockleshell Heroes
Events all across the village including vintage
vehicle displays
www.haworth1940sweekend.co.uk

20-21 1940s Weekend

The Village Church Farm, Skegness, hosted by



the Royal British Legion.
Camping on site.
www.churchfarmvillage.org.uk

Camping available. Wicksteed Park, Barton
Road, Kettering, NN15 6NJ
www.wicksteedatwar.co.uk

20-21 1940s D-Day Living History Weekend and Vintage Show

Bickleigh Castle, Devon
Open 11am-5pm, £10 per adult, £5 per child.
Saturday evening Supper and Dance.
www.bickleighcastle.com 01884 855363

11 Chatham Fair

Historic Dockyard, Chatham, Kent. ME4 4TZ
www.chatham-militaria-fairs.co.uk

11 East Yorkshire Thoroughbred Car Club Annual East Coast Run

East Park Hull, HU8 8JU to Sewerby Fields,
Bridlington, YO15 1ER
Start (9am for display) 11am to leave for the
run. Open to all classic and historic vehicles. £5
advance entry or £7 on the day.
www.eytcc.org.uk

21 Chelmsford Militaria Fair

Marconi Social Club,
Beehive Lane, Chelmsford
www.chelmsfordmilitaria.com

17-18 Wartime in the Vale

10th Anniversary Big Bang Show. World War
Two military vehicle and re-enactment.
Ashdown camp, Evesham, just off the M5
www.ashdowncamp.com

23 Kent's Kit, Custom and American Car Show

Aylesford Priory
www.kentskitcustomandamericancarshow.co.uk

24-25 Tankfest

Tank Museum
Bovington, Dorset
www.tankmuseum.org

27-29 Chipping Steam Fair

Green Lane Showground,
Chipping, Lancashire, PR32TQ
Military vehicle class
01995 61866
www.chippingsteamfair.co.uk

24-25 Flywheel 2017

Bicester Heritage, Oxon
Third annual event celebrating classic winged
and wheeled vehicles
www.flywheelfestival.com

27-29 Overlord Military Spectacular

Hundreds of military vehicles and re-enactors
from World War One to the modern day.
The Lawns, Denmead, Hampshire, PO7 6HS
9am-5.30pm unless camping,
www.overlordshow.co.uk

25 Kempton Park Military and Air Gun Fair

Kempton Park Racecourse, Staines Rd. East,
Sunbury On Thames, TW16 5AQ
For further information email:
binnners57@gmail.com

June

3-5 Auf Radern und Ketten

(On Wheels and Tracks) Austria's largest
meeting for historic military vehicles from
bicycles to main battle tanks at the
Austrian Military Museum, Vienna
www.hgm.at or email t.ilinging@hgm.at

10-11 Wicksteed at War

Free entry but parking charges apply.
Organised by the Military Vehicle Trust,
features Armouredgon Tank Paintball,
fly-pasts and tanks, trucks and firepower show.

July

1-2 Capel Military Vehicle Show

Adhurst Farm, Temple Lane, Capel,
Surrey, RH5 5HJ
Tanks, helicopters, military vehicles in action.
Battle re-enactments, family fun and musing
and dancing Saturday evening.
www.capel-military-vehicle-show.com



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www.bundesheer.at



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Marconi Social Club, Beehive Lane,
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Two halls of dealers selling quality militaria
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Refreshments available.

TRADERS: 6ft table in advance £25

Future 2017 Dates:

Sept 17th, Oct 22nd & Dec 3rd

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accessories available at online shop.

See website for more information:

www.chelmsfordmilitaria.com

Chatham Fair

**Next Fair Date
Sunday 14th May**

Historic Dockyard,
Chatham, Kent. ME4 4TZ

Trade from 5:30AM and Public from 7AM

Most fairs are on the 2nd Sunday
of each month

Future 2017 Dates

Jun 4th, Jul 9th,
Aug 13th, Sept 10th, Oct 8th, Nov 12th, Dec 10th

CONTACT:

james@chatham-militaria-fairs.co.uk
07595 511981

NEW WEBSITE

www.chatham-militaria-fairs.co.uk



2-3 Classic and Vintage Vehicle Fair

Open to classic and vintage cars, caravans, motorcycles, scooters, buses and commercial, agricultural and ex-military vehicles. Staged by Peterborough City Council at Embankment, PE1 1EQ
www.peterborough.gov.uk

10 Chatham Fair

Historic Dockyard, Chatham, Kent. ME4 4TZ
www.chathammilitariafairs.co.uk

17 Chelmsford Militaria Fair

Marconi Social Club, Beehive Lane, Chelmsford
www.chelmsfordmilitaria.com

October

8 Chatham Fair

Historic Dockyard, Chatham, Kent. ME4 4TZ
www.chathammilitariafairs.co.uk

22 Chelmsford Militaria Fair

Marconi Social Club, Beehive Lane, Chelmsford
www.chelmsfordmilitaria.com

November

5 Northern Military Expo

Indoor show at Newark County Showground, 200 trade stalls selling Militaria and vehicle parts. For more information (traders and public) either call 01302 739000, email jeep.promotions@btconnect.com
www.northernmilitaryexpo.co.uk

12 Chatham Fair

Historic Dockyard, Chatham, Kent. ME4 4TZ
www.chathammilitariafairs.co.uk

19 Malvern Militaria Fair

Three Counties Showground, Malvern, WR13 6NW. Militaria, vehicle spares, books, badges and Jeeps for sale at this well established event. 9am-3pm. Admission £5
 Amanda Lycett 01743 762266
sales@jeeparts.co.uk
www.militaryconvention.com

December

3 Chelmsford Militaria Fair

Marconi Social Club, Beehive Lane, Chelmsford
www.chelmsfordmilitaria.com

10 Chatham Fair

Historic Dockyard, Chatham, Kent. ME4 4TZ
www.chathammilitariafairs.co.uk



1-2 Vale Vintage of Interest

Steam, Vintage and Craft show, Maes Elwy Farm, Llanerch Parc, Denbighshire, LL17 0BE. 10am start. Email valevintageofinterests@gmail.com website <http://varevintageofinterests.btck.co.uk>

7-9 Yorkshire Wartime Experience

Hunsworth Lane, Hunsworth, Bradford, BD4 6RN (J26 M62) North of England's largest military vehicle/re-enactment show - more than 400 military vehicles plus re-enactment groups and trade stalls. Stuart Wright stuart.wright@hotmail.co.uk
www.ywe-event.info

8 The Garrison Artillery Volunteers

Leeds Castle Classic Concert. Three World War Two 25 pounder guns will accompany the Royal Philharmonic Orchestra in the 1812 overture finale and National Anthem
www.leedscastleconcert.co.uk

9 Chatham Fair

Historic Dockyard, Chatham, Kent. ME4 4TZ
www.chathammilitariafairs.co.uk

14-16 Thames Traditional Boat Festival

Henley on Thames, featuring fleet of Dunkirk 'Little Ships', amphibious and military vehicles, and the Battle of Britain Memorial Flight
www.tradboatfestival.com

25-29 War and Peace Revival

Hop Farm Show Ground, Paddock Wood, Tonbridge, Kent, TN12 6PY
www.warandpeacerevival.com

August

5-6 Croft Nostalgia Festival

Includes military vehicle displays and living history encampments along with iconic car racing. Croft Circuit, Dalton-On-Tees North Yorkshire, DL2 2PL
www.croftnostalgia.co.uk

5-6 Baston in the Blitz

Celebrating the music, style and spirit of the Blitz years. Camping, re-enactors and vintage vehicles, plus a Marquee Dance. Weekend pass £10, concession £7. Baston is on the A15, midway between Market Deeping and Bourne.
www.bastonblitz.org

12-13 The Essex HMVA Military & Flying Machines Show

Chigborough Road, Maldon, Essex. CM9 4RE. Open from 10am - 5pm daily
www.militaryandflyingmachines.org.uk

13 Chatham Fair

Historic Dockyard, Chatham, Kent. ME4 4TZ
www.chathammilitariafairs.co.uk

19-20 Combined Ops Military and Air Show

Headcorn Aerodrome near Maidstone, Kent
www.combinedops.co.uk

24-28 Great Dorset Steam Fair

Southdown, Tarrant Hinton, DT11 8HX (On A354 between Blandford and Salisbury)
www.gdsf.co.uk

26-28 Military Odyssey

Kent Show Ground, Detling, Maidstone. Living History Event. James Aslett 07595 511981
www.military-odyssey.com

26-28 Tanks, Trucks and Firepower show

Dunchurch, Rugby, CV22 6NR 10am-5pm daily, camping available
www.tankstrucksandfirepower.co.uk

September

1-3 1st International Army Show

Twenthe Airport, an old military airbase in the Netherlands. Camping is available in the recreated 'army style' camp.
www.armyshow.eu



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Double DUKWs?

Nigel Hay gives a round-up of the military vehicle market

Just when you thought there were no more NOS parts from World War Two still being held by the MoD, Withams have released the final stock of DUKW parts that had been kept hidden away.

This sale is real treasure and we expect to see some motivated buyers paying good money for it. Our military vehicle parts traders have had to look for parts far away from home for many years and the chances of finding untouched sources are dwindling rapidly.

The internet is largely to blame for this. Pre the techno age, it was possible to keep sources of parts and vehicles fairly secret. Now people cannot resist plastering discoveries on social media and it is fairly certain that someone else will track them down and the 'secret' is no more.

With two very nice Ford GPAs failing to realise their reserves at two separate auctions this month, we had a rather more modestly priced GPA at €63,000 in Sweden.

We are fairly certain it is one from a small collection of amphibians that came out of Russia. Certainly it needs work but it isn't horrible.

For the private buyer it is perhaps the first entry level GPA we have seen for some time that isn't a pile of rust. Importing from Sweden isn't difficult and this is a potential in-



Ford GPA amphib.
for sale for 63,000 Euros

vestment for a collector whose pockets don't stretch to more than £100,000 for a concours model.

March has seen plenty of Jeeps coming up for sale, with prices between £10,000 and £30,000 giving something for everyone. But we have not seen any budget restorations.

Talking to one dealer who normally imports his Jeeps from France, we gleaned that the winter had provided lean pickings and that he was just starting to find a few to go and view.

Dutch-based Bram Van Buren offered a Willys NB in need of a paint job at around £28,000. But it comes with its history for 38 years and has never been restored since it left army service.

It is almost a shame to restore it, but at some stage the new owner may decide to do so.

That is a hard decision for a Jeep with just 16,000 miles on the clock, but it may not be practical to preserve its patina and continue to use it.

Holland has taken the lead as the busiest country for military vehicle sales this year. Led by Airborne Garage in Arnhem, the Dutch collectors' military vehicle trade is buoyant this year. Aalderson Vehicles also keep finding plenty of older restorations including some nice CMPs. Holland is, outside the USA, the nation that most adores the classic Harley-Davidson.

This love affair has for a long time been a source for the military WLA and WLC bikes. During the post-war years many were ridden

as civilian transport and we are starting to see many civilianised WLAs being offered by Dutch dealers for restoration to military trim or 'ride as it is'.

Michel Clements and Dutch Lion Motorbikes are prolific buyers and sellers of ex-army Harleys and many that we see at the shows in the UK have passed through their hands.

It is worth noting the surplus sales of the army Harley-Davidson were really responsible for the

start of the American biker cult, with many disaffected homecoming GIs using their war bounty pay to buy their first wheeled vehicle during the austere post-war years.

Sales of the British army MT350 and MT500 motorcycles have all but dried up now. After a basic Rotax-engined design had been created in Italy, and been passed around SWM and Bombardier - the

Armstrong-CCM company started supplying MT500 bikes to the UK army in 1984.

Around 1987, the military motorcycle production was sold to Harley-Davidson.

The MT350 appeared in 1993 (as a development of the M50, official designation of the electric-start MT500), and continued until 2000.

By 2000, the British Army had moved on to Honda XR250s and Kawasaki KLRs.

The MoD sold off several hundred about five years ago and although there is an aftermarket for them, many went into the non-enthusiast sector as a cheap and dependable alternative to the trail bike that was road useable.

Will we see a resurgence of sales of these in 10 years time when they approach classic status? ◀



MT Harleys currently hard to come by



Willys MB from Van Buren Jeeps at £28,000



Last MoD DUKW for sale through Withams



**France 1950:
war surplus
Harley-Davidson
WLA**

Burma '44

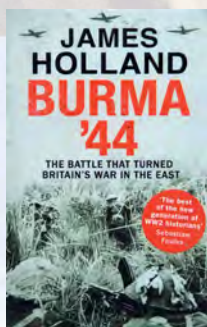
Author **James Holland**
 Publisher **Corgi**
 Year **2017**
 ISBN **978-0-552-17203-5**
 Language **English**
 Binding **Softback**
 Pages **418**
 Size **130x197mm** (5x7.75in)
 Price **£9.99**
www.penguin.co.uk

A few years ago, my girlfriend was quietly browsing a portable exhibition promoting The Kohima Museum (www.kohimamuseum.co.uk) at York's Imphal Barracks. Slightly patronisingly, the man on the stand asked: "Do you know where Kohima is?"

"Yes," she replied with a note of pride in her voice, "my dad was there."

Absolutely nothing else she could have said would have surprised the man on the stand more. I only mention this because it bears out part of the review of the hardback edition of this book from the Literary Review, that says that "too many histories of the Second World War revisit the same old battles: Dunkirk, El Alamein, D-Day and Arnhem. It is refreshing therefore to be reminded of one of the lesser known, yet highly significant, engagements..."

Following various disasters, in 1944,



the British were planning on retaking Burma, the hard way, across the Indian border and through the jungle. The Japanese wanted to conquer India and played their hand first invading through Arakan, in North West Burma, through dense forest, heavy rain and sweltering heat. The Battle of Admin Box was the key to success or failure for both armies. Bigger battles would later be fought at Imphal and Kohima but, in the author's words, "Back in February 1944, a rag-taggle collection of clerks, drivers, doctors, muleteers, and other

base troops, stiffened by a few dogged Yorkshiremen [specifically The West Yorkshire Regiment (Prince of Wales' Own)] and a handful of tank crews managed to hold out against some of the finest infantry in the Japanese Army, and then defeat them in what was one of the most astonishing battles of the Second World War."

The Defence of the Admin Box, fought among the paddy fields and jungle of Northern Arakan turned the battle for Burma. It was the first decisive victory for British troops against the Japanese and demonstrated that the Japanese could be defeated. The lessons learned, set up the campaign in Burma that would follow, as General Slim's 'forgotten' Fourteenth Army turned defeat into victory.

Verdict: Read this book before you argue with a Yorkshireman

RG-31 Mk5

Author **Ralph Zwilling**
 Publisher **Tankograd Publishing**
 Year **2015**
 ISBN **N/A**
 Language **English**
 Binding **Soft-back**
 Pages **40**
 Size **297x210mm** (11.25x8.25in)
 Price **£13.99**
www.tankograd.com

The changing nature of modern warfare means that there is an ever-increasing variety of mine-protected patrol vehicles on the market designed with the lessons learned in Iraq and Afghanistan in mind. One of the lesser known of these vehicles - RG-31 Mk5 - traces its history back to the Mamba 4x4, developed in South Africa when mines and IEDs were the major threat faced during conflicts in South Africa.

Number 9 in Tankograd's In Detail, Fast Track series covers the US Army use of the RG-31 Mk 5 Medium



Mine-Protected Vehicle. Through the US Army and the US Marine Corps, the US military bought approximately 2,600 of these in their various marques. This book follows the established style of the titles in this series; pages of background text that gives details of the development, equipment specifics and deployment of the type, followed by a comprehensive selection of contemporary photos. These show the interior and exterior of the RG-31 in vehicles in both snow and sunshine on US Army bases somewhere.

Verdict: This book provides a useful glimpse at a new, but little known, military vehicle that many won't have seen up close yet.

Ship: The Epic Story of Maritime Adventure

Author **Brian Lavery**
 Publisher **Dorling Kindersley**
 Year **2017**
 ISBN **978-0-2412-9804-6**
 Language **English**
 Binding **Hardback**
 Pages **400**
 Size **215x260mm** (8.5x10.25in)
 Price **£19.99**
www.dk.com/uk



A new, 2017 edition of a 2004 book, published in association with the Smithsonian Institution and the National Maritime Museum, that covers the whole scope of maritime history. From the earliest dugout canoes and the boats of the Ancient Egyptians to the most technologically advanced battleships and cruise liners, this is a packed, informative, colourful and comprehensive guide to every aspect of the ship and those who have sailed them. It may not be the sort of military vehicle that would normally be found in the pages of CMV but the endeavours of the great explorers as they mapped the

globe and discovered new worlds make great reading. There's also a lot about the key historical conflicts in which ships - from galleons to warships - played a vital role. Among the 50+ pages about the world wars, a picture of a Liberty ship under construction in an American shipyard particularly catches the eye.

Verdict: This quote, from Herman Melville, author of *Moby Dick*, sold it to me: "There never was a great man yet who spent all his life inland."

Kübelwagen and Schwimmwagen

Author **David Doyle**
 Publisher **Ampersand Group Inc**
 Year **2015**
 ISBN **978-1-944367-03-9**
 Language **English**
 Binding **Softback**
 Pages **138**
 Size **280x215mm** (11x8.5in)
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In an issue of CMV that contains substantial Kübelwagen features, it is appropriate that a book on the vehicle is reviewed here. This book, through a selection of black and white archive photographs that accompany contemporary photographs of restored machines tells the story of the VW that was to become the Type 82 Kübelwagen. The term Kübelwagen translates as 'bucket car' but has come to be synonymous with the Volkswagen Type 82 where, under the skilled tutelage of Dr Ferdinand Porsche, two years of work and testing were required before the Kübelwagen achieved its perceived 'classic' form. It was soon ubiquitous as transport within the German Army and was also designed and produced in an amphibious form known as the Schwimmwagen.

