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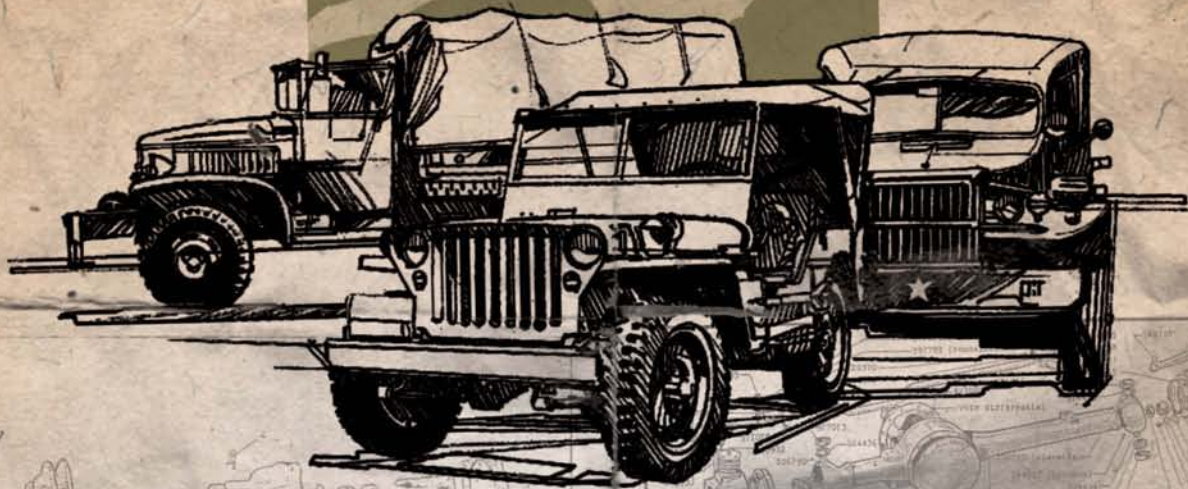
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EDITORIAL



Ian Young

Ian Young
Editor

Welcome to the latest feature-packed special issue of Military Machines International, which this month follows the theme of 'Wheels & Tracks', the idea being that it encompasses a whole host of military vehicle related subjects, from tracked armour to wheeled softskins, which hopefully means that you'll find something in this bumper 100-page issue that suits your particular tastes in military vehicles.

In this issue you'll find our first report from the annual Miltitracks event held in Overloon, and each year it serves as a reminder to me of the privileged position I hold as Editor of Military Machines International, affording me access to places not always accessible to

the general public. In my job I get to see and do things that if I'm honest I probably wouldn't get to do if I didn't do this job, and I therefore count my blessings each time I attend these special events, although if I'm honest there are occasions, when I have my doubts, especially at the end of a long day when I'm tired and the terrain is hilly and it's throwing it down with rain! Overall though I have a fantastic job, and I wouldn't swap it for the world, although it would be nice to have a little more time for my own projects!

I'll be back next month with yet another collection of articles to tickle your fancy, but in the meantime please enjoy this bumper issue - Ed.



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MACHINES**
INTERNATIONAL

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EXCLUSIVE

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NEWS and REVIEWS **UP FRONT**

SPIELBERG WARHORSE TANK COMES TO THE WAR AND PEACE SHOW



An exciting new visitor to the 30th Anniversary War and Peace Show this year will be the famous replica WW1 tank – as seen in the Steven Spielberg blockbuster Warhorse.

This celebrity screen star is being loaned to The War and Peace Show by The Tank Museum in Bovington – the tank's new owners.

The full sized replica was based on the Museum's own Mark IV, which was built in 1917. OSCAR award-winning special effects company Neil Corbould Special Effects LTD, whose credits include Saving Private Ryan and Gladiator, visited The Tank Museum in 2010 to take measurements and copy original Mk IV tank documents held in the Museum's Archive.

The fully operational replica of a British Mk IV tank was built around the engine, transmission and track from a modern commercial excavator. It makes only a brief appearance in the film, symbolizing the brutal impact of technology on the battlefield and the changes in warfare that the Great War ushered in. A lot of the armies began WW1 thinking it was going to be similar to battles fought in the 19th Century, but the nature of technology ensured warfare was changed forever. With its introduction, the passing of the use of a horse in battle began.

Museum curator David Willey said of the tank: "The vehicle is a wonderful re-creation with all the presence and menace of the real thing – just the way it slightly waddles, it's manoeuvring, its speed, it very much replicates all the footage we have and the experiences of members of staff at the Tank Museum. We are very impressed with its authenticity."

War and Peace Show Organiser, Rex Cadman, is delighted that the tank will appear in July: "we're very pleased to be working again with The Tank Museum, thanks to Director Richard Smith and his team. That the renewed relationship begins with the display of such an impressive vehicle is exciting. The Museum's original Mark V tank appeared at The War and Peace Show in 1995 as the star of a WW1 display in a specially conditioned marquee. Without doubt The Tank Museum holds the most impressive collection of tanks in the world – so as the world's largest military vehicle spectacular, The War and Peace Show is keen to support it."

Richard Smith, Director of The Tank Museum added: "We are delighted to have the support of The War and Peace Show in assisting us to bring this exciting recent vehicle acquisition to The War and Peace Show. We value working with organisations that help foster a passion for our subject matter and with the World War One centenaries approaching it is important to keep the memories and sacrifices of this past generation alive for generations to come."

The Warhorse Tank will feature in the WW1 area of The War and Peace Show's Living History fields – alongside the WW1 trenches created by re-enactors from The Queen's Own Royal West Kent Regiment. David Hanmore, of the Regiment said: "we hope visitors will be as excited as we are that such an important and iconic vehicle will be at The War and Peace Show."

Visitors will also be able to see the Regiment's 1915 Great War Tank, Water Cart Mk V, which was found on eBay in a very sad state and has been through a very sympathetic and detailed restoration.

These carts were used through and beyond the Great War. Pulled by a pair of light draught horses, the cart would stop alongside lakes, streams or ponds and a suction hose thrown into the water. Using hand pumps bolted to the English Ash frame, the water would travel through the two filters on the front of the cart before the purified water was deposited into the main 125-gallon tank. Excluding the weight of the cart itself, this gives a payload of 1,250 pounds, which is kept from moving and swashing around by a set of baffles that divide the tank into four compartments. Two of these carts were issued per infantry Battalion during the Great War so therefore one tank carried the water for just over 500 men!

Don't miss out on the opportunity to see the Warhorse tank, which will be on display for the five days of the War and Peace Show. The War and Peace Show is on from 18-22 July at The Hop Farm, Paddock Wood in Kent – for details see:

www.thewarandpeaceshow.com

Tickets can be booked at:
www.thehopfarm.co.uk

EARLY CENTURION TANK



Australian reader Tim Vibert emailed us with some photos and information about his Centurion tank, which turned out to be earlier than he first thought. Many thanks to Tim for getting in touch – Ed.

Hi Ian,

Some of your readers may be interested in my early Cent. It came with the 105 Centurions I purchased from the Australian Army in 1989. The history as I know it shows that the hull is dated 1945 and was issued as a Mk 2 in 1946 with hull number 126. It was the upgraded to a Mk 3 in



1948 with hull number 283 and then rebuilt in 1957, and up-armoured to Mk 5 spec. The tank was sent to Hong Kong in the early 1960s and kept in reserve. The Australian Army purchased it in 1971 as part of a batch of 15 to supply parts for tanks fighting in Vietnam. The Cent was never issued and partially stripped for spares. Preserved in 1974, the tank was in derelict condition when received in 1989 and at the time I knew nothing of its history, but picked it out as important with 2 early bins and turret with rear hatch. I re-attached enough to the engine to get it mobile in 1991 and did some



superficial cosmetic work and it then lay idle until I got stuck into it again this year.

It is fully equipped with No 19 radio and accessories. The original motor from 1957 ran well, but an oil leak meant it had to come out. Engine bay was detailed and a new motor fitted, a challenge working solo! The tank has only done 300 miles from the 1957 rebuild so the running gear is in good condition. The mono wheel trailer was sourced locally 20 years ago, and is the sole survivor of 20 used here.

Love the magazine, regards,

Tim Vibert

Vimoutiers Tiger

MMI reader Ken Rimell emailed us with regard to our item on the Vimoutiers Tiger in the June 2012 issue and we thought fellow readers might be interested in what Ken had to say. Our thanks to Ken for getting in touch and passing on the information – Ed.

Hi Ian,

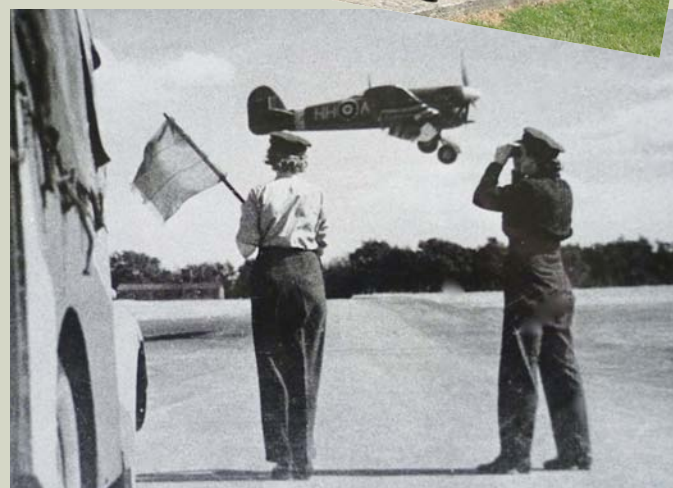
The excellent Tiger Tank at Vimoutiers story in the June issue is worthy of the following info. The Tiger was one of five running up the hill to a refuelling station atop the hill at Vimoutiers during the Battle of Falaise. Unknown at the time to the Tiger crews their depot had been attacked by Typhoons the day before and the remnants fled pending another airborne attack. Indeed the following day two Typhoons of 174 Squadron were sent back to asses the damage and if needed finish it off.

It was while in the area the pilots noted the Tigers out in the open. Turning to attack with rockets, much feared by German tank crews, the pilots were surprised to see one tank displaying a white sheet of surrender while the other tank crews fled to nearby woods. Unknown to the Typhoon pilots the Tigers were running on their last dregs of fuel, and by now so were the Typhoons, and with the Allies less than a mile away called off the attack and returned to base for further instructions.

Four of the Tigers were indeed bulldozed from the road by American heavy equipment two days later while the fifth rolled into a ravine where it languished until 1970 when 'rescued' by the villagers who cleaned it up and put it on roadside display (no doubt to attract tourists).

You might ask why I'm so well informed? On alternate years I take a number of WWII Typhoon pilots to visit the graves of their fallen comrades in France and on one such visit we went to Vimoutiers where the above story unfolded. This amazing story has appeared in the MVT Windscreen Magazine on numerous occasions and I have included a picture of the two Typhoon pilots standing by the tank taken in 2010.

Ken Rimell



Universal Jeep Supplies



With over 35 years experience of owning jeeps from a very young age, Cliff seems to have olive drab paint running through his veins "Some say it must be a real pleasure to have a job doing a hobby you feel most passionate about. Some may say - it's not a job at all when you love doing it'.

Twenty miles off M25's junction ten, just on the edge of the village of Milford, tucked away on a small farm by the railway station, lies the empire of Universal Jeep Supplies, where you'll find a treasure trove of new and old stock, enthusiasts and staff beaver away to get a Jeep restored, serviced or rebuilt with stories being told and memories revisited.

"Whilst we pride ourselves on our expert knowledge of Jeeps and all things WW2 – it's the joy we have talking about it, sharing our memories of shows, runs and trips out which is the best part. Most of our customers stay and share a tea and a biscuit whilst browsing the racks for spares. Some of our stock we haven't even opened yet - nor has anyone; there are some items we have which have lain unused ever since being packaged up at the end of the war. We opened a crate of Ford gaskets last year, and after a frenzy of bidding on eBay we broke them up and sent them all over Europe, most to collectors, one who was opening a museum of early unopened GPW parts'



Universal Jeep Supplies has gained major presence at all the main militaria shows all over the UK. 'I think it's our family business and kind hearted approach which has won the hearts of our loyal customers' Cliff says, and wife, Angela agrees: 'the whole household is involved in this - and our passion runs throughout the family. Both the children learnt to drive in the Ford GP, Lucy, 23, runs the site, marketing, advertising and web-based side part time, whilst our Michael, 20, picks and up delivers customer's vehicles - and helps in the workshop beside his mechanics degree'. Lifelong friends and fellow enthusiasts Ken, Dave and Simon are on hand to assist calls and questions - all jeep owners themselves. Tony Sudds, the previous owner who, in 2009 retired and sold the business to Cliff is very much involved on a consultation basis 'Tony is one of the greatest minds of Jeep knowledge out there - a real asset to the hobby'.

With customers in their 20's to 80's the old Jeep market is still well and truly alive, and supplying anywhere from Malta to New Zealand on daily basis, items really can be sent anywhere. A new website with a shop function is also in the works for this year and with the success of Cliff's Clear Out in January they are announcing another later on in the year 'we gave the opportunity to our customers to sell their unwanted items whilst digging out ours,

completed with a tea and cake stall as standard of course. 'it's a great day out - hundreds of people arrived, we were overwhelmed by the support. The entry proceeds to the site went to charity and we all had great fun so we're doing it again on September 15th this year'

So if you've got a day spare, bomb on over to them at Marsh Farm, Station Lane, Milford, Surrey GU8 5AE. All credit cards are accepted, but please do ring ahead. And, Universal Jeep Supplies are offering £5 off any order over £100 with this article until July 22nd. Contact us on Tel: 01483 860403



American TONKA Toy in the UK



MMI reader Ian Hughes from West Sussex sent in a few photos of one of his toys. Ian tells us that it's a 1959 model Peterbilt 351, (originally fitted with a Hall Scott petrol), but the truck was upgraded in 1983 by a Peterbilt main dealer to include: 6x4 Drive with inter-axle power divider, Turbo, 445 bhp Supercharged 92 series V8 Detroit, 2 stroke engine coupled to a 13-speed fuller overdrive, and fitted with aluminium cab and chassis. Ian has been using the Peterbilt as a heavy hauler to transport some of the other military vehicles in his collection to various shows, but he's apparently running out of space and the truck has to go and reluctantly he's put the truck up for sale.

Our thanks to Ian for sending in the photos and best of luck selling this mighty 'Tonka Toy' – Ed.

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Catalogues for this exciting sale will be available two weeks prior to the sale and will be online at Cheffins.co.uk with images. For further details on this and other sales please contact a member of staff on 01223 213 777.

Brief highlights include:

Military:

FV432 armoured personnel carrier, Hagglund BV206 All Terrain Vehicle, GMC multi-fuel 6x4 communications vehicle, Bedford fuel tanker, Bedford RLHZ 'Green Goddess', Austin Champ, Supacat 6x6 Mk.2, 1986 Portsmouth Aviation Ltd Type Mk.2 weapons loader.

Steam:

1916 Aveling & Porter 10-ton compound steam roller, never been rallied, f/w scarifier, probably needs a new firebox Eng No. 8726 Reg No. MP 238 5nhp

1929 Breloux of Neuers 8nhp Eng No. 1643 William Foster & Co Ltd threshing drum Sn. 7304 Ransomes Sims & Jefferies Ltd SD 48" clover huller

Tractors:

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Field Marshall S. III and IIIa
County Four-Drive
1986 Ford 6610 Gen II 3,008hrs
1982 Ford TW-10
1981 Ford TW-20
1984 Marshall 802 3,638hrs
1991 Track Marshall TM200 1,912, one owner
County loading shovel
County 1004 FC dumper
1983 Trantor Mk.II c/w front loader, 2,413hrs
Barth K140 Mk.4 tracked trencher
c.1967 Ford back hoe digger loader
1986 County 1004 FC
Track Marshall 110
1987 Track Marshall 135
c.1973 IH 674 3,739hrs
1984 Marshall 804 4wd 4,742hrs
1980 Leyland 285 Synchro 3,313hrs
1977 Ford 8700
1984 Ford 8210 3,457hrs
1985 Marshall 302 2,780hrs
Fordson E27N P6

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MF 244 crawler front loader back actor
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Smalley 847 midi digger
CAT D8H 9h
CAT D7 7M
CAT D6 8U
Wright No. 40 trailed scraper
CAT 613 Elevating Scraper
IH 100 crawler loader
CAT D4
CAT D4 7Z
CAT D2
Bristol PD48 crawler loader

Allied Forces Founder Retires

Martin Hammond, a founder of Allied Forces - specialists in the supply and repair of authentic reproduction canvas items - retired on the 23rd June. Martin, 65, founded the company in 1998 with Jim Clark who will continue to run the company on his own, which will now trade as 'Allied Forces Ltd.' and will continue to operate from their premises. Neither Martin or Jim had any experience in the manufacture and repair of canvas products when they started out, in fact their background was in car repairs, but they soon picked up the skills and since then the business has gone from strength to strength having gained a reputation for providing top quality work at reasonable prices. Martin does have a number of projects he wants to do in his retirement, which include finishing his Diamond T wrecker, a WW2 Jeep and a 60's Ford Mustang for his stepson, so he's unlikely to be taking it easy in his retirement!

I've known Martin and Jim for many years, and over that time they've been most helpful with items that have appeared in Military Machines International and we would like to wish Martin all the best in his retirement, he will be missed for his attention to detail, and of course we wish Jim continued success with Allied Forces Ltd.



Making a Splash!

Working late one night in the workshop with no electricity, no HOT water and using a generator to provide light, Ian decided that there had to be a better way. Six months later he found the answer and Showerking was born. Tankless, portable, instant hot water showers powered by propane gas. Plug into a hosepipe or connect a pump and water supply, connect the gas and you're away. No pilot light, no electricity, no hassle. Best of all? Under £150 plus VAT. Simple to use, easy to install and not expensive.

You can attach a jet wash and wash down vehicles or parts at 140 degrees for a deep clean. And of course, you can take it on the road with you as a camp shower, no more queuing in the shower block! (Warning: we cannot guarantee that you will get a go if you have ladies in the camp, they tend to hog it) Who uses them? Anyone that needs hot water without new pipework or a plumber to have a fast, easy, inexpensive solution; outside event caterers; animal owners; fishermen; builders; campers; window cleaners; and homeowners who want hot water for guests without the expense of re-plumbing the whole house. Showerking do hot water systems that are small and portable and only need an LPG tank and water either in a container or a hose, there are inside and outside models and they need no electricity. They cost from £159.00 to £179.00 inc VAT and delivery and they come with a UK CE Safety certificate, 37 milibar regulator, hose and shower head. For details go to:

www.showerking.co.uk



Markings Explained

In our coverage of the Witham Specialist Vehicles' MoD tender sale back in the May 2012 issue I asked about the purpose of the white parallel markings on the CVR(T) Commander's cupola that was listed in the sale. Robin Craig of the Union Jack Collection in Canada has since emailed me with the answer.

According to Robin the cupola is used on the CVR(T) Stormer HVM firing post and CVR(T) Stormer TRV. Robin tells us that he has a Stormer TRV and has spoken with a member of a unit that still has them in service who told him that the markings on the top allows the firing post to acquire a target that the commander is looking at.

Our thanks to Robin for getting in touch and for answering my question – Ed.



Seaforth Publishing Book Releases

We have two superb new releases from Seaforth Publishing (an imprint of Pen & Sword Books Publishing) this month, both relating to World War Two German naval subjects. The first is an stunning 432-page tome entitled 'German Capital Ships of the Second World War' by Siegfried Breyer and Miroslaw Skwiot. The large format hardback book is crammed with over 700 photographs, with around 100 images dedicated to each of the ships covered. Additional illustrations supplement the photos, all of which offers the reader a truly in-depth look at Germany's best known Capital ships of the war. The ships covered include the likes of the Deutschland/Lutzow, Admiral Scheer, Admiral Graf Spee, Scharnhorst, Gneisenau, Bismark, Tirpiz and the aircraft carrier Graf Zeppelin.