The balance of photos is skewed to the colour images but the black

and white photos are useful and interesting. Therefore the fact that the location, of where many were taken, is not given is a shame as it would put them in context. That said, a rough geographical location can be ascertained whether it's the Eastern Front, Western Europe or North Africa.

My favourite archive images in the selection show Kübelwagens that have been captured by the US Army. These are adorned by hand-painted allied stars, state names and the like. One, in a move that would no doubt make restorers wince, shows one in which some enterprising hot rodder has chopped two cuts in the door and folded the steel down to create a handy armrest; just the thing for cruising the southside of Saint-Lô.

Verdict: If you're interested in the World War Two VWs, this book is worth having.

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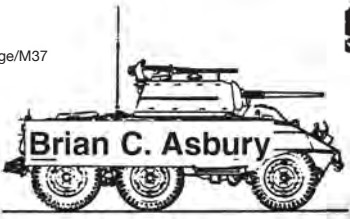


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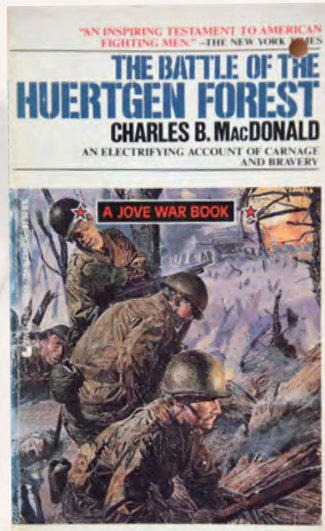
Author **Charles B. MacDonald**
 Year **1963**
 ISBN **0-515-09767-5**
 Language **English**
 Binding **Softback**
 Pages **215 including index**
 Size **105x175mm (4.25x6.75in)**
 Price **£10 on line second hand**
 (numerous editions)
 Publisher **Jove Books/Berkley Publishing Group**
www.penguin.com/publishers

If the cover artwork of the '50s paperback editions of Paul Brickhill's books paint a picture of one decade and one continent, the artwork on the cover of this paperback represents different ones (see inset below).

In the 1970s, when northern market towns had market halls that always included a book stall, these clearly budget, US paperbacks turned up for sale. Curiously, suggesting they were overs or second-hand, they had a hole punched in the cover which defaced them slightly. Nonetheless, they offered an interesting read about battles that were written from an American perspective and often about actions that involved US troops. That's how, in northern polytechnic days, I came to hear of the Battle of the Huertgen - or Hürtgen - Forest.

The Battle of Hürtgen Forest was fighting between September 1944 until February 1945 between American and German forces east of the Belgian-German border. It was the

longest lasting battle, in Germany, of World War Two and the Hürtgen - known as the Death Factory by GIs - cost the US 1st Army around



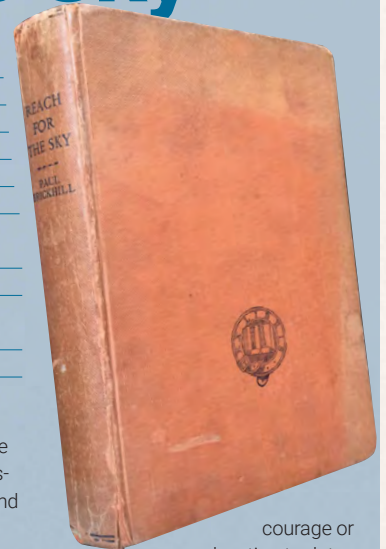
33,000 men killed and wounded and remains the longest single land engagement in US Army history. It was a dark and dirty business because of the fierce German defence and the geography of the area. The Hürtgen is known for its nearly impenetrable forest, cut through by deep ravines, steep gorges and narrow roads and this was the root of many of the problems. Initial American thrusts centred on the village of Schmidt, which US forces attempted to access via the narrow Kall Trail which was used as a Main Supply Route. The nearby Battle of the Bulge gained widespread press and public attention, leaving the battle of Hürtgen Forest largely forgotten.

Years later, inspired by this book, and another similar US paperback, I visited the site of this battle and walked down the Kall Trail, it's now no wider than a cycle track so when it was wet and muddy in winter conditions, it must have been a nightmare for tanks and trucks. Revisiting this book for the purposes of this review, I find it to be well-written book that truly reveals the futility of war. **JC**



Reach for the Sky

Author **Paul Brickhill**
 Year **1954**
 ISBN **0304356743**
 Language **English**
 Binding **Hardback**
 Pages **384 including index**
 Size **160x240 (6.25x9.75in)**
 Price **£12 (new edition is paperback)**
 Originally published by **Collins**.
 New edition (2009) published by **W&N, Orion books**
www.orionbooks.co.uk



This book deserves to be on any collector's wish list simply because it was written by Paul Brickhill, Australian flying ace, POW escapee and author of other such notable titles as *Escape to Danger*, *The Great Escape* and *The Dam Busters*.

There aren't many characters like Douglas Bader. He lost both legs in a peacetime flying accident, doing aerial acrobatics in a biplane in 1931. This was an era long before

courage or devotion to duty whilst flying in active operations," as during the Battle of Britain he is credited for shooting down 30 Luftwaffe planes, earning him the respect of the Germans, who, when he was shot down over France and taken to



para-olympians were seen on running blades and when it was expected for him to give up and to accept the limitations of his disability. 'Accept' and 'limitations' weren't in his vocabulary; he fights his cussed, single-minded, confrontational way back to health and learns to walk again on tin legs. If this wasn't remarkable enough, he then persuades the RAF to let him re-join, re-qualify and finally to become a fighter pilot.

He was awarded the Distinguished Service Order and the Distinguished Flying Cross for "acts of valour,

Colditz, went out of their way to retrieve and repair his legs. These were soon confiscated though, when they realised that he had turned his determination to the task of escape.

Brickhill succeeds in presenting a great tale, without sycophancy. Bader doesn't come across necessarily as likeable, although one can't help but admire him. This really is the stuff of legend and a must read. Even if you've read it before, read it again. It is uplifting, inspiring and humbling. **VT**



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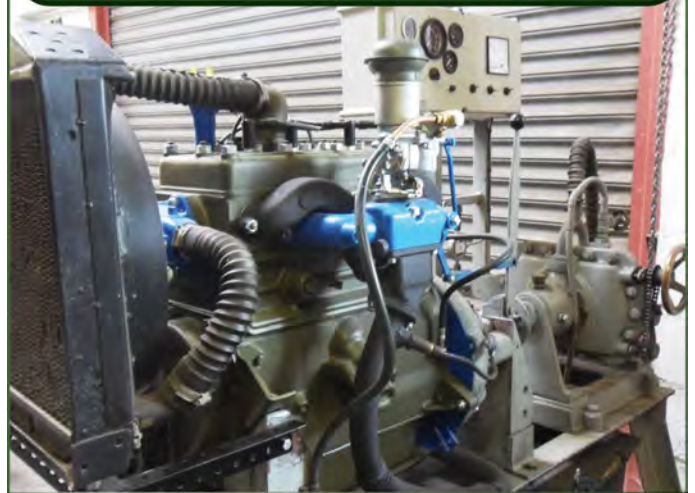


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It's a shame there aren't more vehicles on show, and in the case of this motorbike, it's rather difficult to get a good view!



The Humber 'Pig' was originally a general purpose truck but when violence escalated in Northern Ireland in the 1970s, they were fitted with additional armour.



A contemporary offering: the 2014 Rapier guided missile launcher, designed to be used against enemy aircraft



The 1944 Pack Howitzer was designed for challenging terrain and could be broken down and carried in several pieces



Open for Business



*ABOVE: Children will love this interactive tank!
TOP: This 1942 Dingo Scout Car is of the type originally used in Italy, North Africa and Normandy during World War Two*

Following a three year redevelopment at a cost of more than £23m, the National Army Museum has at long last re-opened to the public. The dramatic transformation has been carried out with the express aim of providing better access and a more engaging experience, and the clean, contemporary architectural space certainly provides an excellent showcase for the impressive range of exhibits.

It may be short on military vehicles, but as an entire collection of military history, it is certainly not lacking – particularly when you take into account the fact that entry to the museum is completely free.

The gallery space is split into five main themes: Soldier, Army, Battle, Society and Insight, while temporary exhibitions occupy a further 500m² – currently displaying more than 130 paintings and objects that view the subject of conflict through art.

Children are catered for too: an interactive tank will give them a taste of the real thing and there are plenty of touch-screen and hands-on exhibits to keep them (and their parents) busy.

There is of course a gift shop and brand new café to complement the overhauled museum

and there is a full schedule of special events, talks, tours and workshops already lined up for the rest of spring and into the summer. Well worth a visit if you're in London. ◀



National Army Museum

The museum can be found on Royal Hospital Road, Chelsea SW3 4HT and is open daily from 10am-5.30pm (closed December 25-26 and January 1), with late opening until 8pm on the first Wednesday of every month.

Café is open daily from 10am-5pm and the Play Base for children up to eight years old is open from 9.40am-5.20pm.

The museum is a 10-minute walk from Sloane Square underground station or a 20-minute walk from London Victoria.

Brief Encounter



Craig's truck on The Mall marked up with German markings, features in the opening scene of SS-GB.



Inside the cab there's few comforts. It won't be the most salubrious ride to Normandy, but this time there's no enemy fire to face



On location at Craig's yard having pictures taken for the book. Now that he has a wheel chair, David needs a lift to get into the truck



With spirit that belies his 93 years, in June 2017, **David Teacher MBE** is going to Normandy in a Bedford QL, 73 years after he did it the first time. His trip will benefit from your help



A chance encounter on a train between three men led to CMV hearing a remarkable story of beaches, Bedfords and bravery. David Leon Teacher MBE, D-Day veteran, was travelling home from an event with Chris Cookson. David was wearing his medals and they drew the attention of the man sitting opposite who was reading a previous edition of this magazine.

The trio struck up conversation, David - now 93 years old - had a remarkable story to tell. Chris is a volunteer at the Imperial War Museum North, D-Day expert and the man responsible for helping David get his book published. As they chatted, the mystery CMV-reader on the train suggested that David contact Classic Military Vehicle to share his extraordinary tale.

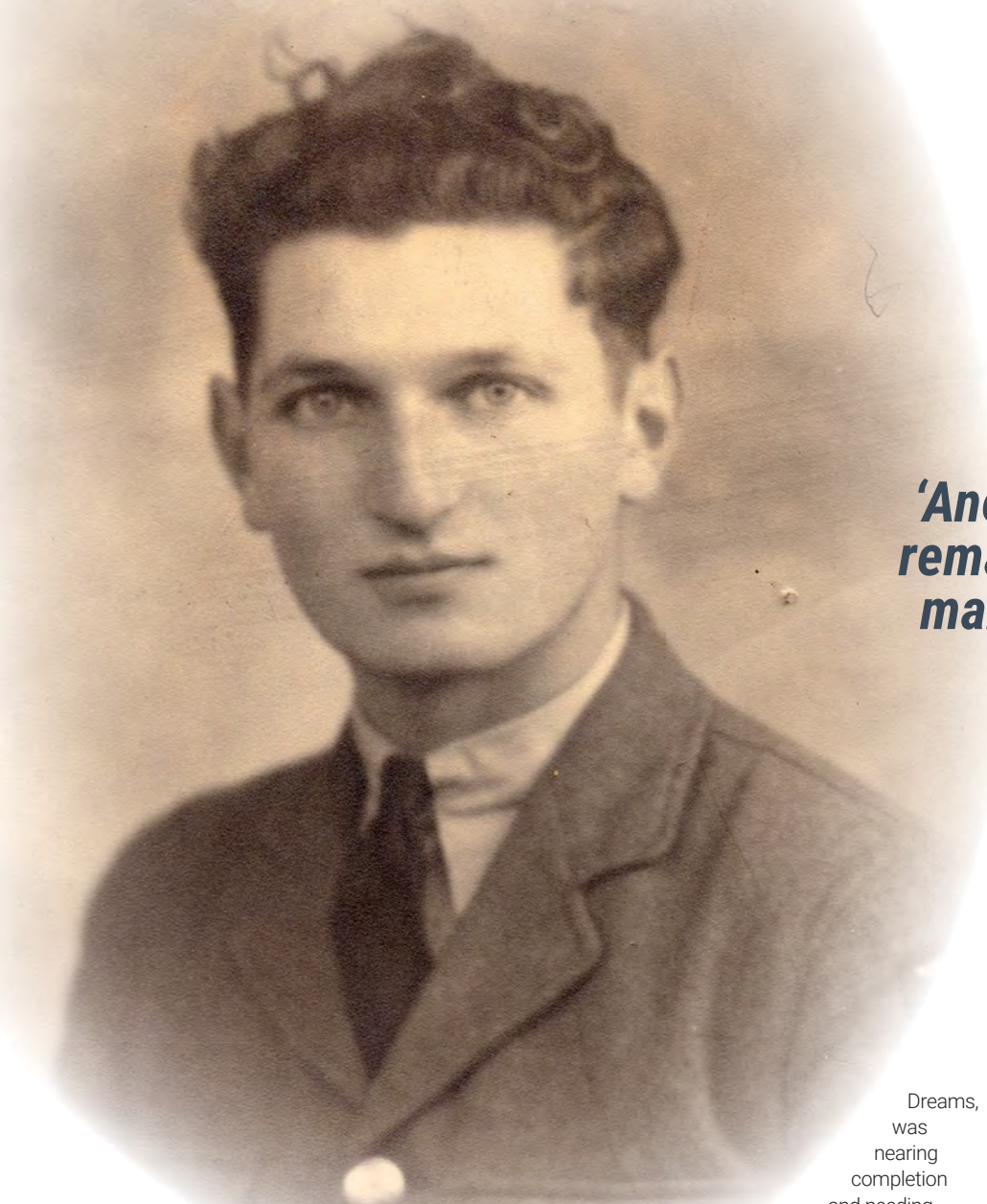
Born in 1923, he spent an unusual childhood living in Palestine under the auspices of a strict Zionist Grandpa, before returning to live with his remarried mother in Manchester where he trained to become a motor mechanic,

something that he loved. He was 15 when war broke out, and as he listened to Neville Chamberlain announce it, he hoped it would last long enough for him to be in it. He joined the Air Cadets as soon as he was 16 because he had a hankering to wear the blue uniform of the RAF and a sense that the girls loved the 'Brylcreem Boys'.

By 1942 he'd been called up, did some basic training and then, in early 1943, volunteered himself for the new 'combined operations outfit' and found himself in 103 Beach Unit. It was clear they were part of the planning, training and preparing for a beach invasion. Their role was to make sure that advancing troops had everything they needed and that supplies, including men and food, machines and fuel, could make it further inland. In the early days it was a lot of trial and error - how best to do this. He found himself experimenting with new machinery including Hobart's funnies and new means of transporting fuel, including huge ▶



David has returned to Normandy many times, including erecting the plaque he campaigned for to commemorate the Beach Squadrons



Through Craig's contacts at REME, an offer has been made to help adapt the QL so that they can get David into it. He is wheelchair bound so a lift will be necessary. The plan is to drive him up to Juno Beach on the anniversary of D-Day this year. It is an ambitious plan, and expensive, not least because the truck does around six miles to the gallon. In efforts to fund the scheme, David and Chris are selling the book, *Beyond My Wildest Dreams*, at shows around the country. It is also available on Amazon, plus they have established a crowd-funding page and will be very grateful

'Another chapter in this remarkable story of both man and truck opened'

float-
ing con-
crete tanks full
of it. Some ideas had
greater success than others.

ABOVE: David Leon Teacher MBE, as he was then at 17
BELOW INSET: 'Beyond My Wildest Dreams' tells of a long and
fascinating life, for sale now on Amazon to help
fund the journey back to Juno in
the Bedford QL

In September that year, the unit received new Bedford QL trucks, and they practiced painting and servicing and waterproofing and de-waterproofing it until they could do it in their sleep. Finally, after months of exercises, they got their orders as Operation Overlord began. The Beach Squadrons were to discharge RAF personnel, vehicles and stores and proceed to the forward area – and David was to be one of the first off the landing craft onto Juno beach in his Bedford truck.

David was not one of the 1200 casualties of Juno beach alone, so he and the others got to work. As well as maintaining trucks, he helped get casualties back to England, to build a new airfield, and to manage fuel supplies. One and a half million gallons of fuel were unloaded by hand in the first four weeks before the fuel pipe line Pipeline Under The Ocean (PLUTO) became operational, as well as sending up supplies that facilitated the building of Mulberry Harbour. Every few hours the tide came in and with it more supplies to unload, get off the beach, sort and store. For three months that was David's life, and his shelter under enemy fire, his home, was the Bedford.

When the book, entitled, *Beyond My Wildest*

Dreams, was nearing completion and needing illustrations, Chris set about finding a Bedford QL so that David could have his picture taken with it. After some research, it transpired that a man called Craig Keeble owned the most local one, in Halifax. Craig has a transport company, Hindle Hire Ltd (coincidentally, his company was featured in CMV 181) and carries a lot of military vehicles for re-enactors, collectors, and military vehicle dealers, and having been in the army himself, has always had a keen interest. He says: "The QL is my favourite of all the vehicles I have and the one I take to shows the most."