Making use of new photographic material that has come to light in recent years, the seven capital ships are described in intimate detail, with the authors looking at each aspect of the vessel, from construction and launch to service life, battle repairs, modifications and life onboard for the crews of these iconic battleships. The book 'German Capital Ships of the Second World War' by Siegfried Breyer and Miroslaw Skwiot (ISBN 9781848321434) has a recommended retail price of £45.00, but is well worth the investment if the subject matter appeals to you. For further details see:

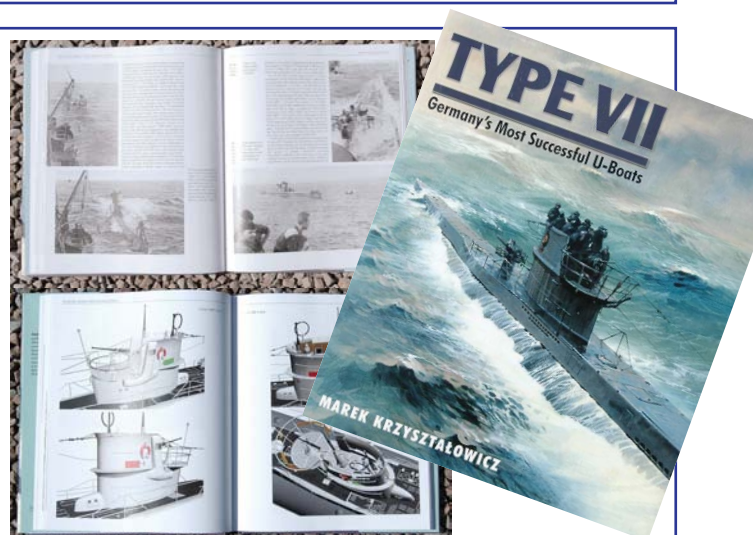
www.seaforthpublishing.com or www.pen-and-sword.co.uk



The second of the new releases from Seaforth Publishing this month, is this superb 210-page book entitled 'Type VII - Germany's Most Successful U-Boats' by Marek Krzyształowicz. The large format hardback book is lavishly illustrated with 320 photographs and 100 3D colour images describing various aspects of the Type VII's design, examples of which are shown here. Detailed scale drawings and plans are also provided within the book, offering the level of in-depth information often sought by historians and model makers researching this most popular wartime German submarine. In addition to photos describing the daily life of the crew onboard these U-boats, both inside and out, the book looks at the service life of the U-Boat and the various design changes and improvements the Type VII underwent during it's service life. The book covers the six major variants of the 650 vessels to have been built, with the first of the Type VII's being completed in the mid 1930's and production continuing right up until the closing stages of the Second World War.

The book 'Type VII - Germany's Most Successful U-Boats' by Marek Krzyształowicz (ISBN 9781848321410) has a recommended retail price of £40.00 and is available through specialist book sellers. For further details see:

www.seaforthpublishing.com or www.pen-and-sword.co.uk



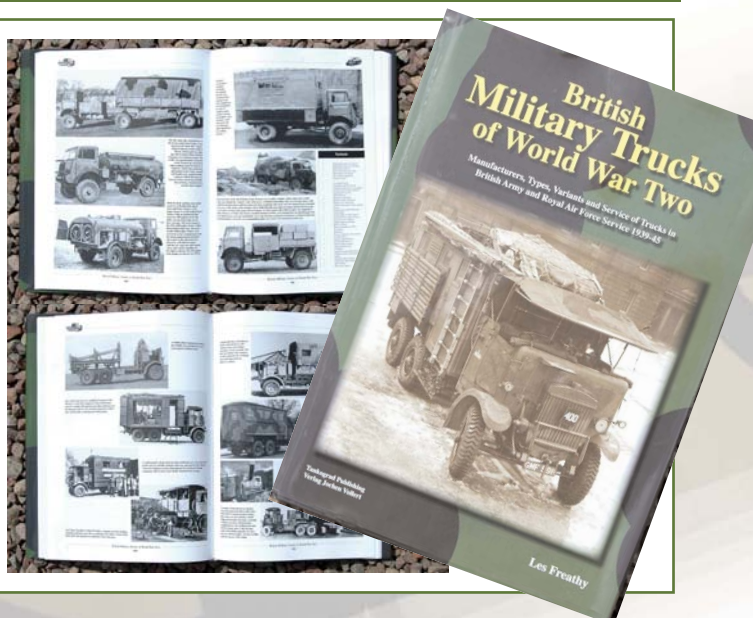
Tankograd Publishing Book Release

To round off our additional book review coverage for this month (more reviews can be found in our regular 'On The Shelf' feature on pages 90 and 91 of this issue) we have this new book release from well-known German publishers, Tankograd Publishing, which covers what is undoubtedly going to be an extremely popular subject, namely 'British Military Trucks of World War Two'.

The book, by Les Freathy, who's name you may recognise from various articles and features in MMI, looks at the manufacturers, types, variants and service of trucks serving with the British Army and Royal Air Force between 1939 and 1945. As such this A4 format hardback book is a hefty tome, comprising of 256-pages, packed with 680 black and white archive images describing what appears to be every conceivable British truck from the wartime period, with many trucks featured that I've never seen before! No less than twenty-three different truck manufacturers are covered in this book, with additional chapters on Lend-Lease trucks, Canadian contributions and trailers.

This book looks set to become a classic 'bible' of British military trucks for followers of wartime British trucks, so grab your copy now before it's sold out! 'British Military Trucks of World War Two' (ISBN 9783936519297) retails at a very reasonable £34.99 and this and the rest of the Tankograd Publishing range is distributed in the UK through Bookworld Wholesale Ltd. for details see:

www.bookworldws.co.uk



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quiet and reliable. After seeing service during the Great War the famous Rolls-Royce armoured car was modified for continued use in the more desolate parts of the British Empire right up until the beginning of World War Two.

Introduced in 1914 the Rolls-Royce armoured car saw service on the Western Front, Gallipoli, North Africa, Russia, Middle East, Ireland and India. The design proved to be a success and with large numbers of modifications having been made, 76 of them were still in service up until 1941 serving in the

Western desert, Syria and Iran.

The first Rolls-Royce to go to war was a touring car in the service of the Royal Naval Air Service which along with a Mercedes car were given some rudimentary boiler plate armour and were used from September 1914 to harass the advancing Germans and to rescue any pilots who had been forced to land away from the British lines. Under Commander Samson a small fleet of armoured cars and lorries with

The Rolls-Royce armoured car really must be a candidate for the most attractive military vehicle ever made. Built upon the Rolls-Royce 40/50 HP chassis (better known as the "Silver Ghost" although this name was not recognised by Rolls-Royce until 1925), its six-cylinder, 7036cc engine was both exceptionally

Tim Gosling looks at the 1920 & 1924 Pattern Rolls-Royce Armoured Car

Top left: the Tank Museum at Bovington has one of the few surviving examples of the Rolls Royce armoured car.

Main photo right: these four 1920 pattern Rolls-Royces have been clearly marked as AC1 to 4 and on three the names 'Despatch', 'Dauntless' and 'Dragon' can be seen.

lefield Royalty



250 Royal Marines successfully delayed the advancing Germans allowing the allied troops to withdraw in good order. The armoured cars had performed very well but the change to trench warfare from the fluid war limited their potential use on the Western front.

THE 1914 PATTERN

In September 1914 all available Rolls-Royce 40/50 HP chassis were requisitioned by the Admiralty for

conversion into armoured cars and became known as the 1914 pattern armoured car. Instead of its luxurious body an armoured body was fitted with a rotating turret mounting a Vickers-Maxim machine gun. The addition of the armour raised the weight to nearly 4-tons, which necessitated the fitting of stronger springs and twin rear wheels although these all had thin metal spokes as used on the touring cars. Behind the turret was an open tray that contained lockers for tools and other equipment. The six-cylinder petrol



Top left: photographed in 1923, 'Anne' is a 1920 pattern armoured car receiving a clean.

Top right: the Vickers machine guns on the Type 24's were fitted with a spherical mount, which offered greater protection for the gunner and improved his aim. (Photo - James Payne)

Above: the officer who selected the names for the armoured cars was obviously running out of ideas when he selected 'A N Other' for this 1920 Pattern Rolls-Royce.





Above: the crew have fitted double wheels on the front axle to help get through the sand - sadly without success! (Photo - James Payne)

engine gave the Rolls a top speed of nearly 50mph, but as the fuel consumption was only 10 miles per gallon in good conditions the range was limited to 150 miles.

It has often been claimed that the 1914 pattern Rolls-Royce was the best

armoured car of the First World War and while this may well have been the case, it wasn't best suited to the static warfare and muddy conditions of the Western Front. Two squadrons of Rolls-Royce were sent to Gallipoli although the fighting was just as static as the Western Front and the armoured cars spent most of their time hidden in deep trenches to avoid Turkish shells, although it is claimed that they were successful in using grapples to rip out a section of Turkish barbed wire prior to an assault.

It was in the more remote locations where the Rolls-Royce really made a name for itself. The use of Rolls-Royce armoured cars by Lt Col TE Lawrence during the Arab revolt against the Turks is legendary, and he referred to them as being "more valuable than rubies".

Another opportunity for the Rolls-Royces to demonstrate their worth occurred when the crew and passengers of the stricken ship the SS Tara were captured by Sanussi tribesmen and a small force including nine Rolls-Royce armoured cars travelled 120 miles through enemy territory to rescue them.

THE 1920 PATTERN

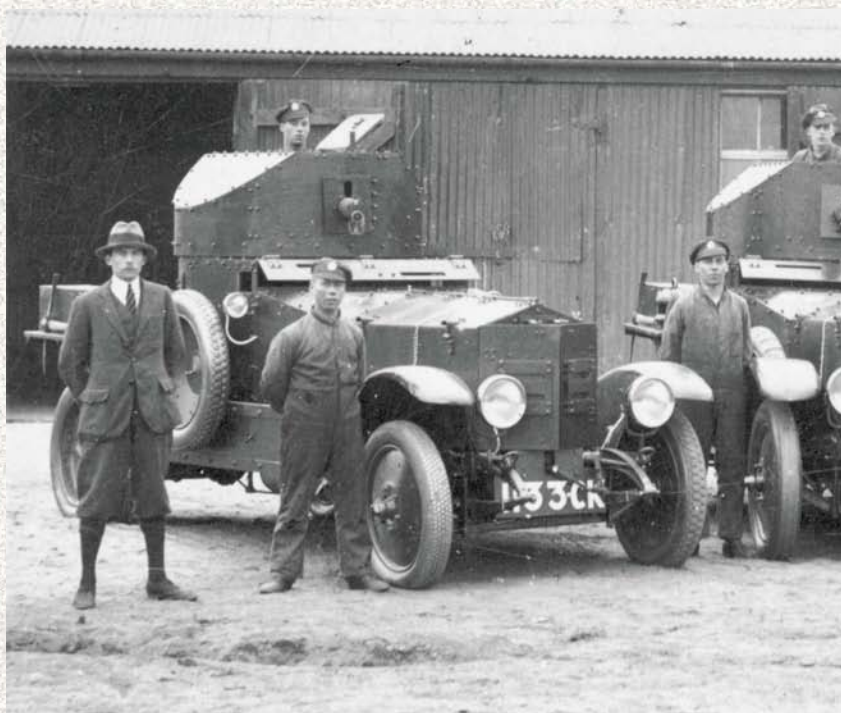
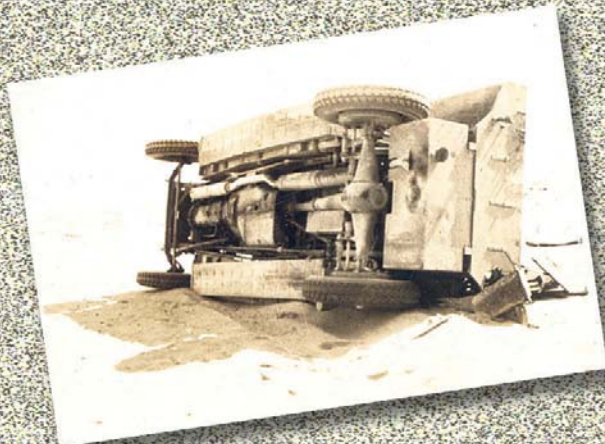
In 1920 the War Department required additional armoured cars and with the 1914 pattern Rolls-Royce having performed so well a modified version was ordered. These new armoured cars looked very similar but had a number of subtle differences. The spoked wheels were replaced with metal disc wheels that would take a wider tyre and while the turret retained the same shape, was taller by one inch. It was, however, still rotated by the gunner bracing himself hard against it and using his strength to turn it around. The 1914 pattern had obviously had trouble with cooling in the Middle East so the radiator now had a larger header tank and the armoured doors in front of the radiator were fitted with louvres to improve airflow. The crew were not neglected as a mechanically driven air pump (running from the magneto drive shaft) was fitted to keep the temperature down in the fighting compartment.

THE A TYPE

Much like the British Army today, the post-WWI British Army had to reduce costs and still maintain a presence in a

Top Heavy Troubles

The heavy turret raised the centre of gravity and it did not take much to cause the armoured car to roll over. Here we have an unusual view of the running gear of a Type 24. The front axle looks rather spindly to carry such a large weight. (Photos - James Payne)



number of "hot spots" around the Empire. In order to do this they took the armoured bodies from some 1914 pattern Rolls-Royce's and fitted them on to new chassis. The only obvious difference between the A type and the 1914 pattern was that its wheels were now discs as opposed to the metal spoke wheels, which had taken a narrower tyre. However, even these wider tyres proved to be inadequate in sandy conditions and a Rolls-Royce Type A Modified was introduced that took a larger commercial type tyre.

THE 1924 PATTERN

Seeking further armoured cars the War Department placed an order for more Rolls-Royces. These were known as the 1924 pattern and had a number of modifications from its predecessor. The most obvious of the differences being the turret which no longer had the slopes on the sides, but they did have a large cupola for the commander. This would provide a little more room and much improved vision for the commander through the slits at the base. The Vickers machine gun was now fitted in a spherical mounting, which allowed the gunner greater freedom of movement and therefore aim.

The bodywork appeared to be much the same but it did have a few subtle differences. The armour plate just in front of the drivers viewing port was an entirely different shape and the armoured car was now five inches shorter than the 1920 pattern. These modifications came at a cost though. The car was now a ton heavier than the

original 1914 pattern, 700cwt more than the 1920 pattern and the top speed was now 45mph as opposed to 60mph on the 1914 pattern and 50mph on the 1920 pattern.

BETWEEN THE WARS

The period following the end of the First World War and before the second started was far from peaceful and the military presence across the Empire had to be maintained but with reduced manpower and resources. The Rolls-Royce armoured cars had proven to be very useful tools, being able to quickly cover large areas of open territory and lay down an impressive firepower when required. Therefore they were ideally suited to the open expanses of

Egypt, Iraq, Palestine and Syria where they were used for "Policing" duties.

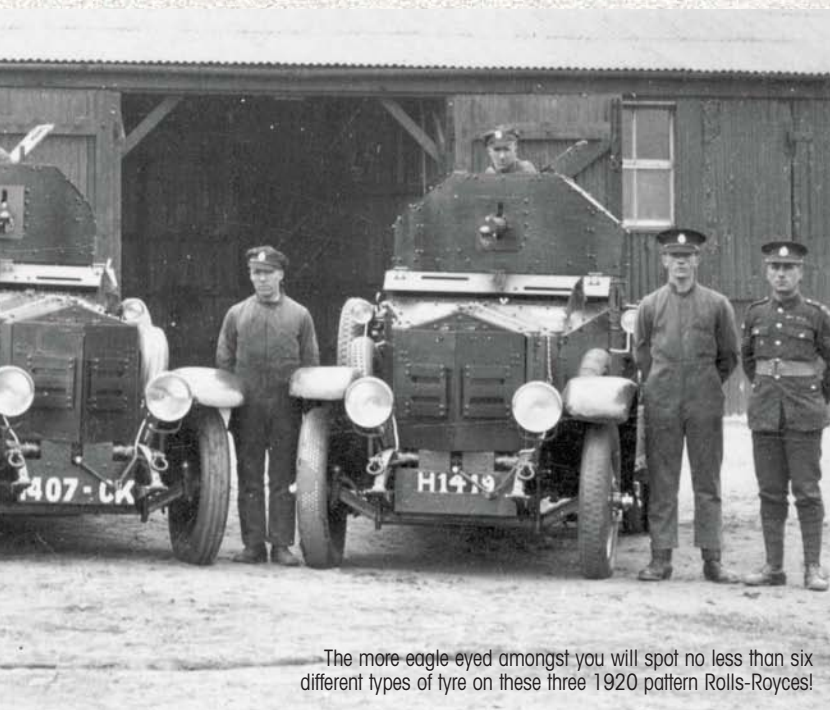
At the outbreak of World War Two, 76 of the Rolls-Royce armoured cars were still in service. Some of these received the further modification of being fitted onto a Fordson chassis and

Above: this Type A is a 1914 pattern on a new chassis and with disc wheels to replace the spoke ones.
(Photo - James Payne)



Rolls-Royce Recovery

Having driven too close to the edge of the road, this A Type has rolled over. Luckily a Vickers Medium tank is on hand to effect a recovery, which is a great source of interest for the watching crowd. (Photos - James Payne)



The more eagle eyed amongst you will spot no less than six different types of tyre on these three 1920 pattern Rolls-Royces!



Above: these Type 24 Rolls-Royces are receiving routine maintenance. A pair of Vickers Medium tanks can be seen in the background.
(Photo - James Payne)

Below: photographed early morning, the crews of these Type 24's are packing up and getting ready to move on.
(Photo - James Payne)

Bottom: as can be seen the cupola on the Type 24 will provide the commander with a much improved view.
(Photo - James Payne)

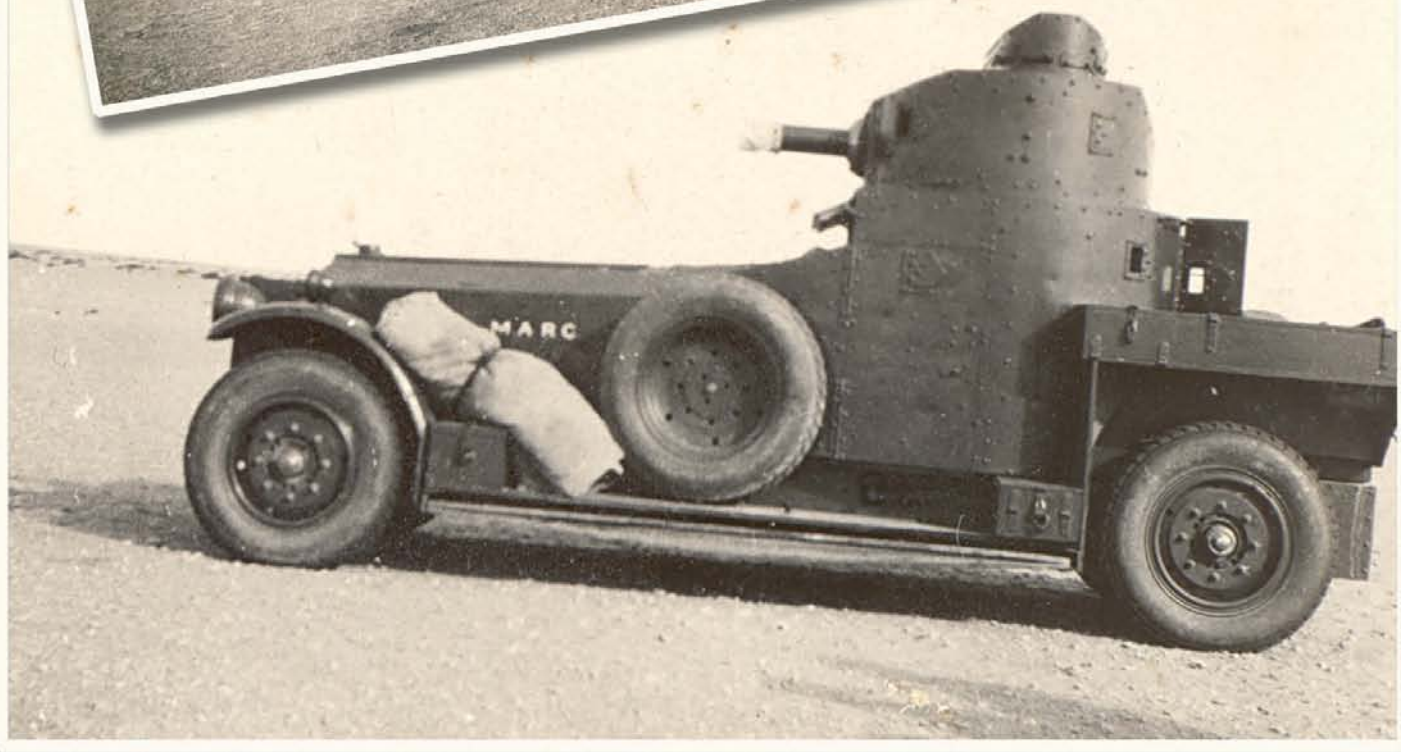
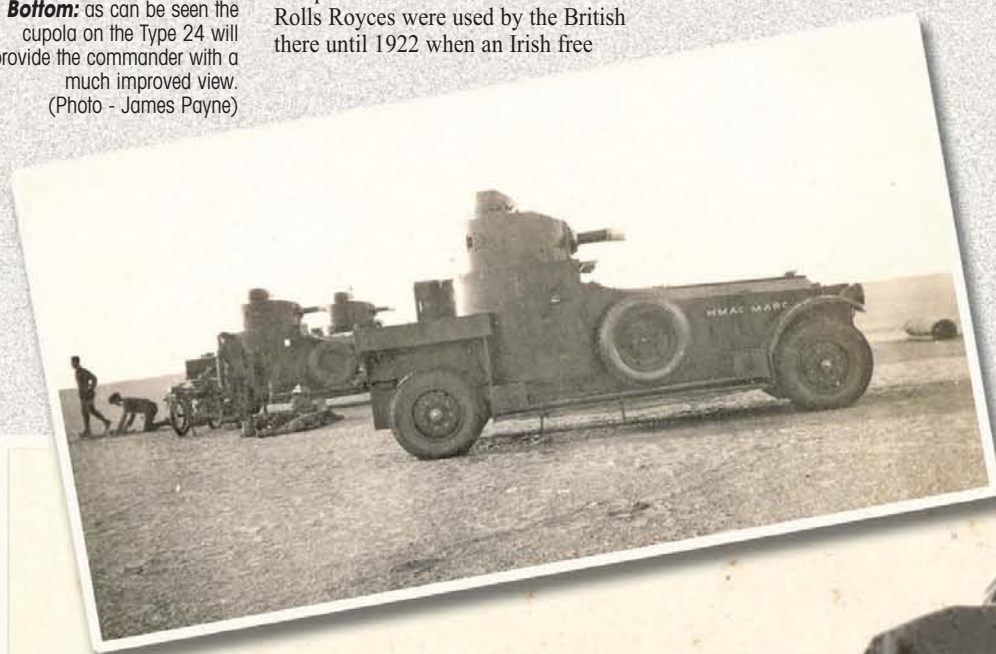
in some instances received an enlarged turret, which could now also hold a Boys anti-tank rifle. Although this now allowed them to take on some of the more lightly armoured axis vehicles they were now totally outclassed and by 1941 they were withdrawn from front line service.