It has been in several films and TV series including *Keep the Home Fires Burning*, *Close to the Enemy* and, most recently, in *SS-GB*. In that, it's in the opening scene on The Mall, marked up with German markings.

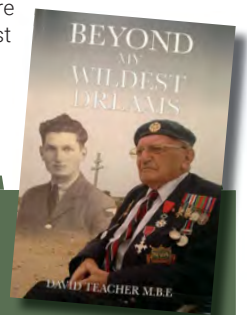
When Craig was approached about helping a Normandy veteran asking if it be possible to come and take some photos for the book, Craig leapt at the chance. He couldn't wait to meet David, his own grandfather was a Normandy veteran but sadly, died around 20 years ago. Chris and David came down to Craig's yard for the photo shoot, they told him David's story and that they were hoping to go back to Normandy again this year. Craig said: "Why don't we take the Bedford over?"

With that question, another chapter in this remarkable story of both man and truck opened.

for any purchases of the book or contributions made to the page.

The book follows David through the rest of the war and beyond. D-Day may be as he puts it, 'one day of history, a mere 24 hours of my 93 years. A day that I will remember and be remembered for', but his life continues. He made it back in one piece from Normandy, he went home on leave, only to be sent back to theatre in time for the Battle of the Bulge where he had his 21st birthday. Before he was finally demobilised, he found himself in Germany. Following an instruction from Eisenhower that any units within travelling distance were to go and bear witness to man's inhumanity, he was taken to drive through Buchenwald Concentration Camp. Understand that this is the Jewish lad, whose commanding officer had made him change his dog tags just before D-Day so that they showed him being of 'no denomination' explaining that he'd have 'enough trouble landing in Normandy without that too', and David had not known what he meant.

David Teacher has a close family, ran a commercial garage, travelled extensively and has worked tirelessly for the Rotary Club and campaigned for the Beach Squadrons to have their efforts remembered and honoured. A more varied life it is hard to imagine, and, for CMV, it was a privilege to talk to an ordinary man who has done extraordinary things over the course of the tumultuous near century of his life. We don't know who the CMV reader on the train was but we are grateful; it led to a most fascinating interview and David's first ever Skype conversation experience! ◀



The Book

To buy the book, *Beyond My Wildest Dreams* (ISBN-13: 978-0016643613) go to

www.amazon.co.uk/books

For more information, email: davidteacherpublishing@outlook.com

To donate to the crowd fund, go to www.justgiving.com and search David Teacher RAF.

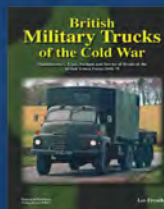
If you are a show organiser, please consider inviting the duo behind this project. Learn more about David Teacher MBE and the RAF Beach Units at www.rafbeachunits.info

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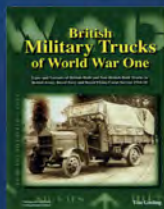
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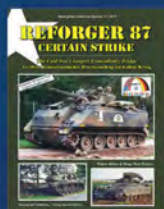
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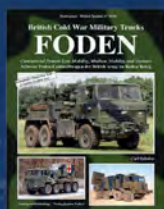
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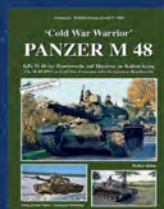
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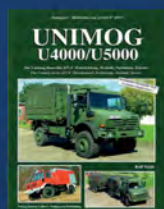
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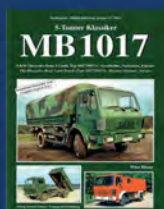
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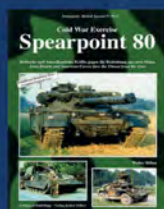
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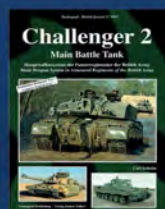
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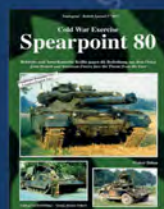
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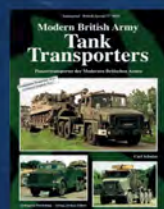
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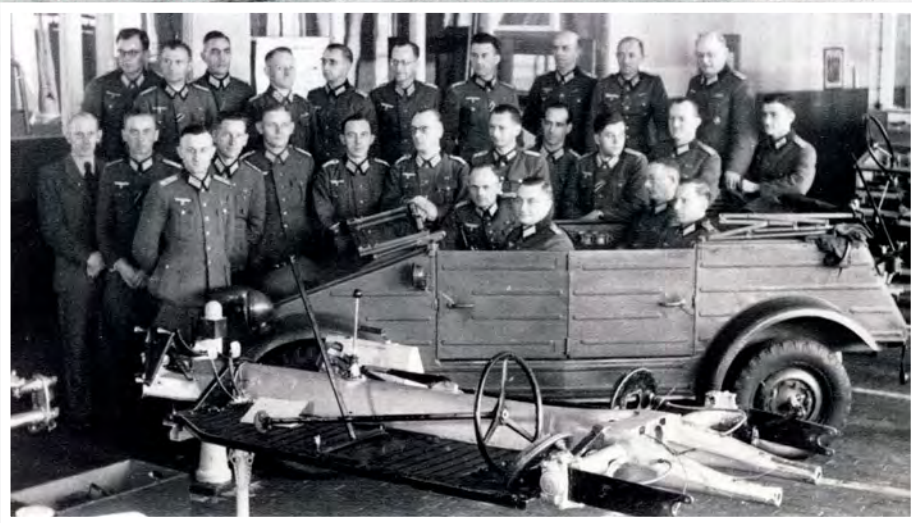
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MAIN IMAGE: Although late to the party the Kübelwagen was soon to make its mark. Pictured outside the works was a swathe of the model which was designated the Wehrmacht's sole Light Uniform Passenger Vehicle by the end of 1941.

BOTTOM: Part and parcel of the launch of the Type 82 was the need to train military personnel in its servicing. A class gathered for instruction in such matters as its rear-hub gear cases, whose lubrication was often neglected



The

Acknowledged as one of World War Two's most versatile and successful light vehicles, the Type 82 'Kübelwagen' had to struggle to gain acceptance by the German military



Volkswagen Goes to War

The final design of the KdF-Wagen, later known as the Volkswagen, was completed by 1938. Although its creation was a team effort, orchestrated by chief engineer Karl Rabe, this historic car's creator was incontrovertibly Ferdinand Porsche. Inventors galore had proposed and built small air-cooled rear-engined cars but it took a Porsche to make

such a car a high-volume production reality.

Although the requirements of its low price and mass production kept the Type 60's final design from having features that specifically pointed toward military use, such as Hitler's preferred four-wheel drive, its potential for wartime service was never overlooked.

In 1935, while the Volkswagen was still under

development, Hitler introduced conscription and scrapped the name Reichswehr for his armed forces in favour of Wehrmacht, or Defence Force, of which the Heer or army became a constituent. Its Heereswaffenamt (HWA) continued to define and source its equipment.

The leaders of the new Wehrmacht proclaimed motorisation was a priority and the ►

As finally realized in 1939 and redesignated as the Type 82, Porsche's military version of the VW looked tough enough. Ingenious engineering gave it parade-speed jump plus the added ground clearance that the Wehrmacht required



'Porsche's Volkswagen was viewed askance by Hitler's armed services'

HWA had already made up its mind about the kinds of vehicles it required. It looked favourably on four-wheel drive and rugged solid axles. For general troop-carrying and field service its vehicles were open-topped with bucket or Kübel seats that let fully-equipped troops jump easily in and out. Such a vehicle was a 'bucket-seat car' or Kübelsitzwagen which was referred to simply as a Kübelwagen, whatever its make or size.

In April 1934, a month before Porsche had been authorised to proceed with the Volkswagen project, the Reich's military proffered advice to the putative designers: Major Zuckertort said it should have space for "three men, one machine gun and ammunition." This was the first contact between Porsche and

the Reichswehr under the new regime. A comprehensive review with the military of the state of his Volkswagen effort was conducted by Ferdinand Porsche in Berlin on March 15, 1935.

Porsche's Volkswagen was viewed askance by Hitler's armed services. Its lack of generous ground clearance was considered a fundamental drawback. Nor was the rear engine regarded as an advantage; a Kübelwagen version of the rear-engined Mercedes-Benz 130 had been hugely disappointing in the many off-road sporting events organized by the Nazis' National Socialist Motoring Corps (NSKK) headed by Hitler crony Adolf Hühnlein. The Wehrmacht strongly supported this Geländesport, whose many participants were

their reservoir of future manpower.

One might expect the enthusiastic members of the NSKK to be recruited to drive the 30 Volkswagens in the V30 prototype series that began testing during 1937. However Hühnlein felt, as he expressed privately, that the effort to build a car for the masses would lead to a weakening of Germany's automotive bloodline. As well, in 1934 Hühnlein and General Blomberg told Germany's auto makers that only a "field-service-capable" vehicle could be considered a proper Volkswagen. Recognising that this would not be a priority in the car's design after all, in spite of his recommendation,



ABOVE: A body drop in the motor-industry tradition mated chassis and coachwork of the Type 82 at Fallersleben. Outside suppliers, including bodies from Ambi-Budd in Berlin, provided much of the initial content

LEFT: Canvas hoods and side curtains were part of the Type 82's equipment, seen on the vehicles as they neared the end of the production line. A small area of the Fallersleben plant was at last producing Beetle-based vehicles

Hühnlein kept his NSKK at arm's length to the evolving Type 60.

In fact Porsche himself rejected this criterion in a technical report about the capabilities of the vehicles used in the NSKK's winter trial of 1935. He stressed that in order to cope with off-road driving in all weather conditions, special vehicles were needed—special cars that "naturally can only have a somewhat limited civilian use." In fact Germany's car makers were obliged to produce extra-rugged machinery that could handle the NSKK's often-exaggerated cross-country trials.

New Fangled

In the event, the 30 Volkswagen prototypes were test-driven by members of an SS troop, under the supervision of Ferry Porsche. The SS men fell under the spell of this new-fangled automobile. Encouraged by reactions of these beguiled SS motorists, the Porsche/GEZUVOR test workshop under Rudolf Ringel modified a test Volkswagen to improve its off-road mobility. Special tyres were fitted and ramp angles at both front and rear were increased by shifting the spare wheel and muffler upward. Tests from December 1937 showed that this made the little car remarkably agile across country.

The modified Volkswagen was seen in action by an HWA officer, who blessed an effort to extract "as much as possible for military application from the existing vehicle." But in January 1938 he was unable to make much more of a commitment than that to Porsche, simply pointing out that a military version would need lighter-weight bodywork if it were to be able to carry four troops plus all their equipment—a desirable objective.

Considerably more enthusiasm was generated at the higher levels of the SS that same January when the leader of the V30 test cadre, Captain Albert Liese, proselytised on behalf of the Volkswagen's military utility to Lieutenant General Josef 'Sepp' Dietrich. An intimate of Hitler's, the influential Dietrich could see the merits of the Volkswagen's low profile, light weight and, particularly, potential for low cost which would facilitate a rapid conversion of



'Aero' wheels and tyres underpinned this Kübel in Tunisian service. During his invasion of France Field Marshal Rommel first appreciated the Type 82's value, which he proved decisively in his North African operations

Germany's military to more modern vehicles when the balloon went up.

A dollop of fertiliser for the flowering of this relationship was spread by Ferry Porsche in his stewardship of the prototype testing. At first, he said, he looked on the SS drivers sent to him as snoops and spies: "Every little detail, each day, had to be recorded, and at first this was intolerable and struck me as quite absurd. It was often difficult for me to contain my anger. But after a while I discovered that few of those SS men were stupid thugs. Some could be approached and spoken to. Some would listen and a few even approved of our own suggestions about testing and performance evaluation."

Porsche's forbearance at a crucial juncture was to be richly repaid. In addition to the rest of his work on the VW project, Ferry became closely involved with the development and testing of military versions of the Type 60.

Helped by a nod from Sepp Dietrich, the HWA gave Porsche an order to build a military version of his KdF-Wagen on January 26, 1938. March 14 saw Hitler hailed in Vienna after

Austria's annexation by Germany. For many in Austria this provided the economic integration with its powerful neighbour that had long been sought. Later that year, on October 5, Ferdinand Porsche's home town was subsumed into the Reich by Hitler's annexation of German-speaking areas of Bohemia and Moravia in Czechoslovakia.

Before receiving the official go-ahead, the SS troops and the workshop at Zuffenhausen had built a crude Kübelwagen that consisted of little more than a VW platform frame with angled-sheet fenders, three bucket seats on the floor and a mount for a massive machine gun. This resembled more a breadboard feasibility study than a serious design.

The first Porsche proposal, pictured in a Karl Rabe layout drawing of May 15, 1938 showing the Type 62, presented a distinctly 'civilian' aspect with rounded wings and engine cover and luxurious pleated-leather bench seats. A clue to the reason for this may be that project Type 62 dated from 1936, according to the Porsche type-number list. This suggests that the number was assigned quite early to what



Traditional celebrations were observed for the completion of the 1,000th and 5,000th Kübelwagens. The later milestone vehicle was equipped with the wide-section 'aero' wheels and tyres best suited to desert use

the project list calls an 'off-road vehicle.'

In 1936 the Porsche people had been thinking of making a version of their new small car that would be suitable for the off-road trials promoted by the NSKK. These popular and well-publicised events would have helped spread the word about the capabilities of the VW-to-be.

The car they built as the Type 62 looked ideally suited to that application, its body details modified to suit the final chassis design.

An alternative body was built in 1938-39 for the same chassis. This was a low, aggressive-looking vehicle whose side-mounted spare wheels fooled some commentators into

calling it a "six-wheeled" prototype. Nicknamed the Stuka after the famous dive bomber for its pugnacious looks, it was as militaristic as Porsche's Type 62 was civilian in appearance. The Stuka took part in comparison tests with the Type 62 and other vehicles.

The body of the official Type 62 was commissioned on May 17 from traditional Porsche panelling partner Reutter of Stuttgart. Its spare wheel was inset into the front deck and its sides were completely open, a few straps deployed to keep the occupants from spilling out. This prototype was ready for presentation to the HWA on November 3, 1938, showing its

kinship with the Volkswagen in the shape of its windscreen and its rounded lines. Ferdinand Porsche presented it to General Becker and others of the HWA including Lieutenant Colonel Sebastian Fichtner, head of the vehicle-test section.

The army put the Type 62 to the test at its Münsingen Troop Training Grounds that same November, pitting it against one of its Class I military vehicles, the smallest 4x4 model in its inventory. The Porsche people brought along a Volkswagen prototype for comparison purposes. The open-topped Type 62 fared well enough, although the army assessors thought it looked too "civilian" and asked for more "military elements" in its design.

While further tests were being conducted on the first Type 62 the Porsche engineers produced a more 'militarised' version. This Type 62 K1 kept the rounded wings and recessed spare tyre but had a more angular main body made of flat sheet steel ribbed for stiffness. One version resembled the first in having open sides with canvas doors; another had proper doors with side screens. The car with open sides was commandeered by the DAF's Robert Ley in October 1939 for a tour of Poland.

Tests of this new type in comparison to two of the standard army vehicles at St Johann in the Tyrol in March 1939 showed it to be promising but still lacking the ample ground clearance needed for military duty. Eighteen-inch wheels were fitted to increase the clearance but these were not the answer, especially because they raised the car's overall gear ratio when what was actually needed was lower gearing.

A different ring gear and pinion were tried in the Type 62 to give a lower axle ratio, but with a pinion that was too small this was a major and risky departure from the standard VW design. Ferry Porsche explained the problem: "You had to be able to go at about the walking speed of a soldier carrying his full backpack, so that he could keep pace with the vehicle. This was about 4km/h (2.5mph). Thus there was one serious drawback to overcome. Low gear in the regular transmission produced about 8km/h (5mph). This was adequate for civilian use but too high a speed for cross-country military purposes."

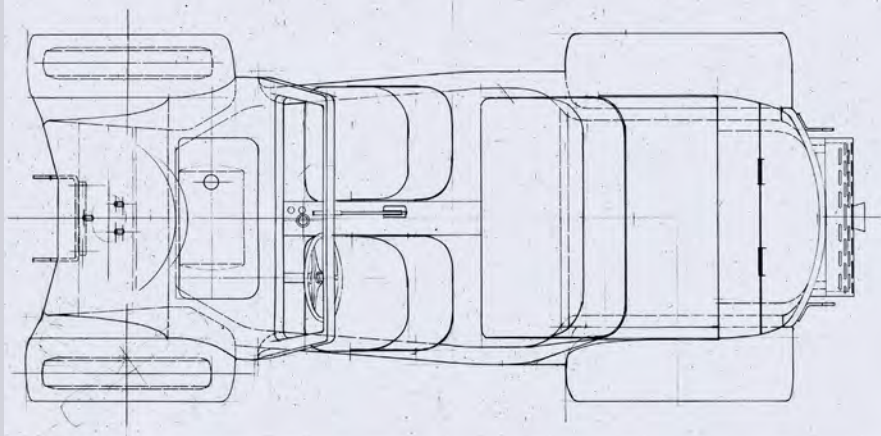
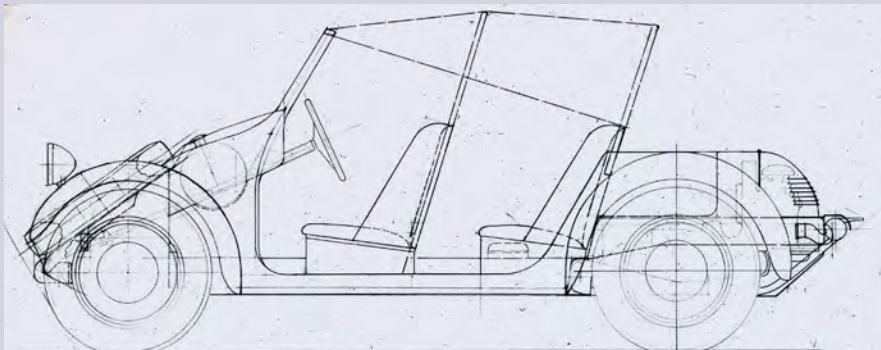
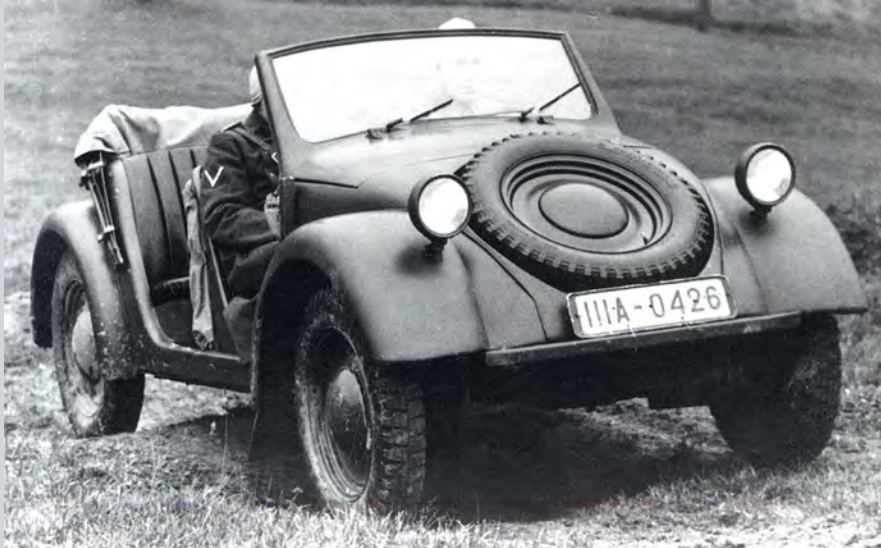
Pulling Power

Porsche's solution was typically ingenious. A pair of reduction gears was installed at each rear-wheel hub. The gearing raised the vehicle by two inches while reducing the overall gear ratio to give more pulling power at a lower road speed. The hub reduction gears had a ratio of 1.40:1, which combined with the standard final-drive ratio of 4.43:1 gave a ratio of 6.20:1. At the front the wheel-spindle carriers were modified to increase ground clearance there.

Now the Porsche engineers, well on their way toward a completely new vehicle design, awarded the VW-derived Kübel project a new number in 1939: Type 82. Another year was destined to pass after the presentation of the Type 62 before the first two samples of the Type 82 were formally accepted by the Army High Command in December 1939.

This new version reverted to 16-inch wheels for which tyres were more readily available. Now the engine was idling at 780rpm at the

Porsche's 1938 Type 62



Dating from 1936, Porsche's Type 62 project was first envisioned as a sporting car to take part in trials organized by Adolf Hühnlein's NSKK. Presented to the Army in 1938 it was found capable but not sufficiently 'military-looking'



'No doubt remained about the vehicle's military bearing'

required walking pace of four km per hour, so Ferry's goal was successfully achieved. At 3,300rpm in top gear the Type 82's maximum speed was 50 mph.

No doubt remained about the vehicle's military bearing. It had square-rigged, corrugated, high-sided coachwork built by Ambi-Budd in Berlin to Porsche's designs. Its spare wheel rested on top of the sloping front deck, simplifying the body. A serviceable hood and side screens were provided.

A key decision was to fit the vehicle with

doors. Doors kept the soldiers inside, meaning that tight-fitting bucket seats were no longer needed. Flat front seats and a wide bench rear seat could be used instead, offering more flexible carrying capacity. It also rendered the "Kübel" nickname completely inappropriate—but it stuck.

The Porsche men deployed several secret weapons in the design of their Type 82 that contributed to its military success. One was lightness. The original Type 60 Volkswagen of 1938 had a design weight of 1,510 pounds and ready for the road it weighed 1,545 pounds dry. Compared with the small passenger cars offered by Adler (1,810 pounds), DKW (1,720

This Kübelwagen was booty for the British Army in North Africa. It is one of the Type 82s that was sent back to the United Kingdom for detailed evaluation to gain insights into the technological threat posed by the Volkswagen

pounds) and Opel (1,700 pounds), its lightness helped the civilian VW gain a power-to-weight advantage over its rivals.

The same philosophy helped the Type 82 shine compared to the heavy Class I military vehicles. Rigorously controlling weight in every aspect of the military VW, the Porsche engineers brought this version in at the same design weight as its saloon counterpart, 1,510 pounds. At 1,600 pounds with all its skid plates and other battle gear it weighed only 3.6 percent more than the road-ready civilian car. This was an astounding accomplishment, even given the Type 82's open bodywork.

Another secret weapon in the car's design



Eight of the first pilot batch of 25 Kübelwagens produced in April of 1940 paraded in the courtyard at Zuffenhausen, where they were produced. Manufacturing at the Fallersleben factory commenced in May of 1940

was its limited-slip differential developed by the ZF company. This used a central cage to drive a ring of sliding pawls which engaged wavy-cam surfaces that drove each of the rear-wheel axle shafts. When one drive wheel started to slip and spin, friction in the unit rapidly built up and began transmitting driving torque to the wheel that was not spinning—the one that had better traction.

The Porsche office exploited its early access to this ZF invention, first in a passenger car it was designing and then, in 1936, in the Auto Union racing cars. In these they stole a march on rival Mercedes-Benz until the Stuttgart firm twigged what they were doing. It was only natural that Porsche would use the ZF limited-slip differential to help compensate for their Type 82's lack of four-wheel drive.

four-wheel drive in all four normal forward speeds. Pushing the lever forward to the second notch engaged the extra-low gear as well. Thus extra-low was only available when the Type 87 was operating in 4x4 mode.

Two Type 82s and two Type 87s were tested by the army in February 1940 in company with a wide range of other vehicles including trucks. They were driven south from the Berlin Kummersdorf test ground to the winter test site in the mountainous Tyrolean Alps at St Johann, the town reputed to be the coldest in the region.

VW historian Dr. Bernd Wiersch quoted a report of April 5, 1940 on the Tyrolean trials: The Wünsdorf Test Centre is in general very enthusiastic about our vehicles. In the prevailing slippery ground conditions in the mountains, for example, our four-wheel drive Types 86 and

Type 82 in its final form was featured at the 1940 Vienna Spring Exhibition. The HWA was thawing, albeit slowly. Pilot manufacture launched at Porsche's Stuttgart plant produced 25 units in April and thereafter 100 in May at Fallersleben. In June, when 200 were made, deliveries commenced to the army. It paid RM2,945 for each of its Type 82s.

This early production "involved mostly an assembly job," wrote historian Art Railton, "the line occupying a small portion of the huge factory. Joe Werner's shop was producing the engine-transmission, but the rest of the vehicle was shipped in from suppliers. The foundry was still not finished so castings came from a supplier in the nearby Harz Mountains."

Joseph Werner was one of a handful of German-American engineers whom Porsche had recruited in Detroit in the 1930s to help mass-produce the KdF-Wagen. An ex-Ford man, he knew the art and science of volume production, especially for engines. So his instructions on the Kübelwagen job were especially frustrating: "I was ordered to build no special tools and not to make the mistake of having any tooling left over for use in building KdF-Wagens when we finished the 'Jeep' order."

There was as yet no demand for hordes of Kübels, the thousandth not built until December 20, 1940. The war was still expected to be over soon.

Invasion of Russia

Military interest in the little vehicle began to grow after the invasion of Russia in mid-1941. The original Uniform Chassis I for light Army vehicles had been replaced by a new design in 1940, made exclusively by Stettin's Stoewer. Under the challenging conditions of the Russian Front the Stoewer vehicle exhibited "severe defects in the frame, wheel suspension, clutch, drive shaft, steering, etc."

In contrast KdF Kübels, just becoming available in Russia, performed much better. On November 1, 1941 an army report stated, "All special designs of the Wehrmacht in the realm of wheeled motor vehicles were weeded out (some of them are still being concluded) and, specifically, special designs for the Light Uniform Passenger Vehicle were replaced by the VW (two- and four-wheel drive)."

Before this decision could be reached the army set one more exam for the military Volkswagen, one they were confident it would fail. They sent two samples to the North African desert, where the HWA and the Uniform Chassis builders were certain the VWs would simply sink into the sand and never be seen again.

"If they proved right," Ferry Porsche reflected, "this ordeal would do us serious damage and cause Hitler's men to lose confidence in our capabilities. Our detractors were to be deeply disappointed, however. The military version of the Volkswagen performed without giving the least trouble, despite the desert heat, the sand and the brutally rough strains imposed on them. On the contrary they seemed to thrive on this kind of treatment!"

The ascendancy of the Type 82 was affirmed on March 19, 1942 by an Adolf Hitler decree that gave Fallersleben a monopoly on the production of light military vehicles. The Type 82's merits had finally triumphed. In his table



With its complement of five soldiers this striking image of the Type 82 Kübelwagen showed the benefit of adopting bench rear seating. The use of doors was considered a radical departure for this class of vehicle

As a form of protection for the project's future, four-wheel drive was also explored. This was done under Porsche's Type 87 designation, work on which continued into 1941. A drive shaft was taken forward from the front end of the secondary or output shaft of the gearbox to axle gears between the front wheels.

The front-axle gearing was given a drive ratio of 6.20:1 in order to match the gearing at the front to the double-reduction ratio at the rear wheels. In a clever design tweak, Porsche used hypoid gearing for its ring and pinion. This allowed the pinion to be offset upward from the centre of the ring gear, helping to improve ground clearance at the front. Some Type 87 versions had self-locking front differentials and some did not.

Also added to the Type 87 was an extra-low gear for off-road use. A supplementary lever controlled both functions. Normally the front-wheel drive was not selected. Pushing the extra lever one notch forward engaged it, allowing

87 cars without snow chains were vastly superior to the Army Uniform Personnel Car.

One of the most frustrated car makers, in view of the proven performance excellence of his light and low-cost military vehicle, was Ferry Porsche. Tests had shown the clear advantage of the Type 82 over the heavy Class I Uniform Chassis but no decisions were being made on the basis of this unambiguous evidence. He wrote: "Weeks went by in this way, and I finally became so annoyed that I openly proposed we take a VW Kübelwagen and run it hard for several more weeks, under all conditions, against the 'Jeep' designed by the Military Supply Office [HWA]."

The offer was accepted. Far from weakening our case, the test decisively broke the deadlock in our favour. The Kübelwagen under many conditions came off better than the military version. But still the military held back giving us clearance to manufacture..."

With the saloon and a display chassis, the

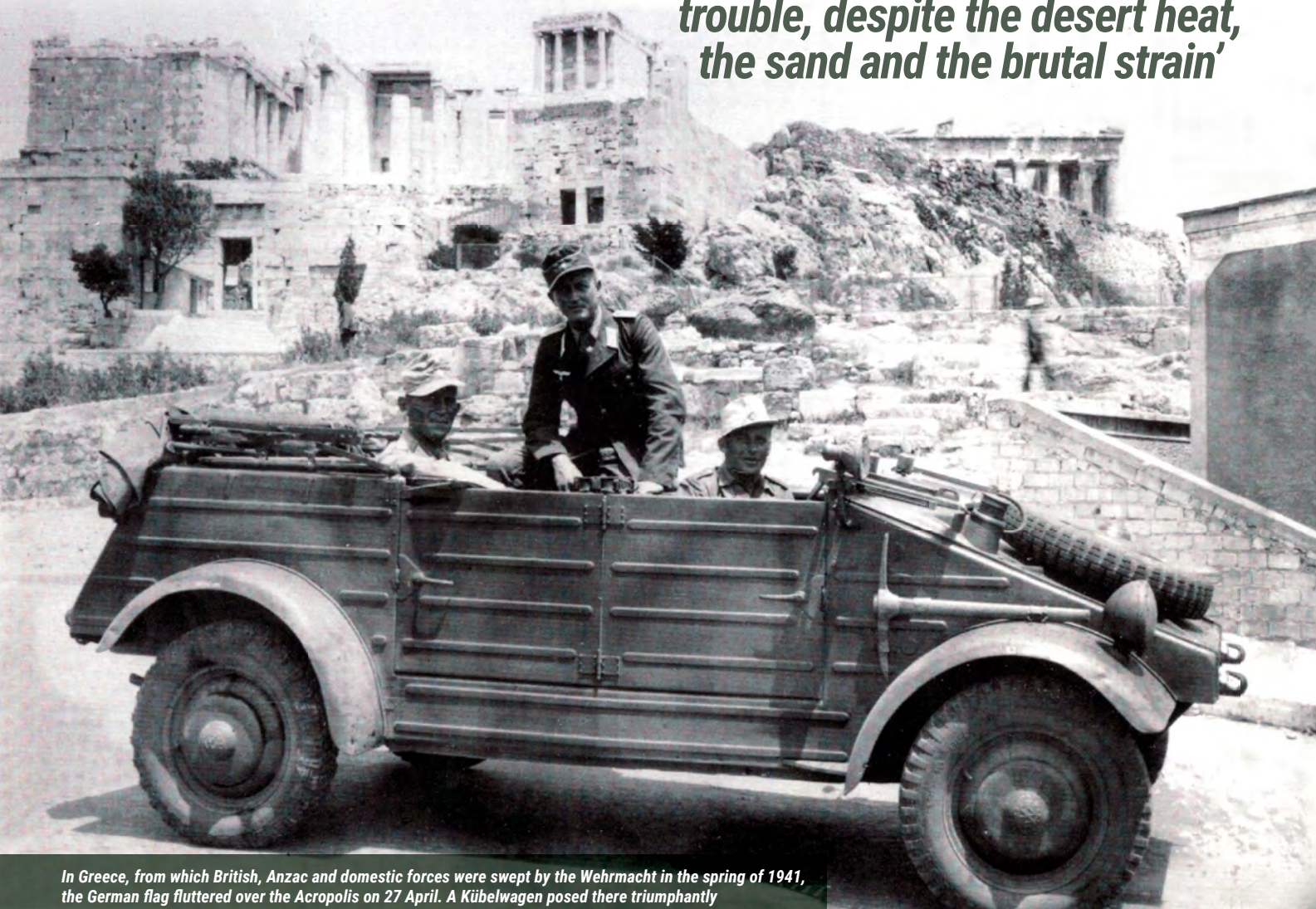
conversation among friends on April 9, Hitler elaborated on his thinking: "After the war we must, for military reasons, limit the German motor industry to the production of a dozen models, and the primary objective of the industry should be the simplification of the engine. Higher power must be achieved by increasing the number of standard cylinders rather than by the introduction of a variety of new cylinders. But the most important task will be the design of one single engine which can be used just as well for a field kitchen as for an ambulance, a reconnaissance car, road-haulage or a heavy artillery tractor. The 28bhp engine of the Volkswagen should be able to meet all these military requirements. The ideal standard engine which I envisage must have two characteristics: (a) it must be air-cooled; (b) it must be easy and swift to dismantle and change. The latter characteristic is particularly important because, as this war has shown, it is more difficult to get spare parts than to get a complete engine unit."

Production shifted up a gear; in 1942 delivery of the 5,000th Kübel could be celebrated. At that time its price to the army was RM3,457. Production, which had been flat through most of 1941, began to rise late in the year and kept climbing well into 1944. Tropical battle zones opened up to the versatile Kübel after proving trials were conducted successfully in occupied Afghanistan and Greece.

Observed by horse-drawn troops, the driver of a Type 82 peered around his door to find a way forward through muddy terrain that plagued the Russian front. Its lightness was a huge asset to the Kübelwagen in such conditions



'The military version of the VW performed without giving the least trouble, despite the desert heat, the sand and the brutal strain'



In Greece, from which British, Anzac and domestic forces were swept by the Wehrmacht in the spring of 1941, the German flag fluttered over the Acropolis on 27 April. A Kübelwagen posed there triumphantly



A military version of Porsche's front-engined Wanderer chassis well illustrated the origin of the term Kübelwagen as used for most German military people-carriers with their Kübel or bucket seating.

Equipped with large-section (200 x 12) 'aero' tyres on special Kronprinz wheels that let them take full advantage of their light weight, the Type 82s proved their merit by skimming over the desert sands of North Africa. And if one did get stuck in a ditch it was easy enough for a few soldiers to heave its light chassis out and send it buzzing onward.

It would be an exaggeration to say that the Kübels in North Africa were trouble-free. Said one German workshop report from the front, "At first this vehicle gave very good performance, but after 5,000 to 6,000 km every possible type of trouble appeared." One weak spot was the rear-hub reduction gears, a design feature which was unique and, as a result, tended to escape the routine maintenance so essential to its reliability.

Engineers from Porsche were quickly on the scene to diagnose such problems. They suggested field expedients and recommended changes to the production cars. Porsche's people considered it vital to build a cooperative relationship with the army vehicle-service personnel; generally they succeeded.