One location where the Rolls-Royces were sent not so far from home was Ireland. The "Irish War of Independence" started in 1919 and the Rolls Royces were used by the British there until 1922 when an Irish free

state was formed. At this stage the British withdrew but left behind 13 Rolls-Royce armoured cars (12 of which were the 1920 pattern) for the newly formed Irish National Army. The Rolls-Royces were not to rest for long though as the following year the Irish Civil War broke out, which would last for twelve months when the Republicans stopped their campaign.

These Rolls-Royces were kept in Irish service long past their best sell by date. Difficulty in funding or even finding a suitable replacement prevented their disposal. It was as late as 1954 when the 12 Rolls-Royces had their armour removed and were disposed of. The 13th Rolls-Royce was kept by the Irish Army and currently resides at the Curragh in County Kildare, you can read more about this on page 26 of this issue.

One of the 12 that was sold has been restored with a replica 1920 pattern body and was recently offered for sale. There is sadly only the one survivor of the 1914 pattern, which resides at the Armoured Corps museum at Ahmednagar in India and unfortunately is in poor condition. Perhaps the best known of the survivors is the 1920 pattern model that survives at Bovington Tank Museum. It served in Ireland, Shanghai and also Egypt and having been so very well travelled, it is one of the museum's most prized exhibits.



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Bundeswehr Boxer



Ralph Zwilling describes the GTK Boxer A1 Armoured Personnel Carrier

Main photo above: these Infantrymen of Bravo Platoon, 3rd Company, Jägerbataillon 292 dismount and move into a defensive position in front of their GTK Boxer AO Armoured Personnel Carrier. They carry a wide range of armament such as the 5.56mm x 45 G36 assault rifle or the 40mm x 53 underslung AG36 grenade launcher.

In July 2011, the 3rd Company of Jägerbataillon 292 was the first German Army unit to deploy to Afghanistan with the brand new GTK Boxer A1 armoured personnel carrier. It would be used for ISAF patrol and security missions, but as early as the spring of 2010, the soldiers of Jägerbataillon 292 (which belongs to the Franco-German Brigade), were testing the vehicle extensively in Australia to ensure it would be mission ready worldwide even under extreme climatic conditions.

During several weeks of training conducted at the German Army Infantry School in Hammelburg in early 2011, the future weapon operators, drivers and commanders were able to familiarize themselves with the new vehicle. After the delivery of the first seven GTK Boxer AO production vehicles at the end of

February 2011 to Jägerbataillon 292, based at Donaueschingen, the battalion conducted intensive and challenging training missions. The infantry soldiers conducted the first exercises at the end of March at the Hammelburg Infantry Training Centre followed by an April live fire event at the training centre in Munster where the FLW 200 remote weapon station training also took place.

The final mission rehearsal exercise, in preparation for the unit's upcoming mission as the Training and Security Battalion Mazar-e-Sharif in Afghanistan, was training rotation 10/11 at the German Army Training Centre. Here, on the 30th May 2011, the soldiers of Jägerbataillon 292 were the first Bundeswehr unit to officially receive the GTK Boxer. In addition to Jägerbataillon 292, the Infantry School in Hammelburg, Jägerregiment 1 in Schwarzenborn and

Gebirgsjägerbataillon 231 in Bad Reichenhall are also being equipped with the GTK Boxer to train for their upcoming ISAF deployments.

GTK BOXER

Initially the GTK Boxer, with a gross vehicle weight of 33-tonnes, was seen purely as a transport vehicle, but it's really the infantry's first new, purpose-designed armoured vehicle for current operations. The development of the GTK Boxer began in 1981 with a concept study by Mercedes-Benz. Further developmental work to create a modular, highly mobile, multirole, armoured wheeled vehicle was primarily based on the tactical concept of February 1990 and the tactical and technical requirements of January 1995. The early development of the GTK Boxer had many ups and downs



This photo was taken as part of training rotation 10/11 of Jägerbataillon 292 at the German Army Combat Training Centre in the Altmark while training for the upcoming mission as Task Force Mazar-e Sharif.

Top right: the first training rotation with the GTK Boxer AO APC at the German Army Combat Training Centre in Altmark took place in May and June 2011. Jägerbataillon 292 from Donaueschingen was the first unit Bundeswehr unit to receive the new vehicle.

Above centre: rear view of a GTK Boxer A1 APC. Above the rear ramp is half of a tow bar as well as the rear view camera. Behind the small hatch right of the rear ramp there are a field telephone, a switch to open and close the ramp and a switch to release the fire extinguishing system.

Above: despite a gross vehicle weight of 35-tonnes the GTK Boxer A1 Armoured Personnel Carrier has very good cross country mobility even on sandy or muddy ground. Besides the three man crew the Boxer offers enough space for an Infantry Squad with up to seven soldiers and their extensive gear.



Right: in November 2010 the German Army Infantry School at Hammelburg in Lower Franconia received the first two GTK Boxer AO APCs where they are used for the pre-deployment training of the German ISAF troops. This Boxer A1 APC of the German Army Infantry School was seen during living firing exercises at Wildflecken in December '11.

Below: rear compartment of a GTK Boxer AO APC. It offers space for up to seven Jäger and their equipment. Each of the soldiers in the rear has a special adjustable, shock absorbing single seat with integrated head rest. Additionally, the seats feature 4-point seatbelts with integrated airbags in the shoulder straps protecting the soldiers in case of a crash.



Rear Compartment

“... the first German prototype PT 01 v

and saw various countries like France and Great Britain joining, and later leaving the project.

Despite changes requested by the partner nations, the first German prototype PT 01 was delivered in December 2002 followed in October 2003, by the Dutch Command and Control Vehicle prototype. By this point a total of 12 German and Dutch prototypes had been built and extensively tested in different environments. On the 19th December 2006, the OCCAR (Organisation Conjointe de Coopération en Matière d'Armement) signed a contract with Germany and the Netherlands for the production and delivery of 272 vehicles for the German Bundeswehr and 200 vehicles for the Koninklijke Landmacht.

BOXER PRODUCTION

Germany will eventually field 125 Armoured Personnel Carrier vehicles, 65 Command and Control vehicles, 72 Armoured Medical Evacuation Vehicles as well as 10 Driver Training Vehicles. Modularity is one of the key features of the new GTK Boxer, therefore the vehicle consists of a driving module and a mission module, which can be exchanged if necessary. It is equipped with a powerful FLW 200 remote controlled weapon station for self-defence and close combat support, manned by an infantry team equipped with a variety of personal equipment and various small arms and anti-tank weapons, making it a true

armoured personnel carrier in the hands of the German Army. In addition to the commander, driver and weapon operator, it offers sufficient space for seven dismounted soldiers, known as “Jäger” in German Army parlance. The extensive range of equipment used by the modern infantry soldiers can be completely stored inside the vehicle, but remains easily accessible by the crew, and depending on mission requirements and threat levels during dismounted operations, the crew will choose the equipment needed and leave the rest in the vehicle.

The storage system is especially designed to minimize the effects of mine and IED explosions and potential injury to the crew from equipment flying around inside the crew compartment following an explosion. Each of the seven dismounted soldiers has a special adjustable, shock absorbing, single seat with integrated head rest. Additionally, the seats feature 4-point seatbelts with integrated airbags in the shoulder straps. The air-conditioning and NBC overpressure protection system enables the crew to operate under all climatic and environmental conditions.

As the GTK Boxer is equipped with the IFIS (Integriertes Führungs- und Waffeneinsatzsystem der Kampftruppen) Command, Control and Communication (C3) equipment, it can be integrated into the future joint infantry command system. The soldiers' C3 infantry soldier of the future equipment receives updates



Left: in contrast to the original AO version the A1 variant features mine protection plates and the CG-12 electronic countermeasure system. Additionally the FLW 200 weapon station was mounted on a 30cm platform for better target engagement in the close vicinity of the vehicle.

Below: view looking down onto the rear of the roof of the GTK Boxer AO Armoured Personnel Carrier. With the help of the four roof hatches the Jäger can use their small arms to protect the close vicinity around the vehicle.

was delivered in December 2002...”

directly from the vehicle. As a result, when dismounting from the GTK Boxer all infantry team soldiers have the latest information about the mission and the situation on the battlefield directly available to them on their PDAs.