They realised that it was essential that the military version of the KdF-Wagen gained an excellent reputation among the soldiers and their families they were counting on to keep saving to buy the civilian edition. To this same end the technical manuals produced for the Type 82 carried the civilian KdF-Wagen service emblem

on their covers. This, soldiers were to understand, was the wartime version of the same car they would be driving after their victory.

Invasion of France

Field Marshal Erwin Rommel first made use of a handful of the fast-moving Kübels in the invasion of France. Later, saying that they could follow wherever a camel could go, the bold and brilliant Rommel exploited their capabilities to the full in his African campaigns. "With its black, white and red command flag on its fender," wrote historian David Irving, Rommel's "own Volkswagen Kübel car was clearly visible. From it, he set the angle and tempo of the attack. If his car was shot up or ran over a mine, he simply commandeered another."

"You saved my life," Rommel told an astonished Ferdinand Porsche when they met during the war. "I was using one of your Kübelwagens," the Field Marshal explained, "which went through a mine field without setting it off. The big Horch that was following me, with all our luggage, went sky-high!"

"It was a great car," Rommel's technical advisor John Eschenlohr told Art Railton. "Everybody drove them, officers and men. You could trust it because you knew you would get back if you went in a Kübelwagen." If they received cars without the big "aero" tyres that coped easily with the sand dunes, they installed their own from aircraft supplies.

Kübels were ubiquitous in all German theatres. They were personnel carriers, munitions carriers, fuel carriers, ambulances, siren cars, cannon tractors, engineer vehicles and communications cars. Able though they were, however, the Type 82s could do little without fuel. Lack of fuel, especially in the Wehrmacht's more extended and remote fronts, meant that many serviceable vehicles of all kinds, including Kübels, were abandoned in the field.

In North Africa many Kübels were left behind with only vapour in their fuel tanks when the rest of Rommel's army withdrew after the British counter-attacked successfully late in 1942. A decade later 350 wartime Volkswagens were still being driven happily by the local population in Libya and other Northern African nations. The situation was no better on the Russian front, said Hans-Georg Mayer-Stein: "Since the German troops in the east were more and more involved in losing battles, at least since 1943, there was scarcely time for vehicle maintenance. In the front-line repair shops, only makeshift repairs were made, or damaged vehicles were cannibalized, in order to keep their time out of action short.

As a rule the life span of a vehicle lasted only three weeks. The German military vehicles of 1944-1945 thus made a miserable impression: bashed and bent body panels, missing parts, wrong wheels and tyres, etc. Many a Volkswagen was simply left by the roadside as the German troops retreated."

Many examples, captured intact, were commandeered for use by the allied forces, who valued their mobility. In the Sahara, their saying was that one Kübel was worth two Jeeps. Several were liberated for study back home in Coventry and Detroit. The allies were deeply curious about the design of these agile German vehicles, based as they were on Hitler's famous yet mysterious and indeed notorious people's car. In years to come they would see many more of the civilian version on the roads of the world. ◀

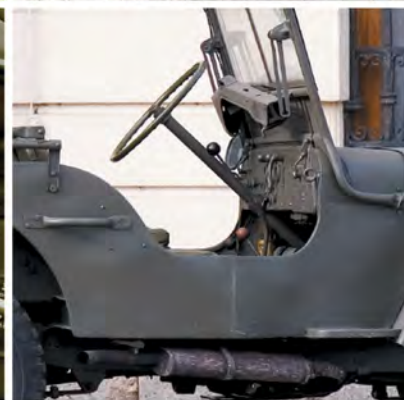
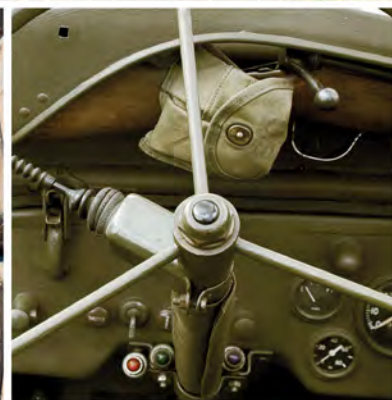
*This article on the Volkswagen Type 82 has been adapted for CMV by Karl Ludvigsen from his book entitled, **Professor Porsche's Wars**, reviewed in the May/June 2015 issue.*



In 1938 enthusiastic SS troops connived with mechanics at Porsche's Zuffenhausen workshop to make this "breadboard" sample of a possible military version of the Volkswagen. A sectioned V30 prototype was in the background



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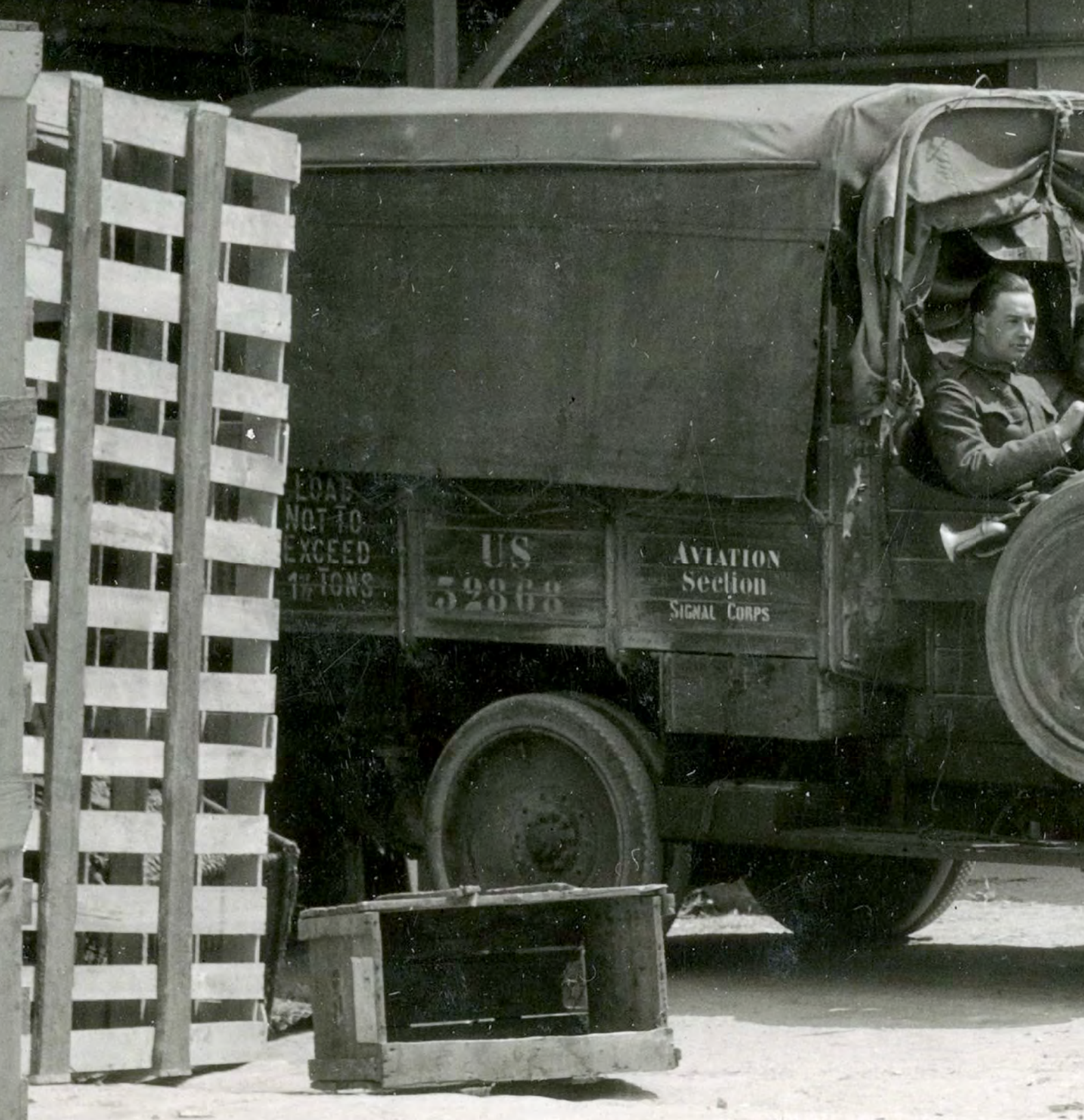
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The original caption for this Ontario photograph, that was passed by the censor in January 1941, reads, "Testing Ground: Each vehicle is given rigid tests to ensure that nothing will go wrong on the field of battle. A gun tractor is shown here as it goes bouncing across the testing ground." There is no mention of what this Field Artillery Tractor (FAT) was driven over to get off the ground so spectacularly. This FAT is the 1941 Canadian Military Pattern (CMP) Ford with a No11 cab on the 101in wheelbase version of the Ford FGT chassis. It was powered by Ford's venerable, 95bhp, flathead V8 and had a 4x4 system based on the Marmon-Harrington type



ARM-375





'The Air Service set about designing and building their own 30cwt truck'

It seems that for the potential restorer of a World War One vehicle the best place to find a candidate is still France. You are unlikely to find a British-built vehicle, but ones of American or French origin do have a habit of turning up. At the end of the war the US Army disposed of their surplus equipment including many thousands of vehicles to the French army who, along with their own surplus, sold them off via

auctions. Starved of new vehicles for five years they found eager buyers and had a secondhand life until being eventually scrapped or tucked away in barns and left to gather dust.

One barn find which was recently brought back to the UK was a remarkably original ex-French army 1917 Fiat 15 Ter which had almost been in the same family since its disposal by the army shortly after the end of the war in 1918.

I say almost, because the documents that came with it show that having been sold into private ownership at the end of World War One it was requisitioned back into French military service in September 1939. Unfortunately, we don't know how or where it served but we do know that by a remarkable stroke of luck the same family acquired their truck back at the end of World War Two, albeit now fitted with a

Tim Gosling is invited along to see an ex-army French truck that served in both world wars



Photographed at the US Signal Corps research and inspection laboratories in Paris, this Fiat was an ideal truck for the Aviation Section who bought 1,000 examples

Gallie Charm

German temperature gauge. Surely, one of the very few vehicles which served in both World Wars and possibly even on both sides?

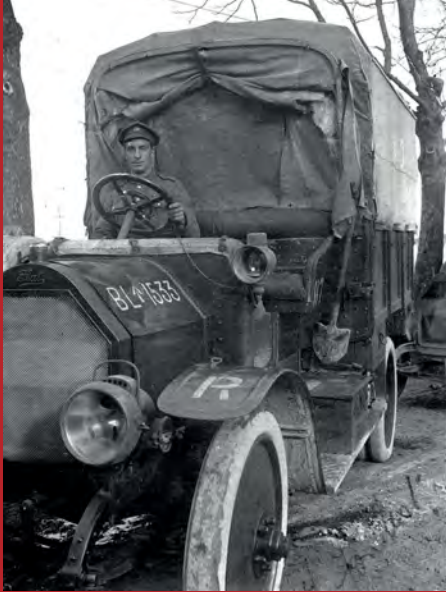
This Fiat had a second lease of life working on a farm in the South of France until the owner no longer had the strength to hand crank the engine, at which time it was relegated to a barn.

In 2015 the grandson of the original owner put the Fiat up for sale. As the owner made

it clear that he would not haggle on the price and would only accept cash, which had to be inspected by a bank to ensure there were no forgeries before he even showed them the Fiat, some potential customers were probably put off. Unperturbed, Rowley Moores travelled from Dorset on the 20-hour round trip, bought the Fiat, took it home and invited me to come and look at it. My immediate thought was that it is

probably the most complete unrestored World War One vehicle I have ever seen.

The bodywork is all original, the engine turned and after a small amount of tinkering it even burst into life. On the downside, the tailgate, rear mudguards and two of the four rear wheels are missing, the replacement of which is not insurmountable. Being in such original condition the owner felt that he



In service with the British Army in Italy the number on the Fiat carries the prefix BL which presumably stands for British Lorry



The Italian Government provided 294 Fiat 15 Ter to the British Army which had been sent to Italy to assist after the disastrous battle of Caporetto



Looking like a colander, this Fiat has been on the receiving end of a shrapnel burst. Any passengers would have been unlikely to survive



The pneumatic tyres allowed the Fiat a top speed of 36mph which is double that of a comparable size solid-tyred truck



The Fiat was right-hand drive which gave a better view of the edge of the road which was particularly important while navigating mountain roads

could not possibly restore it and that as it was running, it should be left unrestored as a testament to its interesting history.

Fiat

The origins of the Societa Anonima Fabbrica Italiana di Automobil (shortened to Fiat with the addition of a T standing for Turin) go back to July 1899 when nine prominent Italian businessmen, set up an engineering company with the objective of establishing an Italian motor industry. Concentrating on overcoming design problems Fiat built just five cars that year, 25 the following year and 175 the year after that. By 1903 Fiat had started building commercial vehicles as well, using their 24bhp car engine in a two-ton cab-over-engine type chassis. This was followed in 1906 by a larger truck powered by a 40bhp engine. Fiat had already identified a demand for light commercials and successfully met this by fitting a van body onto a car chassis. This was followed by a range of light trucks but in 1911 they introduced what would become their most successful commercial vehicle so far, the 15 Ter, the production of which would continue up until 1923.

The first Fiat 15 Ter trucks were fitted with a 20bhp (3,052cc) engine but in 1913 to meet a demand from the military this was replaced with the more powerful 30bhp (4,396 cc) engine. This, along with a change from wooden spoke to metal disc wheels now shod with pneumatic tyres would enable the Fiat to carry loads of up to 1.5 tons at speeds of up to 36mph.

One of the most innovative features of the Fiat was the design of the back axle. The complete axle including the differential housing and torque tube was made out of two T-shaped steel pressings bolted to each other. Although Italians drove on the right hand side of the road, due to the mountainous roads it was thought safer to have the driver also on the right hand side so that he could see how close to the edge he was driving.

The driving controls are fairly conventional with the handbrake and the gear lever to the right of the driver, but the pedals are arranged with the accelerator in the middle, the footbrake on the right and the clutch on the left which takes a few minutes of practice to get used to.

Starting any early truck with the starting handle is not a task for the faint-hearted and this Fiat



In service with a French medical unit, the starting handle has been secured with a leather strap to prevent it from fouling the uneven roads



Photographed shortly after returning from France the Fiat was found to be in remarkable condition. It did not take long before the engine was running

SPECIFICATIONS

- Make **Fiat**
- Model **15 Ter**
- Nationality **Italy**
- Year **1917**
- Used by **Italy, France, UK, USA**
- Production Run **1911-1923**
- Engine **Fiat 53A**
- Type **Four-cylinder**
- Fuel **Petrol**
- Displacement **4,398cc**
- Power **40bhp @ 1800rpm**
- Torque **Not known**
- Transmission **Shaft drive**
- Type **Manual**
- Gears **Four-speed**
- Transfer Box **None**
- Suspension **Leaf springs**
- Brakes **Transmission with hand brake on rear wheels**
- Wheels **Steel disc**
- Tyres **880X120 with dual tyres on rear**
- Crew/seats **Two seats**
- 30cwt payload**

Dimensions (overall)

- Length **15 feet**
- Width **Two feet 11.5in**
- Wheelbase **10 feet**
- Weight **25cwt**

Modifications

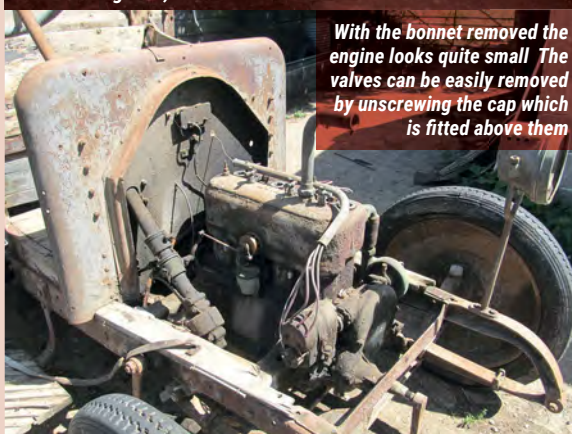
None. Very original but missing rear dual wheels

Additional Notes

Owner has no plans to restore it but leave it running in its original condition.



The back axle was made of two steel pressings bolted together with the date of manufacture being stamped on the case. In this instance August 2, 1917



With the bonnet removed the engine looks quite small. The valves can be easily removed by unscrewing the cap which is fitted above them

'The engine turned and after a small amount of tinkering it even burst into life'

certainly follows that rule. In fact the reason why it survived so well is because the original owner no longer had the strength to turn the handle and the constant threat of it kicking back and either hitting him in the face or breaking his fingers did create a preference for an electric starter. I am pleased to say that the current owner who is very experienced in these old machines quickly got the Fiat running and has taken it to several shows although he is well aware of the risk presented when starting it.

Use during World War One

In 1909 the French government, on the basis of national security, directed that all military trucks bought by the French Army should be manufactured in France from French-sourced material. This is all well and good but due to the enormous demand from 1914 the French manufacturers were unable to keep up and the military was soon looking overseas for trucks. Because they shared a border, Italy made an ideal supplier, even more so when it became apparent that Italy had excess capacity for their own needs. France bought large numbers of

'Survivors in the UK are few and far between'



Fiat painted their name on the sides of the canvas which probably didn't make good camouflage. Unusually, this example has been fitted with a windscreen

the Fiat 15 Ter, the 3.5 Ton Model 18BL as well as ambulances and cars.

Rather unsurprisingly, the largest user of the 15 Ter would be the Italian army who, as the end of the war approached, had nearly 7,500 in service. Most of these were general service trucks but they were also used as workshops, searchlight carriers and ambulances. The ambulances could hold six stretchers which were suspended from the ceiling and the sides using slings and hooks.

Great Britain was a much smaller user of the Fiat 15 Ter and according to Bart Vanderveen there were just 386 in service by 1918. Of this number 294 were in service with the British Army in Italy. In October 1917 the Italians had suffered a major defeat at the battle of Caporetto resulting in British and French troops being rushed to Italy to help bolster the defence. Short of transport the Italians provided the British with examples of the Fiat 15 Ter.

When the Americans started arriving in France in 1917 they could not supply enough trucks to meet their own immediate needs. The US Air Service (or to give it its correct title at this time The Aviation Section, Signal Corps) required a 30cwt general service truck to meet their specialist needs. As there was no such size truck in use by the US Army at that time the air service having seen the Fiat 15 Ter in service with the French army contacted the Italian war department. The Italians already able to meet the demands of their own army were happy to supply them with 1,000 examples. The Air Service set about designing and building their own 30cwt truck (which was known as the Light Aviation) but changes in design delayed the arrival of this truck until the war was almost over.

Survivors

Production of the 15 Ter continued in Italy until 1923 by which time 26,714 had been made and in Russia the Zil company made 6,285 of them under licence (known as the AMO F-15) until production ceased in 1932. With just under 33,000 examples built, several have survived into preservation.

Survivors in the UK are few and far between and, in addition to the one featured here, there is

another within the Duxford land warfare hall which has been restored in British military markings appearing as it would have done during the fighting in Italy in 1917. This restored example was brought into the UK with the remains of enough parts to restore two more. Many years ago, I was approached by a gentleman with photographs of them which he was now offering for sale. I didn't take him up on the offer but I do wonder what happened to them. ◀



Located at Duxford is the Fiat 15 Ter which was restored by Richard Peskett and which is in the markings of the British Army in Italy



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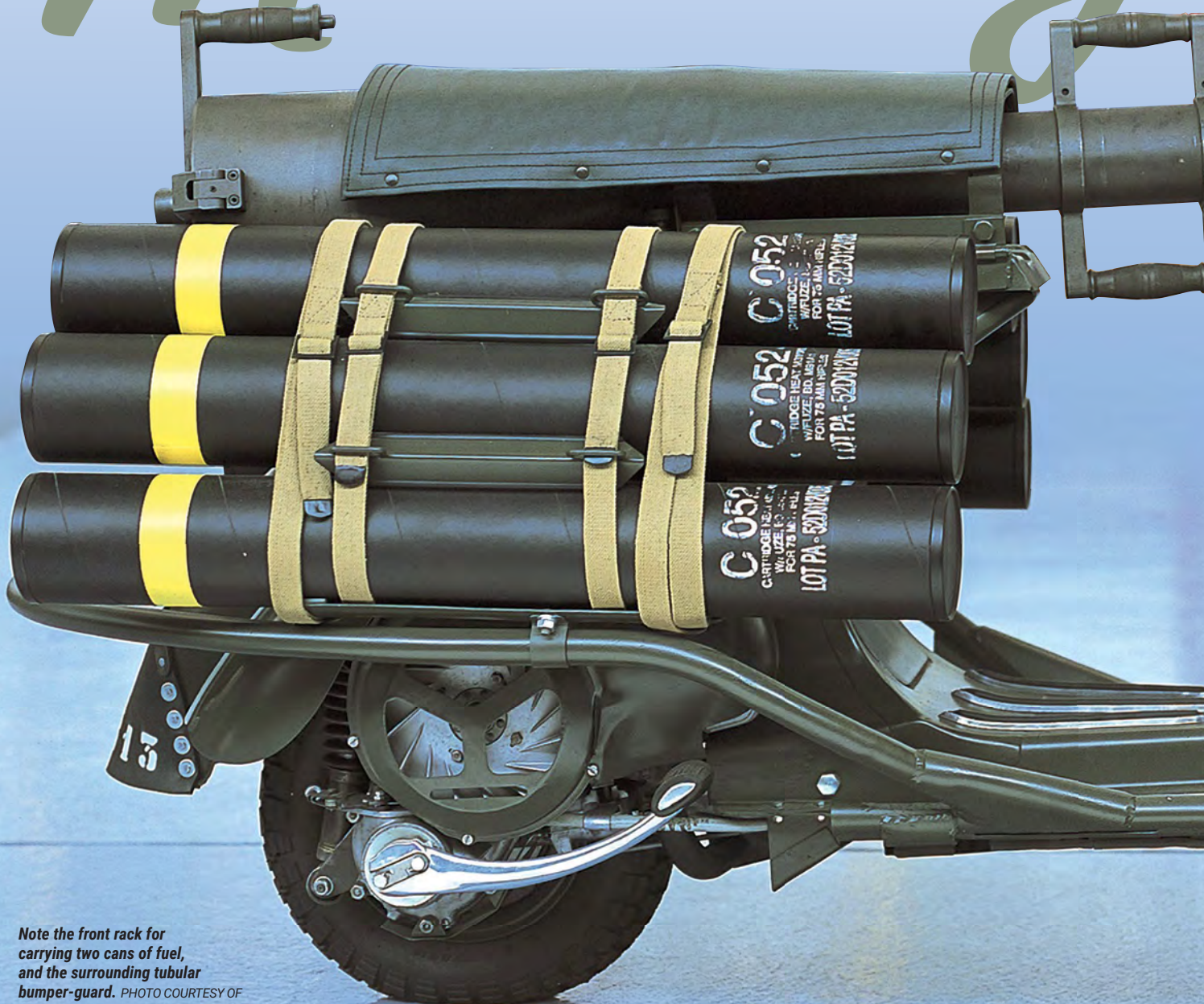
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*'The Vespa TAP could carry
two people and pull a small one-wheeled trailer'*

Military



Note the front rack for carrying two cans of fuel, and the surrounding tubular bumper-guard. PHOTO COURTESY OF THE PIAGGIO MUSEUM, PONTEDERA, ITALY.

The diminutive Vespa scooter was an unlikely tank destroyer
but it proved to be surprisingly effective

Moped



A vintage ice cream or sherbet-coloured Italian Vespa scooter might be the last image which comes to mind when contemplating classic military vehicles. But so successful, reliable and durable did the Vespa prove to be, that the maker designed a military model which had a beefed-up frame and carried a recoilless rifle: the Vespa 150 Troupes Aéro Portées (TAP).

The Vespa TAP was conceived of by the French Ministry of Defence in the early 1950s to be employed in Vietnam during the First Indochina War. The Corps Expéditionnaire Français en Extrême-Orient troops were facing artillery and Soviet T-34 tanks supplied by China to General Giáp's Viet Minh troops, usually concealed in thick jungle. The French Army therefore required an agile vehicle which carried anti-tank weaponry, and which could be para-dropped from the C-119 Flying Boxcar behind enemy lines. The army also wanted to replace their American Cushman scooters with more modern machines.

Piaggio had already been contemplating a military Vespa for some years. A prototype, the Vespa Forze Armate, was developed in 1949-51 with several options in mind, including an under-saddle two-way radio, an armoured leg shield, and a sub-machine gun mounted on the handlebars. This scooter had many advantages over military motorcycles of the period. These included a lighter weight, better fuel economy, superior low-speed manoeuvrability, the inclusion of a spare wheel coupled with quick-change capability, and its reliable direct-drive ►

system (as compared to a motorbike's chain drive).

Though the Vespa Forze Armate underwent some NATO trials with favourable results, in 1952 Enrico Piaggio cancelled the project based on his experience with the lowness and slowness of government payouts for purchases of vehicles.

However in 1953 the French Ministry of Defence arranged a competition between scooter manufacturers to design a new machine to meet their airborne requirements. Entrants included prototypes based on the Bernardet 250, the Valmobile 100,



Prepping the scooter after an aerial drop. PHOTO RETRIEVED FROM [HTTP://VESPA-TAP.COM/](http://vespa-tap.com/) COPYRIGHT UNKNOWN
ABOVE INSET: Insignia of the 9th Parachute Chasseur Regiment. PHOTO BY BRUNOLC, WIKIMEDIA COMMONS, PUBLIC



The ammunition racks have been unloaded on this Vespa TAP example on display at Saumur Général Estienne Museum. PHOTO BY RAMA, WIKIMEDIA COMMONS.

and the Vespa. The Vespa won out, and the Ministry of Defence commissioned Piaggio to develop and build the machine.

But the quick escalation of the First Indochina War, culminating in the fall of Dien Bien Phu on May 7, 1954 meant that the Vespa TAP project was too late to have had any effect on that outcome.

Piaggio presented the Vespa TAP, which had a 125cc engine, at the 33rd Milan Salon in December 1955. The vehicle, also designated the TAP 56, went into production in January 1956 in Fourchambault, France by the Ateliers de Construction de Motocycles et Automobiles

(ACMA), the official French assembler of Vespas for the transalpine market, under license from Piaggio, Italy.

The scooter had a 146cc engine derived from the Piaggio 125cc motor, but with a different bore and stroke. (Only prototype and pre-series Vespa TAPs had the 125cc engine.) It was painted in standard dark olive green, or sand.

The Vespa TAP's transmission had lower gearing than did that of the civilian model, and the scooter could do 66km/h (41mph) on the road. The engine cover and front mudguard were reduced in size as compared with those of the civilian scooter. It was fitted with a surrounding tubular bumper guard, had extra reinforced steel around the crankcase, and rubber-coated steel strips as muffler supports. These additions were to not only make the Vespa more robust for hard use on rough ground, but to protect the machine during impact when para-dropped.

The Vespa TAP could carry two people and pull a small one-wheeled trailer. The rear rack hauled six rounds of ammunition, and the front rack was loaded with two cans of fuel. When mounted on the scooter, the gun protruded more than one metre through the leg shield. Vespa TAPs produced in 1959 were designated TAP 59.

The Vespa's weapon was an American-made M20 75mm recoilless rifle which was very lightweight (52kg) in comparison to a standard 75mm cannon. This anti-armour gun, launching a high-explosive anti-tank (HEAT) warhead, could penetrate 100mm armour, and had a range of 6.4km (7000 yards). It vented the propellant gasses out the rear, which negated the need for a heavy mounting system or a mechanical recoil. The Vespa TAP carried a



A Cushman Model 53/G683 on the move at Bridgehead, 2011. PHOTO BY ALFVANBEEM, WIKIMEDIA COMMONS.
BELOW RIGHT: Note the chain drive on this Cushman Model 53/G683 scooter, photographed at the Marshall Museum - Liberty Park - Oorlogsmuseum Overloon, The Netherlands. PHOTO BY ALFVANBEEM, WIKIMEDIA COMMONS.

THE CUSHMAN AIRBORNE SCOOTER

The civilian Vespa was inspired by the American Cushman scooters, which the US military used in Italy and Austria during World War Two. Cushman made scooters for the US Army, Army Air Force, and Navy. The scooters were effective for messenger riders to bypass difficulties such as destroyed bridges and roads. The Cushman Model 53 (US Army designation G683) was designed to be deployed by the US Army Airborne, and became known as the Cushman Airborne. Far from the aerodynamic

design of the subsequent Vespa, this one-seater scooter had an angular body and a rudimentary skeletal frame. It weighed in at 115kg and its 4.6bhp Cushman one-cylinder four-stroke 242cc engine powered the vehicle up to 65km/h (40mph) on the road. The G683 entered service in 1944. The scooter proved to be popular in both military and civilian guises, leading Cushman to introduce the Model 53A for the postwar civilian market. About 4,500 total examples were made.





SPECIFICATIONS

Make **ACMA**
 Type **Motor Scooter**
 Model **Vespa 150 TAP**
 Nationality **French**
 Year **1956**
 Production Run **1956-59**
 Engine **ACMA**
 Type **Air-cooled two-stroke one-cylinder**
 Fuel **Oil-petrol mixture**
 Displacement **145.2cc**
 Power **6.2bhp**
 Torque **n/a**
 Transmission **Manual**
 Type **n/a**
 Gears **Three**
 Suspension **Helicoidal springs and hydraulic shock absorbers**
 Crew/seats **One-two**

Dimensions(overall)
 Armament **M20 75mm recoilless rifle**
 Armour **n/a**
 Length **1760mm**
 Width **695mm**
 Weight **115kg**
 Vertical obstacle **225mm**
 (ground clearance)
 Trench **n/a**

ABOVE: The Vespa TAP's front mudguard is considerably shortened compared with that of the civilian scooter RIVARS. REGISTRO ITALIANO VEICOLI ABITATIVI RICREAZIONALI STORICI, FOTO DI C.GALLIANI, WIKIMEDIA COMMONS. BELOW: Ethiopia was the first nation in Africa to contribute a complete unit of ground troops to the UN Korean command. Three Ethiopian gunners from Addis Ababa preparing to fire a 75mm recoilless rifle are, from left to right: Corporal Alema Welde, Corporal Chanllo Bala and Sergeant Major Bogale Weldeynse. Note the tripod mount. AIR AND SPACE MUSEUM #: 51-12883-306-PS-D (RELEASED TO PUBLIC), 1951.



THE M20 RECOILLESS RIFLE

The US Ordnance Department Small Arms Division developed the M20 recoilless rifle, and tested 75mm prototypes in 1944. Production began in March 1945. The M20 was employed in the final months of World War Two, and saw widespread use during the Korean War. It could be mounted to and fired from a vehicle, and was compatible with the Browning M1917A1 machine-gun tripod. The weapon proved effective in destroying pillboxes and lightly-armoured vehicles, but the M20 HEAT warhead turned out to be ineffectual against Korean War T-34 tanks which had been up-armoured. Wire-guided missiles, introduced during the Vietnam War, supplanted the recoilless rifle. The US National Park Service and Forest Service use the M20 for avalanche control operations.



A peek into the breech of the M20 mounted on a Vespa TAP. RIVARS REGISTRO ITALIANO VEICOLI ABITATIVI RICREAZIONALI STORICI, FOTO DI C.GALLIANI, WIKIMEDIA COMMONS.

the Vespa TAP proved to be effective against field fortifications in the Algerian War (1954-62). Some were used as service vehicles by the 9th Parachute Chasseur Regiment in Souk Ahras, Algeria. The scooters also saw action in the Suez Crisis. According to Piaggio, 600 Vespa TAPs were made.

In 2012 in Monaco, Coys auctioned a TAP 59 which had been stationed at Messina in northeast Sicily, on the Strait of Messina which lies between Sicily and mainland Italy. The scooter fetched £12,336. Another Vespa TAP, which was in Reggio Emilia, Italy was auctioned on Catawiki in 2016. This example, listed as a 1957 model, had chassis No. 622 TAP and engine No. 7859 TAP. Besides the M20 and tripod, accompanying equipment included gasmask, driving goggles, helmet, six ammunition holders, ballistic sextant and viewfinder, excavating shovel, and signal lamp. This Vespa realised £14,536. ◀



An excellent view of the bumper-guard encircling the rear of the machine. R.I.V.A.R.S. REGISTRO ITALIANO VEICOLI ABITATIVI RICREAZIONALI STORICI, FOTO DI C.GALLIANI, WIKIMEDIA COMMONS. BELOW RIGHT: The M20 extends more than a metre beyond the leg shield. PHOTO COURTESY OF THE PIAGGIO MUSEUM, PONTEDERA, ITALY. BELOW: Spare wheel, and a can of Castrol Oil. R.I.V.A.R.S. REGISTRO ITALIANO VEICOLI ABITATIVI RICREAZIONALI STORICI, FOTO DI C.GALLIANI, WIKIMEDIA COMMONS.



tripod which the weapon attached to for firing, and the ammunition's warheads could be switched to a smokescreen option. The Vespa TAP's armament led to the scooter being nicknamed the 'Bazooka Vespa'.

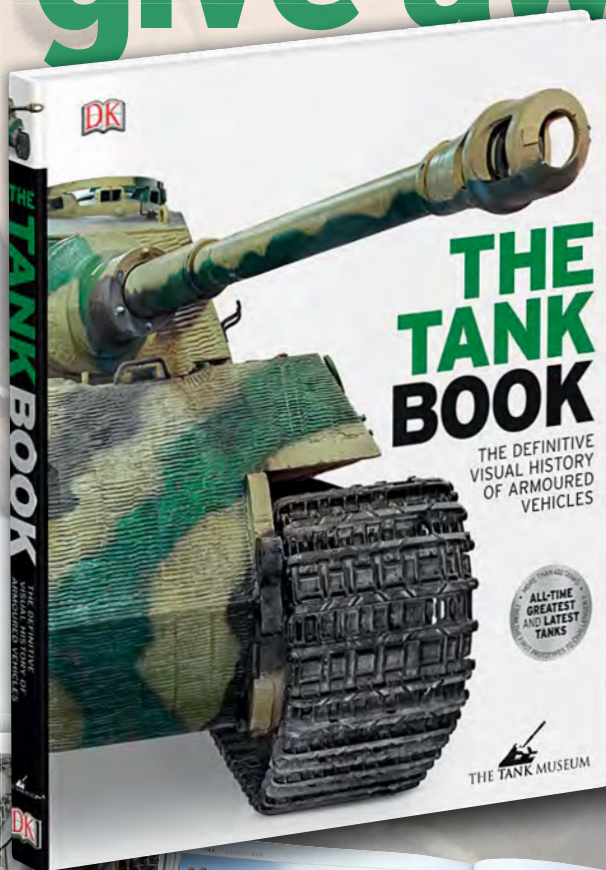
The Vespa TAP was para-dropped preassembled on pallets, cushioned with hay bales. Five parachutes carried two scooters – one the Bazooka Vespa, the other a Vespa TAP support vehicle carrying ammunition – one M20 recoilless rifle, 16 20lb rounds of ammunition, and two paratroopers.