For self-defence the vehicle features a remote controlled FLW 200 weapon station on top of the hull to the right of the commander's hatch. Depending on mission requirements, it can be equipped with either the 12.7mm M2 HB QCB machine gun or the very reliable and powerful Heckler & Koch 40mm Automatic Grenade Launcher.

The first GTK Boxer A0 vehicles feature eight smoke grenade launchers at the rear of the vehicle and

sometimes another six are fitted to the remote weapon station. These can fire lethal and non-lethal ammunition.

There are five hatches for the crew to observe the area in the vicinity of the vehicle or for “Show of Force” if needed. Usually the driver operates the vehicle with his hatch closed, entering and exiting his compartment by the rear of the vehicle with the hatch only used as an emergency exit. The GTK Boxer Armoured Personnel Carrier serves not only as the infantry's transport vehicle, but also providing a remote weapon station, sufficient space for their large inventory of weapons and offers the possibility to relax in the crew compartment while still being completely integrated into the C3 network of the German Army.



Crew Interior

Far left: in front of the commander's seat is the multifunction display for the Command and Control System, the fire and control unit for the smoke grenade launcher system as well as the control and display unit.

Centre: the gunner has a joystick and the control and display unit to operate the FLW 200 remote weapon station.

Left: the control and display unit in front of the steering wheel is the driver's main unit for the handling and monitoring of the vehicle systems. The control elements are consolidated in control units for the different systems.



Hull Details

Top right: GTK Boxer A1 Armoured Personnel Carrier on Range 9 in Wildflecken during a live firing training. Note the MLC 41 marking for the military loading class of the vehicle.

Right: immediately in front of the commander's hatch on top of the periscopes is a fold down glass windshield with integrated windscreen wiper. It's only protects against the effect of the weather and offers no ballistic protection.

Right: when looking at the rear of the A1 version of the GTK Boxer APC you can see the changed mounts for the warning light. Note the mounting points of the add-on armour, and the tow cable.

Right: depending on mission requirements the GTK Boxer AO Infantry Carrier can be armed with the 12.7mm x 99 M2HB QCB machine gun.



AFGHANISTAN

In contrast to the Transportpanzer 1 Fuchs, currently used by German Forces in Afghanistan, the new GTK Boxer has significantly superior endurance and survivability. Due to its multi-walled construction, shaped hull and additional protective measures in the suspension, the GTK Boxer offers good protection against most mines as well as direct fire from weapons up to a calibre of 14.5mm. The front of the hull is also protected against direct fire from armour piercing RPG-7 rocket propelled grenades. The armour consists of a base armour and a composite Advanced Modular Armour Protection (AMAP-B), which is attached with shock absorbing mounts. The interior of the vehicle features a high-strength AMAP-L Spall Liner, which reduces the amount of shrapnel should the armour be penetrated by projectiles. The armour of the GTK Boxer also protects the crew against the effects of 155mm artillery rounds

and multiple hits at one point. The vehicle is equipped with AMAP-M and AMAP-IED mine protection. Bomblet protection on the roof completes the armour protection suite. With the add-on armour, the vehicle's ballistic protection can be increased depending on mission requirements and threat levels. When the engineers designed the shape of the hull they took special care to reduce the infra red and radar signature, which should complicate the detection of the vehicle on the battlefield. The payload of 7.8-tonnes enables the integration of various mission kits as well as armour packages and still provides the potential for future modifications.

In the case of complex systems like the GTK Boxer, it is not unusual for improvements and changes to be implemented on production vehicles after initial fielding. The first five vehicles have already received an additional mine protection plate and the CG-12 Electronic Countermeasure Device specifically for the ISAF mission. Additionally, the FLW 200 remote weapon station was installed on a 30cm mount to improve the effectiveness of the system. The modified vehicles, now designated GTK Boxer A1, received a non-permanent camouflage with water-soluble paint; sand beige, grey beige and camouflage grey directly at the factory in Munich.

After extensive planning, on 21st July 2011 the first five GTK Boxers were airlifted to Afghanistan by leased Antonov cargo aircraft from the Leipzig/Halle airport. Time will tell how the new vehicles prove themselves during dangerous operations in Afghanistan. Official sources have already confirmed that all GTK Boxer A0 vehicles that have been fielded so far will receive the A1 upgrades in the future. Military Machines International will keep you updated!

GTK BOXER Fact File. . .

- Boxer has a top speed on the road of 64mph
- The vehicle is fitted with acoustic stealth technology
- Boxer was considered for the UK FRES programme
- Boxer can be fitted with an add-on armour package
- The first prototype was delivered in 2002

This photo shows a GTK Boxer A1 APC belonging to 3rd Company, Jägerbataillon 292 of Task Force Mazar-e Sharif in Afghanistan. Note the tactical markings and modifications at the cooling air outlet. (Photo courtesy Bundeswehr)



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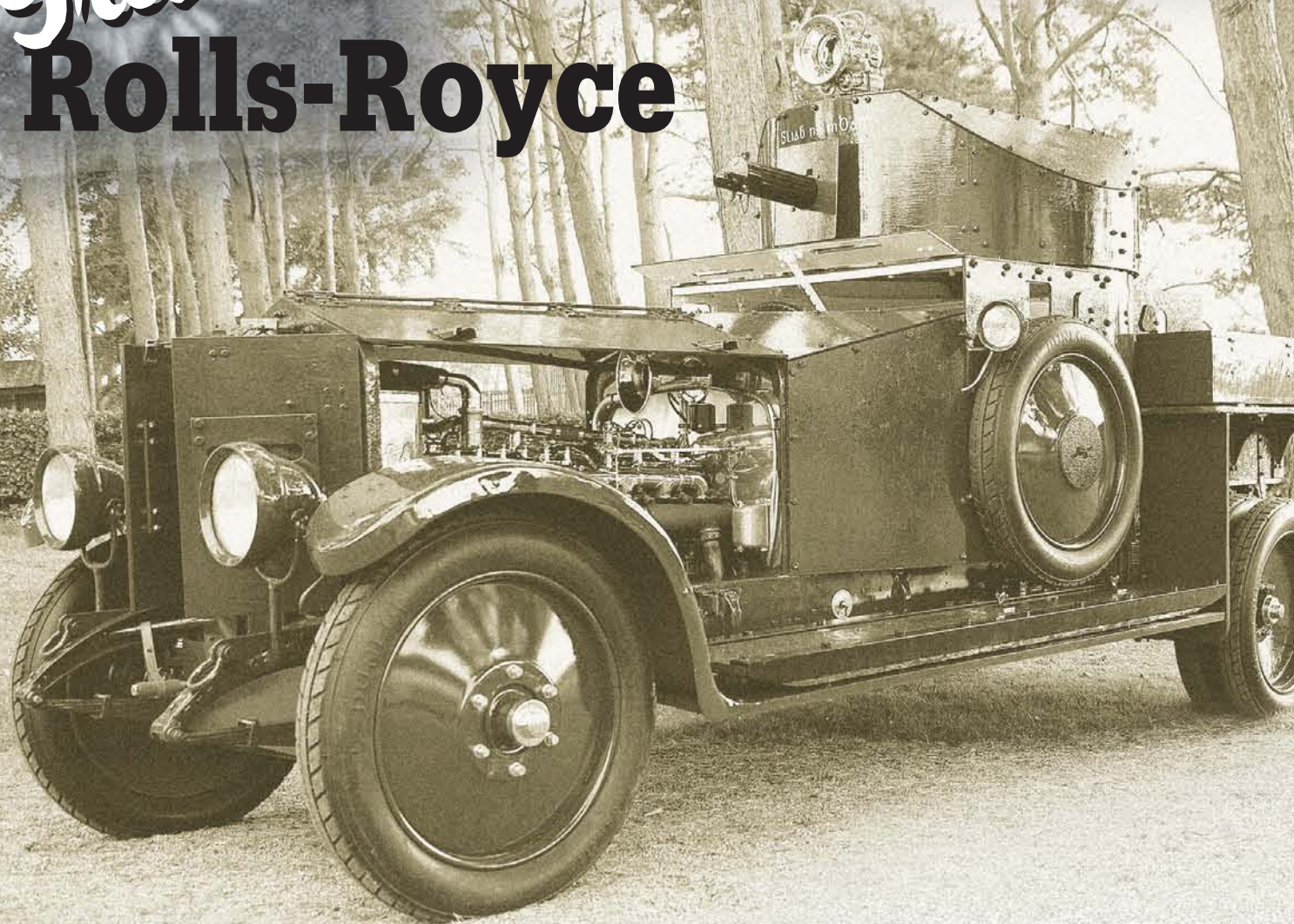
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Irish Rolls-Royce



Colin Stone delves into the history behind a restored Rolls-Royce armoured car once used by the Irish Army



Above: Rolls in camouflage scheme on exercise in Cork. Note the traditional Glen garry headgear as used by the Cavalry Corp.

How did an armoured car that was designed for the British Crown Forces for service in Mesopotamia end up in Ireland and see heavy action there? In fact it went on to serve in three wars and on two sides and continues to this day to find an honoured position in the hearts of Irish soldiers. The average Irish soldier would follow this car to the gates of Hell and back, if asked to do so as this one vehicle means so much to the Irish military identity. When the Irish Free State (forerunner of the modern Republic of Ireland) achieved independence from the United Kingdom in January 1922 the new State had to establish its own National Army (now the Irish Defence Forces) to replace the withdrawing British Army. As often happens when new states are established after a period of strife, a

civil war broke out in March 1922 when elements of the IRA decided to reject the authority of the new Irish government. In order to bolster the newly formed National Army the British transferred on credit military equipment, such as 18-pdr field guns, small arms, Crossley 25/30 Tenders, lorries and armoured vehicles, drawn from surplus stocks awaiting disposal.

By August 1923 the Irish had purchased from Britain a total of 1,143 vehicles. Of these, 13 were Rolls-Royce armoured cars, seven Peerless armoured cars and 111 armoured Lancia IZ and Triota lorries. All these vehicles were in good or excellent condition and gave great service despite rough handling by inexperienced drivers and shortages of trained mechanics. Large numbers of cars and lorries etc were also commandeered from Irish civilians.