Also employed by the French Foreign Legion,



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Day Trip to Kursk

James Kinnear took a 1300km road trip to visit the site of one of the most famous battlefields in World War Two history

Being based in Moscow has had some particular advantages. Over the years I've visited wartime Russian Front battlefields on what is today the territory of the Russian Federation and now independent Belarus and Ukraine. All these visits have been particularly thought provoking and poignant, but it was only recently that the opportunity arose to visit one of the most famous battlefields in Soviet World

War Two history; the battlefields near a provincial Russian city that is widely known across the world even by those with no particular knowledge of history or warfare - Kursk

The Battle of Kursk was the greatest clash of armour in history. Following as it did after the defeat of the German 6th Army at the Battle of Stalingrad, it was the definitive turning point of World War Two on the Eastern Front, and the

beginning of Red Army offensive operations that would eventually see Red Army tanks parked up outside the Reichstag in Berlin.

The Battle of Kursk, or more correctly the plural Battles of the Kurskaya Duga was not actually a set-piece battle, but rather a series of ongoing engagements fought in southern Russia over many weeks in the summer of 1943.

The Kurskaya Duga or salient was a break-





through from a Red Army bridgehead formed around the city of Kursk from which the battle takes its name. Though it was in the centre of the salient, the city of Kursk was not the epicentre of the fighting, which was concentrated on a pincer movement breakout in the region of Orel to the north and around Belgorod to the south, the overall area being just north of Kharkov. To give some perspective, the Battle of Kursk

was conducted over a front that was more than 300km wide, with fighting extending over thousands of square kilometres in an area of gently undulating farmland geographically larger than Wales.

Sources have always conflicted to some degree as regards the exact numbers of infantry, armoured vehicles, artillery and aircraft involved in the battles of the Kursk salient. ▶



ABOVE RIGHT: The 'Kurskaya Duga' or Kursk salient was centred around the city of Kursk, with Orel in the north and Belgorod to the south To give some perspective on scale, the bulge in the pincer between the north and south is more than 300km wide
TOP: Another plinth-mounted T-34-85 serving as a war memorial on the Prokhorovka battlefield
BELOW: T-34-85 tanks 'in formation' with the Prokhorovka battlefield in the background



'The Battle of Kursk was the greatest clash of armour in history'



ABOVE: Destroyed Red Army T-34 tanks among the ripening crops, typical of the Kursk battlefield in the summer of 1943

MAIN IMAGE: The view from the country roads surrounding Prokhorovka exactly 70 years after the battle has not changed in the slightest, with undulating fields of ripening sunflowers giving good cover for infantry and anti-tank weapons

BELOW: A Red Army SU-122 assault gun near Prokhorovka, Battle of Kursk, July 1942





These two T-34-85s with 'starfish' road wheels as introduced during capital repairs in the 1950s have Guards tank division markings

One of the main memorials in the region lists Red Army participants at the decisive Battle of Prokhorovka near the end of the overall Battles of the Kursk salient as 1,336,000 officers and men of the Central and Voronezh Fronts, with 19,100 guns and mortars (not including Katyusha multiple rocket launchers), 3,444 tanks and self-propelled guns and 2,900 fighter aircraft.

It was one summer weekend, when my colleague and driver Valery and I decided to visit the battlefields of the Kursk salient and some of the memorial complexes there, a 1300km round trip not including the touring around, the same distance as travelling from London to Edinburgh and back.

The Kursk salient is an area of generally flat land with low undulating hills, with rich and particularly loamy dark earth sown with corn and sunflower fields, which at the time of the Battle of Kursk gave infantry and anti-tank weapons significant cover. For tank modellers it should be noted that the crops were not ripe at the time of the battle, hence were for the most part

a pale green, not bright yellow.

The fiercest fighting was around the village of Prokhorovka, which is some 140km south of the city of Kursk from which the battle takes its name. The central Kursk battle memorial complex is located near the village and for many years was a simple memorial complex, but it has been recently renovated and is now bordering on what might be called a Russian tourist attraction, though the number of foreign visitors is obviously small due to the remote location.

The Prokhorovka complex, as with so many Russian memorial sites, has been completely revamped in recent years, and is now an impressive collection of tanks, self-propelled and towed artillery. Sadly, the actual tanks which participated in the battle, such as the early 76.2mm F-34 armed T-34, the T-70 and the SU-122 are not represented, all the tanks and self-propelled guns being later production types such as the T-34-85, the SU-100 and the IS-2. Nevertheless, the central display is impressive, with the tanks and other vehicles laid out as

This ISU-152 Self-Propelled Howitzer is displayed as a representation of the earlier SU-152 based on the KV heavy tank The slogan reads "Death to the Fascist Beasts" which may have been more politically appropriate in 1943 than today, though maybe not...



There are many plinth-mounted tank memorials in the Kursk area. This T-34-85 is located at Prokhorovka Memorial Complex



This IS-3M at the Prokhorovka Memorial Park is also chronologically misplaced, the IS-3 making its first public debut at the Allied Victory Parade in Berlin in 1945. There are actually no appropriately in-period tanks on display at Prokhorovka



An SU-100 self-propelled gun The SU-100 was the last such wartime weapon, replacing the Kursk era SU-85 Though labelled as self-propelled guns, the primary role of these vehicles was as long-range tank destroyers



An IS-2M heavy tank The earlier KV was still the standard Red Army heavy tank at the time of the Battle of Kursk but there are no surviving KV tanks in the immediate region



A Soviet 45mm anti-tank gun looks out over the battlefield in the village of Pervie Voin, near Orel



Soviet heavy artillery was highly effective in the anti-tank role, armour penetration being achieved by sheer projectile weight. The 152mm M-1937 (ML-20) howitzer was particularly effective



This 76mm ZIS-3 dual-purpose gun at the Kurskaya Duga Memorial Complex at Yakovlevo was commanded by Sgt P D Azarov and destroyed during the Battle of Kursk, having taken a heavy toll on Axis armour

The main Kursk memorial complex at Prokhorovka has a large display of tanks. The memorial commemorates those that died in battle and now live forever in people's memories, seared into Russian understanding of the reality of war in a way that now seems missing in western Europe



'The Battle of Kursk was conducted over a front that was more than 300km wide'





The Battle of Kursk was as much a duel between tanks and anti-tank weapons as it was directly between tanks. The 76 2mm ZiS-3 divisional gun was widely used in the Red Army in the anti-tank role



A 122mm M-1931/37 (A-19) Corps artillery piece mounted as a war memorial



The 57mm ZiS-2 looks nearly identical to the 76 2mm ZiS-3, but was a more focused anti-tank weapon. It has a longer barrel without a muzzle brake



if crossing the surrounding plains. Though generally known historically as a tank battle fought over a large geographical area, direct tank-tank engagements were less common than combat between anti-tank weapons and tanks. The whole region is scattered with individual war memorials, many of which are anti-tank and artillery pieces that are dug-in as they would have been during the battle.

In addition to the main and most visited Prokhorovka complex (which today has all the tourist essentials including a café and souvenir shop) there are a myriad of markers and small museum complexes scattered around the region, many of which are perhaps more individually poignant. In many areas the original trenches have been left untouched as a stark reminder of the ferocity of the battle, while

A T-34-85 serves as a war memorial in the village of Pervie Voin. Tanks plinth mounted as war memorials are to be found throughout Russia and other countries of the former Soviet Union, and are always a poignant reminder



MAIN IMAGE: A massed formation of T-34-85 tanks and SU-100 tank destroyers. Both are later versions of tank and SU-types that served during the Kursk offensive





ABOVE LEFT: A 7 62mm DT tank machine gun and other artefacts recovered from the battlefields, on display at the Kurskaya Duga Memorial Complex in the village of Yakovlevo

ABOVE MIDDLE & RIGHT: The gun mantlet from a 76 2mm F-34 armed T-34 M-1942 or M-1943 and damaged T-34 track links recovered from the battlefields around Prokhorovka

TOP: A Russian schematic of the Kursk salient, located at the Kurskaya Duga Memorial Complex and museum in the village of Yakovlevo. The Kursk salient covered an area of many thousands of square kilometres

the less touristic settings and in some cases the eerie silence surrounding the sites focuses attention on what Kursk was, and what it meant for the Red Army and the combatants on both sides of the conflict.

The battlefields of Kursk are not exactly easily accessible other than by car; though I do know one Russian-speaking British tank-nut who jumped on the local train from Moscow to Kursk and did the local journeys at the other end by bus.

Most of the sites are entirely open with the museums functioning by the usual Russian timetable of more or less daily 9-5 but with 'sanitary dien' (usually a Monday) for cleaning. Getting to the area without a car and strong nerves (the roads are excellent near Moscow but then gradually deteriorate as they get nearer the Ukrainian border, and driving standards are atrocious) is not advised unless a Russian speaker.

Prokhorovka is close to Belgorod, which is in turn just over the Russian side of the Ukrainian border. The nearest big city is actually Kharkov in Ukraine, but considering recent history it is easier to travel to Moscow and drive from there staying overnight at any of a number of hotels in and around Belgorod or Kursk. ◀



Memorial plaques such as this list the tank and other units of the Voronezh Front under General N F Vatutin reporting to Marshal G K Zhukov that participated in the battle at Prokhorovka

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French Protection

By the outbreak of World War Two, the Panhard 178 was considered to be the most advanced 4x4 armoured vehicle in the world – **Sheldon Rogers** traces its development



Panhard & Levassor had been producing armoured cars for the French Army since 1932 with their Type 165/175, and had previously supplied the engines for the 1925 prototype to the later produced Schneider (P16) M1928s and M1929s. However, even earlier than this, there was a Panhard & Levassor 24bhp touring car used as an unarmed reconnaissance vehicle during the 1905 French Cavalry manoeuvres.

The following year, a Capitaine H Genty adapted the vehicle to carry a machine gun. The Auto-Mitrailleuse was trailed by the cavalry during 1906 and 1907. During 1907, the Panhard-Genty machine gun car, as it became known, was hurriedly sent out to North Africa during a native uprising, and performed well according to the French Command in Algeria. After crashing in 1908, the car was returned and refitted with

the manufacturer of seven similar adapted cars from Panhard and Clement-Bayard following from its success. These were subsequently sent out to Morocco to counter similar tribal disturbances. The Panhard 178 therefore followed an already rich history in Panhard's involvement in armoured car development.

The Panhard 178 was a futuristic vehicle for its time. It was the result of a 1931 French Cavalry development programme, which incorporated three design-type criteria. One was the auto-mitrailleuse de reconnaissance (AMR), a light reconnaissance vehicle for short-range use, the second was the auto-mitrailleuse de decouverte (AMD) a fast vehicle for long distance reconnaissance for mainly road use and the third was the auto-mitrailleuse de combat (AMC) which was effectively a tank.

The full AMD requirements were released in

November 1932 outlining a vehicle that was four metric tonnes in weight, had a range of 250 miles (400km) and a top speed of 44mph (70kmph). The vehicle was required to have a 39 feet (12m) turning circle and 8mm of armour protection. The weapons were stated as 20mm with a 7.5mm coaxial machine gun.

The Panhard, was up against other manufacturers' prototypes with the Renault VX, Berliet VUB and Latil AMD. Panhard put their ideas into action for the AMD requirement, which resulted in the prototype version of their armoured car appearing in 1933, and demonstrated in January 1934 in front of the Commission de Vincennes.

Armed with a provisional Avis 13.2mm machine gun and turret. A second testing was carried out later in the same year by the cavalry, with the vehicle being accepted as the AMD

Panhard 178 AMD 35 during a parade



Front view of a Panhard-Schneider P16 Type M29

Panhard modèle 1935. Two orders of 15 vehicles were placed in the same year, one on January 1 and a second on April 29, 1935. However, delivery of the first order did not start until February 2, 1937 with the last of the second batch reaching the French Cavalry in November, due to strike actions by Panhard workers. Further orders followed, with more than 360 vehicles being in service with the three Divisions Légères Mécaniques, the French Cavalry's armoured formations. It was often referred to as the 'Pan-Pan' after the manufacturer Panhard.

Unlike their previous armoured car, the Type 165/175, which was modelled on a car chassis, this model, Type 178, was designed from scratch. What made it such an important innovation can be seen by its design specifications, with all four wheels driven by a rear-mounted engine.

Although it had beam axles and semi-elliptic leaf-spring suspension, it was equipped with large 42x9 Michelin run-flat tyres, which performed well off-road. The hull was a relatively straightforward riveted design of 6 to 20mm steel plate. The driver and co-driver sat in the hull with the co-driver operating the ER29 short range or ER26 long range radio sets.

The commander and gunner stood in the turret with simple leather belt-type seats to perch on. There were two access doors to the rear of the fighting compartment and a side door for the drivers.

The Panhard ISK 4FII bis V4 petrol engine produced 105bhp, sat low in the chassis, producing a low silhouette and was separated from the hull by a fireproof bulkhead. The steering wheels at both ends of the vehicle, allowed for fast withdrawal while undertaking

reconnaissance duties.

The eight-speed gearbox had four forward and four reverse gears. The gear changes for on-road performance were higher than the off-road and reverse drive performance. On road, the speeds achieved by the gears were: First 8.5mph (13.8km/hr), second 15.1mph (24.3km/hr), third 24.9mph (40.1km/hr) and fourth 45.1mph (72.6km/hr). Off-road and reverse were: first 4.9mph (8km/hr), second 8.6mph (14km/hr), third 14.3mph (23.1km/hr) and fourth 26mph (42km/hr).

The 'Pan-Pan', was not without its teething problems. The new APX3B turret, derived from the APX3 from the AMC-35, had problems with cracking gun sights and high internal temperatures. The vehicle was retested from June 29 to December 2, 1937 and the 1937 model, which began production in 1938, was fitted with a



**Panhard 178 AMD 35
on a rafting exercise.**



ventilation system and a gun silencer.

By the outbreak of World War Two, the Panhard 178 was considered to be the most advanced 4x4 armoured vehicle in the world. Production took place at the Panhard & Levassor factory on Avenue d'Ivry, Paris. Sub-contractor Batignolles-Châtillon of Nantes, produced the armoured hulls with the turret being manufactured by Société Française de Construction and the armament made by the Atelier de construction de Rueil (ARL). Hulls were produced at a disproportionate level to the turrets, for example in October 1939, plans for spring 1940 had 50 hulls for manufacture against only 40 turrets.

The Panhard proved to be an expensive vehicle to produce, with a single hull costing more than a light infantry tank at FF 275,000 in 1934. Nevertheless, the French Cavalry ordered more after their initial first two orders of 15 Panhards. A third order for 80 vehicles was placed on September 15, 1935, but due to the prior strike action, manufacture did not commence until around August 11, 1937.

The scheduled timeframe for delivery was from January and July 1938. However, due to more strikes and the lack of turrets the first arrived on June 24, 1938 and the final vehicle in February 1939. A fourth order for 40 and a fifth for 35 vehicles were made on January 11, 1938, with a predicted delivery for the fourth being between February 13 and July 31, 1939 and the fifth between July and December. A sixth order followed a week later on the January 18 for 80 vehicles for a delivery schedule of between June and November 1939. Of this sixth order 57 'Pan-Pans' were delivered prior to the outbreak of the World War Two on September 1, 1939.

Along with these armed vehicles some 24 radio command variants were ordered. Twelve in 1937 and another 12 in 1938 with production for all 24 beginning in December, with these variant being delivered between October and December 1939.

SPECIFICATIONS

Make **Panhard**
 Type **Armoured Car**
 Model **178 (AMD 35)**
 Production Run **1937-1940**
 Engine **Panhard**
 Type **ISK 4FII bis V4 eight-cylinder**
 Fuel **Petrol**
 Power **105bhp**
 Transmission **Manual**
 Gears **Four forward four reverse**
 Suspension **Leaf spring**
 Crew **Four**

Dimensions(overall)

Armament **1 x 25mm SA35 Cannon**
 Armour **9-20mm**
 Length **4.79m**
 Width **2.8m**
 Weight **8,200kg**

This command version (Poste Commande) was intended for deep penetration into enemy territory. Produced with a fixed unarmed turret instead of the electric traversed APX3B and without the standard radios, it had an ER27 radio set, which could transmit between 80-150km and two ER26 radio sets with a range of 60km.

Another version was produced for North Africa. The prototype vehicle left for Morocco from Bordeaux in September 1936 and was tested by the 6e Cuirassiers on the mountains and in desert conditions in October. The vehicle was accepted as the heavy reconnaissance vehicle (automitrailleuse lourde) with the Laffly S15 TOE chosen as a light version.

The initial plan was to arm the vehicles with a 37mm and later a 47mm gun. However, due to the worsening situation in Europe, the North African version was forced to mirror the stand-

ard version known as the AMD 35 type Afrique Française du Nord, but with internal changes and a more efficient radiator.

A colonial version was also produced for French Indo-China. This had a smaller one man turret, known as the APX5, which was taken from the Renault AMR 35 ZT2 light tank. It was armed with a 25mm gun and 7.5mm machine gun. There was a crew of three with a gunner/commander, driver and driver/radio operator. The first order for this vehicle was made on September 14, 1938 for four vehicles with a second order of another four vehicles following on June 10, 1939. The first order made it to French Indo-China (now Vietnam), the first two in June and the second two in July 1939. The last order did not make it out of France in time and where issued to the Vichy forces after the armistice with Nazi Germany of June 22, 1940.