Of the armoured vehicles purchased from the British, the Rolls-Royce armoured cars were found to be invaluable. With their power to weight ratio they were quick for their day and they packed a heavy punch in the form of a Vickers machine gun, which had a



Top left: Rolls-Royce armoured car at what is thought to be Ballinlee in Sligo April 1922.

Left: Rolls-Royce seen here with no spare tyres, which was unusual as punctures were seen as the Achilles Heel of the Rolls Royce armoured car.

fearsome reputation for reliability and weight of fire. The vehicle was also easy to drive and maintain, which was a bonus in that the Free State Army was only establishing itself. Its light weight also meant that it could be deployed anywhere in the country, whereas the Peerless armoured cars tended to be rather heavy and prone to getting bogged down in the poor road infrastructure outside of the capital, Dublin. Indeed it was found to be ideal in the seaborne invasion by the government forces against the rebels and were a great success due to their low weight whereas other vehicles could not be unloaded from the ships due to the limitations of the dockside cranes. The rebels were outflanked from the rear and were not prepared for the Blitzkrieg that rained on them.

Ghost limousine model and was blessed with a rugged construction that could absorb the impacts from early Irish roads, carry armour and take the punishment from drivers who received little training in the early years of the new army. The other major improvement was the replacement of the aluminium pistons in the engine with cast iron pistons.

Over their years of service the cars were modified by degrees. A 1933 report stated that the rear axles and ball races were giving problems and that each car took three months to rebuild from the chassis up. The Achilles Heel of the Rolls had always been the tyres, which were prone to puncture, due to their small cross section. Most pictures show as many tyres as possible being carried on the running boards. During

World War Two, tyres became impossible to source and it was decided to trial rims from Morris Commercial 2-ton trucks, but did not prove to be a success and the cars were effectively off the road due to a shortage of tyres.

The cars were also modified with an 18-inch wide commander's cupola similar to the one's fitted to the locally designed and constructed Ford Mk VI armoured cars. While being fitted with

Above right: pair of Rolls-Royce Silver Ghost Armoured Cars. Note the large painted letters/numbers on the lower armour plate below the vehicle's radiator.

Below: Rolls-Royce pictured here on the streets bearing the name 'The Manager'. Interestingly, the front left headlight looks to have been replaced with a searchlight.

1920 PATTERN

A reported thirteen Rolls-Royce 1920 Pattern Mk1's were turned over to the Irish Free State, although some reports claim that this was fourteen, but it is thought that this extra model might have been of an earlier pattern. It was hard to keep up with the cars as they changed location and name frequently, and during a war paperwork tends to take a back seat. The 1920 pattern differed from the earlier 1914 pattern with their steel wheels, which replaced the earlier spoked wheels. The engine compartment also benefited from a heavier armoured louvred shutter design that allowed air to enter the radiator even while closed and under fire. The chassis was from the Silver





“The thirteen Rolls Royce survived until 28th of April 1954,...”

Top right: Rolls-Royce Cars the Big Fella & the Fighting 2nd with FF Sunbursts, which is the symbol of the Irish Defence Forces to this day.

Above left: Rolls-Royce showing how open the turret was until the Vickers shield was installed later.

Above right: Rolls-Royce in Castletownbere, West Cork, in 1939, with a locally manufactured 10hp Ford 10 cwt converted to a Scout Car and Leyland lorries with local bodywork.

the cupola it was also decided to address the Vickers in the turret, which was given a ball mounting allowing for easier aiming and retention of the initial point of aim. The Thompson Engineering Works in Carlow was given the task after the Cavalry Corp produced the pattern vehicle at Tintown in the Curragh Camp. To produce the ball mounting was going to be a problem as Thompsons did not have the necessary equipment to produce the ball mounting, so with typical engineering thinking they started with a steel tube

and pressure was applied at both ends with a heavy duty press to produce the ball mounting - genius!

The cars had been seen as reserve cars during the World War Two and were to have been boarded (the Irish Defence Forces term for retiring equipment) before 1939, but with events in Europe and it not being possible to procure armour from exterior countries they were forced back into service. The Free State Army had

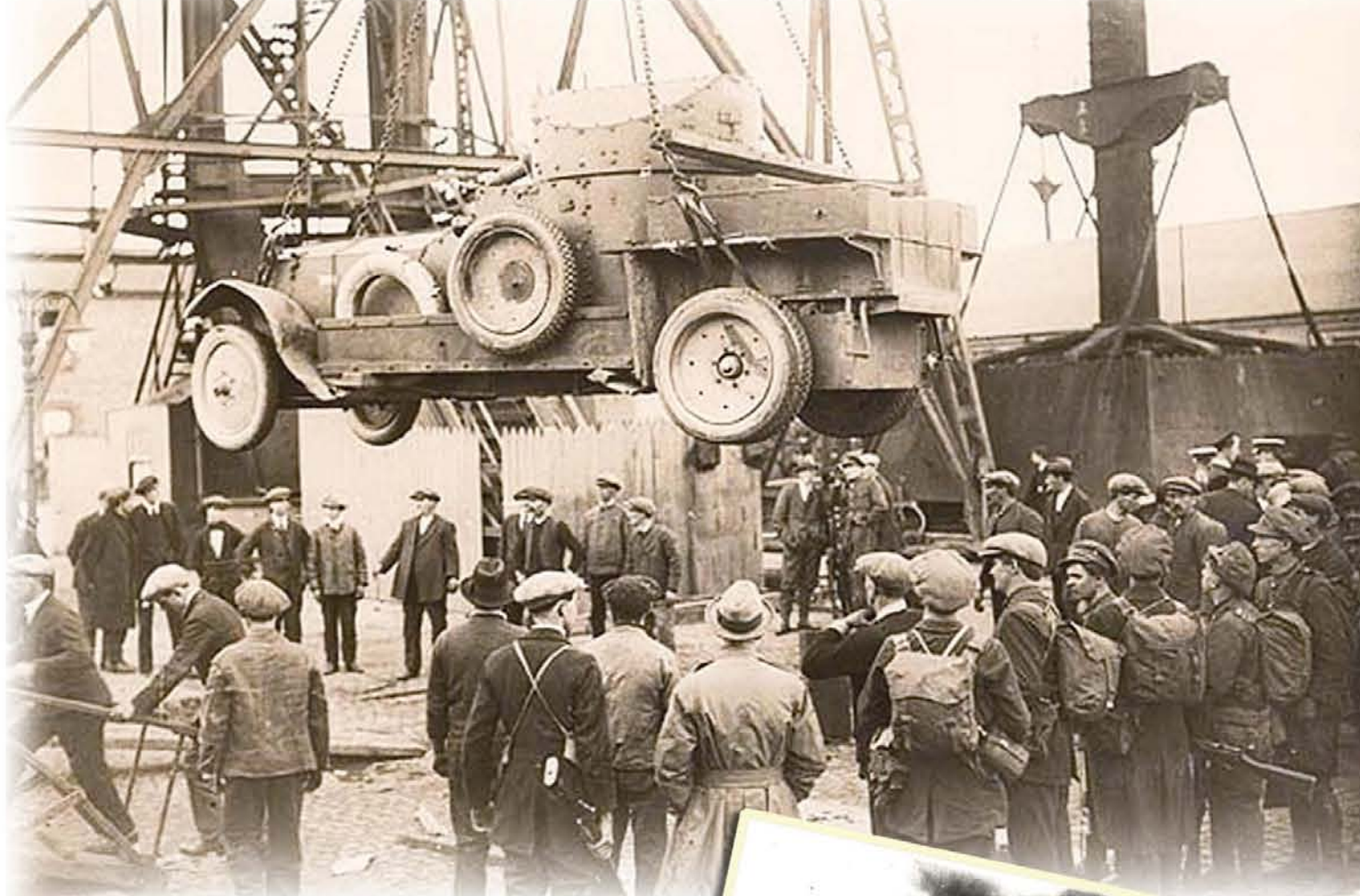
sought to purchase new Rolls-Royce cars but they were informed that the British were moving onto heavier models of armoured car and it was thought that these would be unsuitable for Irish conditions.

The thirteen Rolls-Royce survived until 28th of April 1954, when twelve were sold at public auction in Dublin's McKee Barracks. They were stripped of their armour and turrets and sold as chassis only. Records show that they

Left: Moneygall (painted on the front of the turret) is the place in Ireland Where President Obama's relatives are from. Note the 'A.R.R.7.' also painted on the turret.

Right: Rolls in Dublin City, which might explain the lack of spare wheels. The building in the background was Harry Fergusons of the tractor fame and it was being guarded to stop rebels from gaining access to the vehicles.