A late development was to adapt the 'Pan-Pan'

Panhard 178 AMD35 of 2^{eme} Goupes de Reconnaissance de Division d'Infanterie abandoned in Northern France



into a tank destroyer. An initial proposal was put forward on January 14, 1939; this was to use the 47mm SA 35 in the existing turret. However, these were in short supply due to them being used to up-arm the Char Bs and to arm the Char D2s.

By April 1940, Panhard proposed their own version, the Voiture spéciale 207. This was effectively a Panhard 178 with a rear facing 47mm SA 37 gun, though this version only went to the development stage. Following this, there was a call for Renault to design a new closed turret. This resulted in a new octagonal turret which gave the vehicle a higher and more wedged shaped profile. The rear entry was replaced with a narrow top hatch. The new turret was heavily armoured, with the welded plate being 25mm thick with an added spaced 13mm appliqué plate on the front. It lacked the electric traverse mechanism, and instead had

'Two days later, it was destroyed by its own crew at Cosnes-sur-Loire'

to be hand cranked.

There was also no provision for a machine gun. The first prototype was finished on May 31, 1940. There were plans to build four of these vehicles a day and from August onwards to produce 35 a month. However, due to the evacuation of Paris on June 10 and the factory likewise being evacuated on June 12, 1940, the now finished prototype, known as Voiture 47, remained the only tank destroyer.

It saw action with 1er Régiment d'Artillerie de Montagne (RAM) on June 15 when it defended a bridge, destroying two German tanks and a column of vehicles.

Two days later, it was destroyed by its own crew at Cosnes-sur-Loire, while in retreat, as the bridge could not take the weight of the vehicle.

By the outbreak of the World War Two, there was around 219 Type 178 armoured cars available for action with the French Cavalry. The 6e Curiassiers were the first to receive the Panhard 178 in April 1937. By 1939, there were 11 squadrons equipped with the Panhard armoured car.

In the spring of 1940, the Panhard saw action in Norway with the 21e Escadron. By the summer of 1940, there were more than 370 vehicles in the reconnaissance squadrons for the mechanized and armoured divisions of the French Army. Reconnaissance squadrons were sent

into Belgium and Holland where they conducted skirmishes with the advancing German Army. They also engaged German reconnaissance vehicles at the battle of Hannut, in Belgium, where they suffered little or no damage.

After the defeat of the French Army in 1940, about 190 Type 178 armoured cars were taken over by the German Army and used in the reconnaissance role. They were given the designation of Panzerspähwagen P204 (f) and were used in Operation Barbarossa against the Soviet forces in June 1940, but became heavily reduced in numbers after the loss of 107 vehicles. Some that remained, were the Panzerspähwagen (Funk) P204 (f) versions with their large frame antenna which were still active on the Eastern Front in 1943, many being up-armoured with space armour by this stage.

Some 43 Panzerspähwagen (Funk) P204 (f) were converted to Schienenpanzer, railway patrol vehicles. The Vichy regime was given 64 Panhards for patrol duties, with their guns replaced with a machine gun. Thirty-four of the patrol Panhards, were taken back by the Germans and converted to open top gun carriers mounted either with the 50mm L/42 or L/60 guns. It is also reported that two Panhard armoured cars were taken by the Italians in November 1942.

However, some 45 Panhards had been hidden from the Germans. By April 1941, a new turret was being produced for these chassis, by Engineer J Restany at the Camouflage de Matériel and armed with the 47mm SA35 or 25mm SA35 guns. The turrets had 20mm plate for the sides and 10mm plate for the top. There was a

top hatch but a rear hatch was later added. By January 28, 1943 all 42 turrets were completed. Another later addition was a 7.5mm FM 24/29 machine gun. Some were put together with the hulls for trial purposes.

The majority of the cars were hidden or dumped when the whole of France was occupied by the Germans in November 1942. A number of these converted Panhards were also seized, and used by the Germans with some reportedly making it into resistance hands in the summer of 1944.

In 1944 plans were enacted to produce an upgraded Panhard known as the Panhard 178B. Fives Lille designed a new turret the FL1 which could mount the large 75mm SA45 L/32 gun and was of a larger cylindrical shape. There was an uprated four-cylinder engine and an

EM3/R61 radio set. A 47mm SA35 gun and machine gun were put into the turret replacing the proposed L/32 gun after the initial order was made on January 5, 1945, which was confirmed on July 31, 1945.

In total there were 414 of this type built. These vehicles were used by French and colonial forces in Syria, Tahiti, Vietnam and Madagascar. In Vietnam, some 24 178Bs were used by the French Far East Expeditionary Corps, which was raised in 1945 during the Pacific War, and later fought and lost the First Indo-China War (1946-1954) against the Viet Minh.

The French 15e Escadron Blindé d'Infanterie de Marine, were still using the Panhards in 1960 in Djibouti during the first referendum when joining Somalia was voted upon. The newly formed country of Syria took over old French equipment in 1944, including a number of Panhard 178B. These served briefly during the first years of the cold war.

In total there were some 729 Panhard 178s built before and during the World War Two with some 414 Panhard AMD 178Bs produced soon afterwards. Today, there are only a small number of these vehicles left in existence. There is one Panhard 178 at the Musée des Blindés in Saumur, France painted in the colours of the 8th Cuirassiers.

There is a second one at Patriot Park, Kubinka, painted in the colours of a Nazi Germany reconnaissance unit. Finally, there is a Panhard 178B somewhere in Syria. It was formerly at the Damascus Military Museum, but seems to have been moved to an unknown location. Hopefully, it has not found its way onto the black market. ◀

'The majority of the cars were hidden or dumped when the whole of France was occupied by the Germans in November 1942'



A Panhard 178B with FL1 Turret. JL

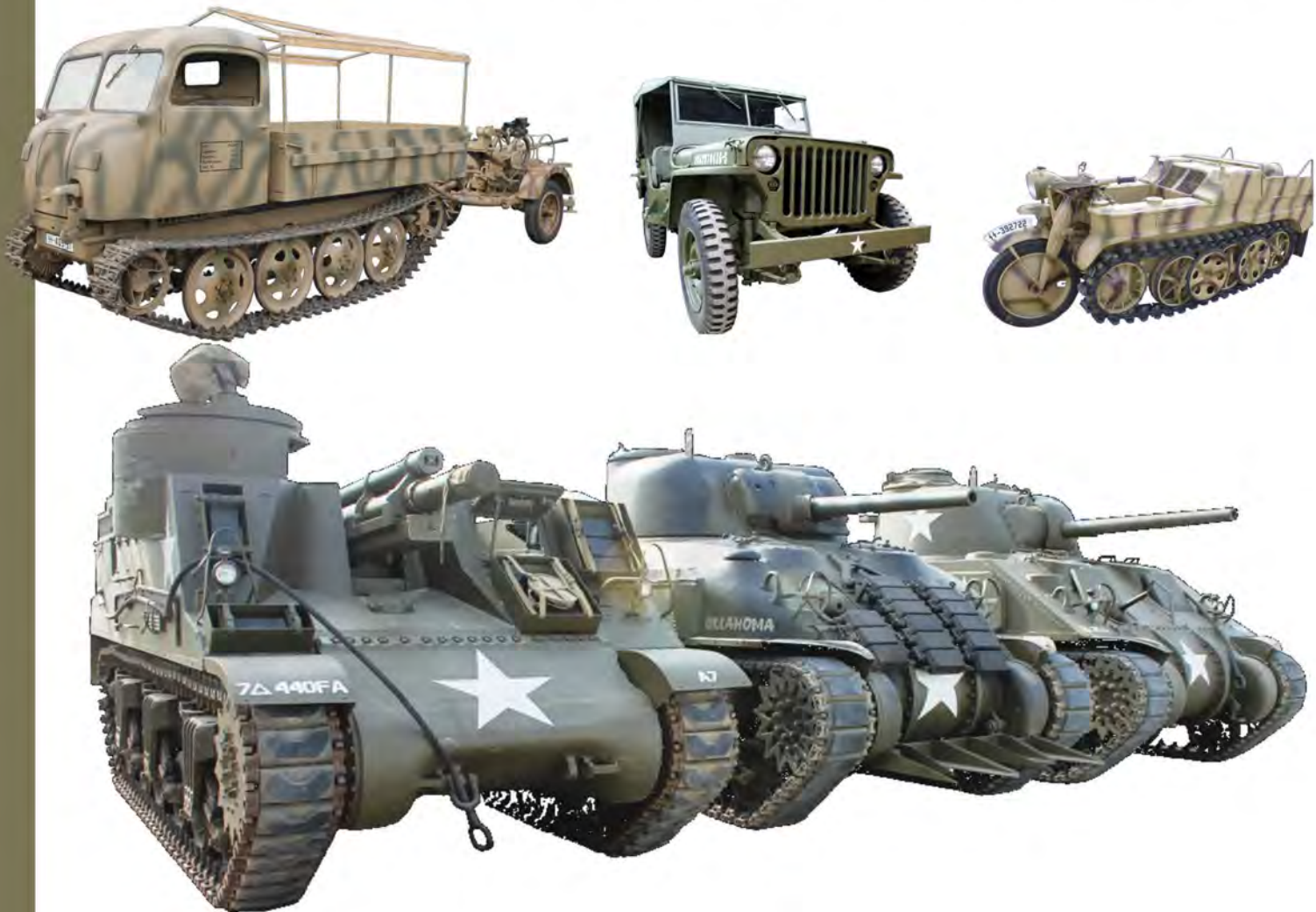
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John Norris gets reacquainted with the owner of a beautifully restored White M3 Scout Car

Despite having no family connection with the military, apart from a grandfather who served in the local Home Guard unit during World War Two, Andy Norman has a passionate interest in military equipment and vehicles which was fostered from an early age.

And now, after 35 years of restoring vehicles and collecting militaria, he has built up a superb collection of several vehicles along with a range of uniforms and other equipment from World War Two, including this White M3A1 Scout Car.

Andy first came across the Scout Car online at MilWeb. It was being offered for sale by the

owners of a country house hotel in Scotland who had bought it with a view to offering guests a themed experience. When the venture failed to attract interest, it was put up for sale and Andy arranged to go and see it. The first time he laid eyes on it he decided he just had to have it: it looked almost brand new due to the amount of refurbishment it had received.

It is believed that after the war the vehicle was transferred to the Greek Army where it was rather neglected. Indeed, it may have been here that the worst of the damage was done, which included some of the armour being removed.

At some point in the mid-1980s, after years of

neglect, it was returned to the UK and, despite being in poor condition, the hotel owners bought it and set about restoring it.

The work was completed to a very high standard, leaving it requiring relatively minor attention when Andy took over ownership in 2015.

With a wartime production figure of 20,918, the M3A1 is not a particularly rare vehicle, but finding one which has been



Scouting

'Andy is rightly proud of his M3A1 and is more than satisfied with its performance on the road'

Looking factory-fresh, Andy has added a few personal items such as the Coca Cola crate in keeping with the period



for boys



An eclectic mix of items reflecting the kind of things the vehicle's crew would have picked up along the way, including German Panzerfaust anti-tank weapon, Bren gun and water container



Andy has installed the Type No 19 radio set as used by the British Army and added some other items, including the hurricane lamp and tin mug to make life a bit more comfortable



The seats have been reupholstered and the dashboard shows the basic layout of controls



The engine has been refurbished and some parts replaced



The bucket is not standard equipment, but is the kind of thing the crew would pick up and find a use for

refurbished to such a high standard does not happen that often.

I first came across Andy in 2016 when he was driving his M3A1 in the Armour and Embarkation road-run in Dorset. The immaculate condition of his vehicle was a talking point and we were drawn into the conversation.

He explained at the time how he had only recently acquired the vehicle and this was the first convoy in which he had driven it. He then offered me a lift and at the end of the road run, extended an invitation for me to visit him to see his other vehicles and find out some more about the Scout Car.

We kept in touch and I recently arranged to drop in to see him at his home, somewhere in Somerset, where he keeps his prized collection in a large garage-cum-workshop. It is the per-

fect set-up and completely self-contained and it has all the equipment necessary for the restoration and refurbishment of military vehicles.

Since acquiring the Scout Car, Andy has spent time smartening it up including installing a British Army No 19 radio set, which would have been standard for a vehicle operating in the support role. He has also replaced the canvas weather top. The vehicle did not have a front roller fitted and there was no 'race rail' fitted inside which would have mounted a .50in calibre machine gun. This pointed to the fact that it had been in service with the British Army. For that reason, he has configured it in service with the British Airborne Forces.

Andy is rightly proud of his M3A1 and is more than satisfied with its performance on the road. He is fine-tuning some points and adding those

'The work was completed to a very high standard'

SPECIFICATIONS

Make **White Motor Company**
Model **M3A1**
Nationality **American**
Year **1940**
Used by **US Army, British Army, Soviet Red Army, French Army et al**
Production run **20,918**
Engine **Hercules JXD**
Type **Six-cylinder, water-cooled in-line**
Fuel **Petrol**
Displacement **5200cc**
Power **87bhp at 2,400rpm**
Torque **n/a**
Type **Manual**
Gears **Four-speed**
Suspension **Leaf spring**
Seats **Eight**
Length **201in**
Width **80in**
Weight **combat ready 5.53 tons**
Power to weight ratio **15.7bhp/ton**
Ground pressure **60lb/in²**

Additional Notes

The M3A1 entered service with the US Army in 1939 and used in all theatres of war. It was also supplied to the British Army and the Soviet Red Army under the terms of the 1941 Lend Lease Act
Modifications: Andy has badged his M3A1 as being in service with the 6th Airborne Reconnaissance Regiment which took part in Operation Varsity, the crossing of the Rhine in March 1945



touches which a crew would have included during the war for their personal comfort.

His attention to detail is such that he will not have anything that is not of the correct period. For example, the Jerrycans for fuel which are stored in brackets either side of the vehicle are dated 1944.

He explained that only four seats are fitted in the rear because it is a support role vehicle rather than being a personnel carrier. He can mount machine guns on the pintle mount when the canvas cover is removed and an 8mm calibre mortar is carried strapped to the rear, which would have been used to provide fire support.

Since acquiring it, Andy has also taken the vehicle to various local shows where it has attracted a lot of interest. This year he has several

shows scheduled to attend where his M3A1 will join the line-up with other vehicles. All in all, this is a fine example of a well-preserved vehicle and hopefully will long continue to be a regular on road-runs and other events.

During the war the M3A1 served in a range of duties, including artillery tractor, headquarters vehicles and ambulances, as well as the normal personnel carrier. It was a rugged vehicle, capable of negotiating vertical obstacles up to 14in, ford water obstacles up to a depth of 26in and tackle gradients up to 30 degrees. It could be equipped with machine guns of .50in and .30in calibres. During the war, trials were conducted to mount heavier armament, including 37mm and 57mm anti-tank guns, but these projects were never pursued beyond the experimental stage. ◀



Proud owner Andy Norman



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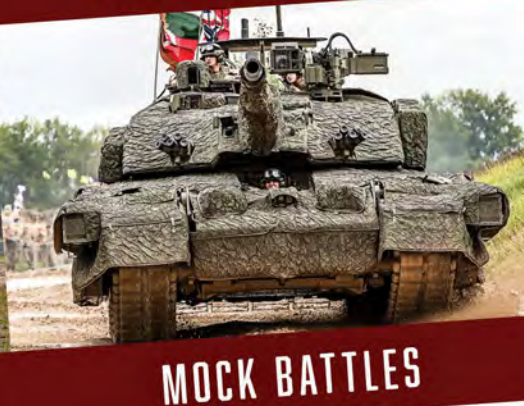
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The original caption to this photograph of April 21, 1961, reads, 'High Time. Fort Tregantle. Devon, England: A tightrope act that has nothing to do with the circus may one day be a standard military operation. Sapper (Engineer) Charles Grayson of the British Army, checks his position as he drives a Land Rover over two suspended steel wires at Fort Tregantle, England. He drove the 3,600-pound vehicle, fitted with special outer wheels for a distance of 110 feet. The venture was part of an exercise staged by the British Army following techniques devised by the Royal Australian Electrical and Mechanical Engineers.'

Fort Tregantle, now in south east Cornwall, is one of a number of forts surrounding Plymouth that were built between 1858 and 1865 as part of a major fortification programme initiated as a response to French re-armament to deter attacks on Royal Navy bases on the Channel coast. It was vacated after World War One until 1938, when it was used as the Territorial Army Passive Air Defence School. During World War Two it was used first as the Army Gas School and, from 1942, for US Army accommodation. After 1945 the fort, which is found off the B3247 between Crafhole

and Millbrook, was again used by the British Army.

Fort Tregantle was being used for training by the British Army when this photograph was taken in 1961. Sapper Charles Grayson drove this Series One Land Rover - a 1954 Rover 3 - fitted with special outer wheels for a distance of 110 feet along a pair of suspended but taut steel wires. It was part of an exercise staged by the British Army following techniques for traversing rivers where bridges had been destroyed and was devised by the Royal Australian Electrical and Mechanical Engineers (RAEME). ◀

Additional Information

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Fort Tregantle was completed in 1865 with barracks accommodation for 1,000 men and provision for 35 large guns. Early in the 1900s, it became an infantry battalion headquarters and, from 1903, was used for rifle training. It remains part of the Defence Estate and still used by Royal Marine and specialist Royal Naval Electronic Warfare teams for training purposes.



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