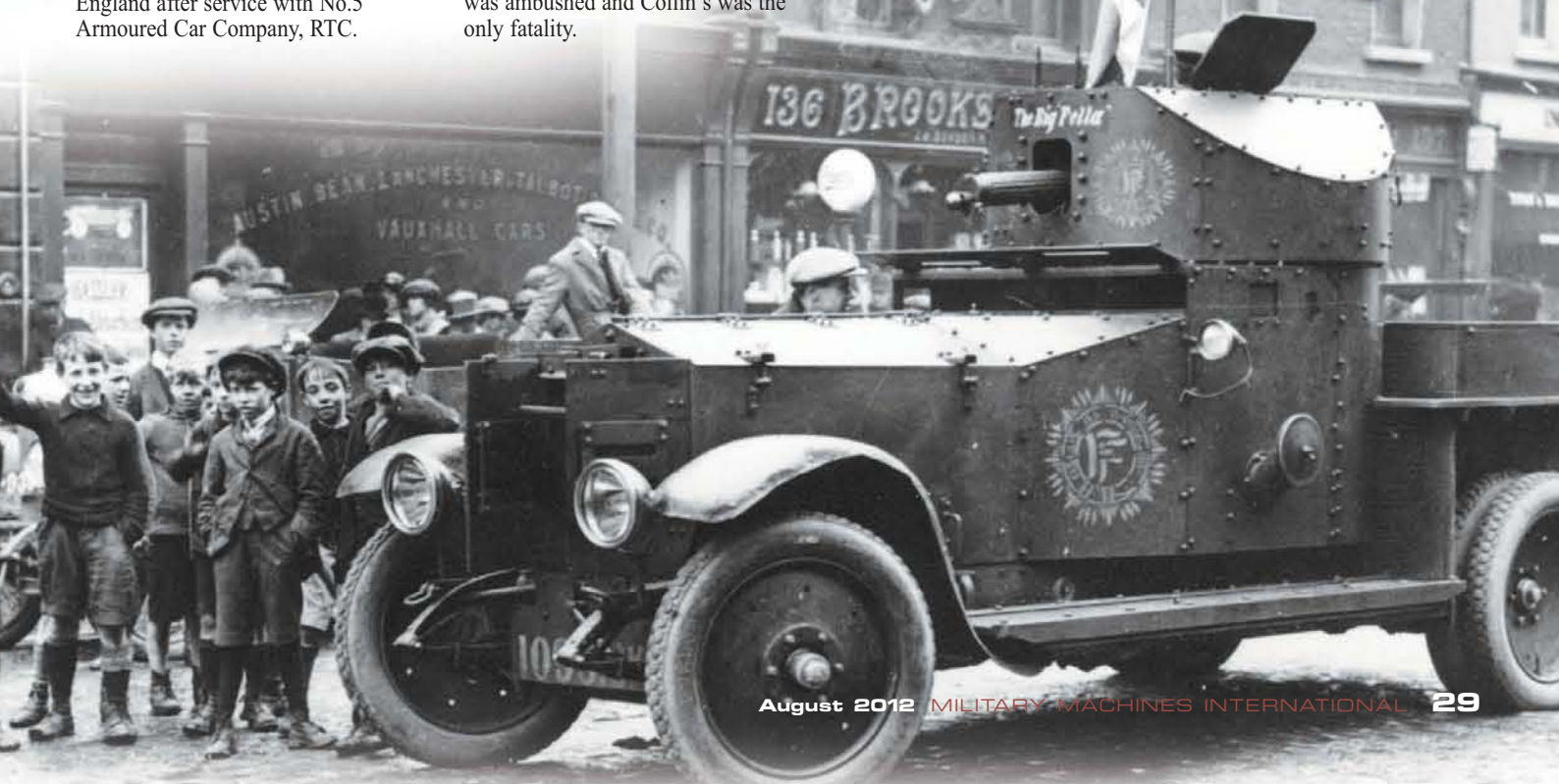
Above: Rolls-Royce Silver Ghost Armoured Car being winched aboard a cargo ship for invasion. Note the additional tyre located forward of the spare wheel. (Photo - Sean O'Sullivan)

Far right: although a poor image, it is a rare photograph showing a Rolls-Royce during fierce fighting on Dublin's O'Connell Street.

achieved between £27 and £60, not bad for such old vehicles. Some were bought to be converted for hearses, and if true I wonder where they are today? One was rebuilt in mild steel and was last seen for sale in England with a 'substantial' asking price. It is the only privately owned Rolls-Royce armoured car in the world. The other Rolls in Bovington also served in Dublin in 1921, but it was returned to England after service with No.5 Armoured Car Company, RTC.

IRISH DEFENCE FORCES

This leaves the most important vehicle in the current Irish Defence Forces inventory. Registration number ARR 2 is the car that was purported to be the vehicle that accompanied Ireland's legendary General Michael Collins on his fateful trip to Cork in the South of Ireland to broker a ceasefire with the rebels. On the way home his convoy was ambushed and Collin's was the only fatality.





More conspiracy theories have come to light over the years than with who shot JFK or for that fact JR Ewing in Dallas. Rumour has it that when Collins convoy was ambushed the Rolls' Scottish gunner Jock McPeake had a jam in the Vickers and couldn't lay down return fire, allowing the rebels the upper hand in the firefight. Three months later McPeake added fuel to the fire by defecting to the rebel side with Sliabh na mBan. She therefore served on both sides of the Civil War, before being recaptured by the Free State Forces. The most likely story is that Collins, who broke the anti ambush tactics that fateful day, was killed by one lucky shot to the head by rebel Sonny O'Neill whose bullet was thought to have ricocheted off Sliabh na mBan. The marks of bullets can still be seen to this day. The Rolls will always be associated

“Registration no. ARR 2 is the car purported to be the vehicle that

Top left: the Rolls pictured in the workshops as the restoration nears completion. (Photo - Karl Martin)

Top centre: Rolls-Royce Silver Ghost Armoured Car with a Belfast Truss Hanger behind.

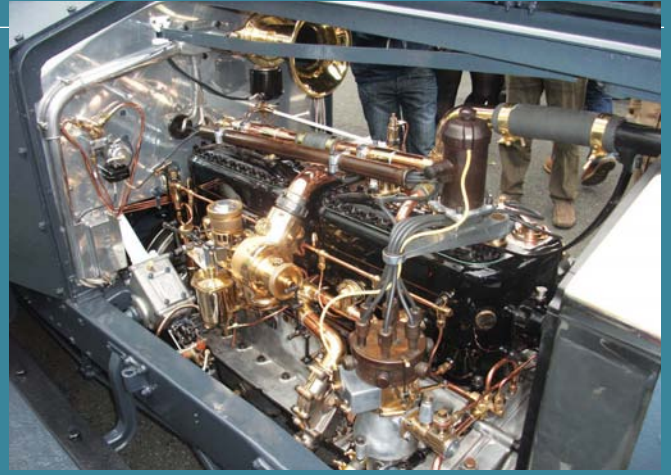
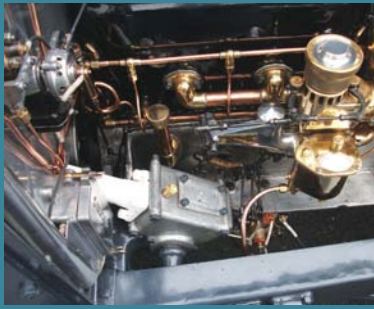
Top right: close-up of the rear wheel of the Rolls, showing the brass cap, which is one of the few hints that this is a Rolls!

Above centre: the gunner's position in the Rolls-Royce, photographed at the annual Cavalry Day in 2011.

Above left: Rolls-Royce Silver Ghost Armoured Car with Paddy Lynch.

Right: Rolls-Royce Silver Ghost Armoured Car photographed at the Curragh. Note the old pre-restoration headlights on the vehicle. (Photo - Sean O'Sullivan)



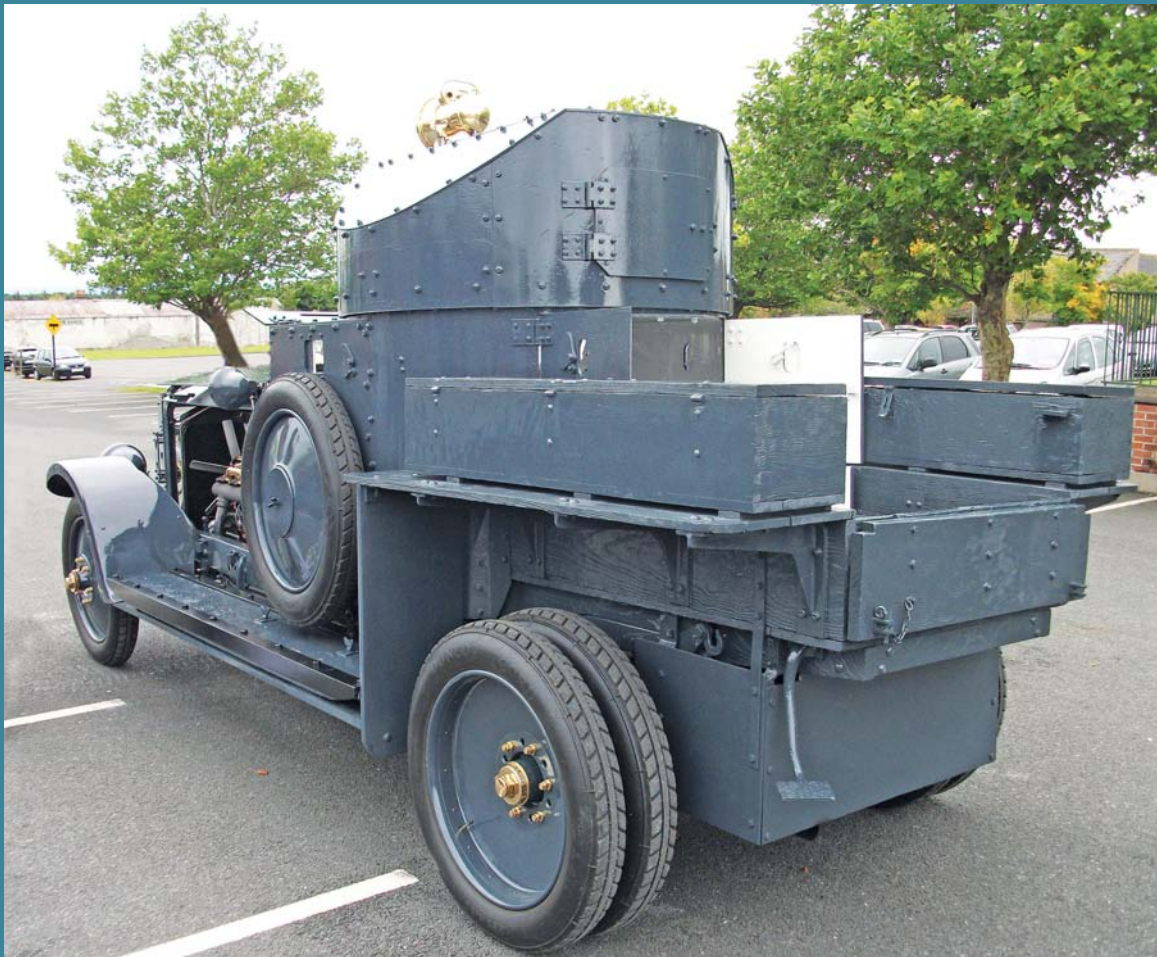


with Collins as it carried his body to hospital and is the only known vehicle to still exist from that convoy.

So how was this vehicle saved from the auction? It is rumoured that a group of Cavalry Officers pooled their resources and got the car earmarked to be preserved by making contacts and getting the Minister for Defence to keep that Rolls along with an engine from another car to be used as an instructional tool. The car is housed with its own parking spot within the Cavalry Depot in the Curragh Camp, to say that this vehicle is minded like a child would be an understatement. It has been looked after by three generations of the one family from it being taken into service in 1922 to the present day. The Lynch Family's Grandfather, Paddy even at one stage had to put Sliabh na mBan down as scrap metal to keep the bureaucrats and



accompanied Ireland's legendary General Michael Collins..."



Top left: everything under the bonnet is gleaming, here we can see the steering box in the centre of the image, another clue towards the vehicle being a Rolls-Royce.

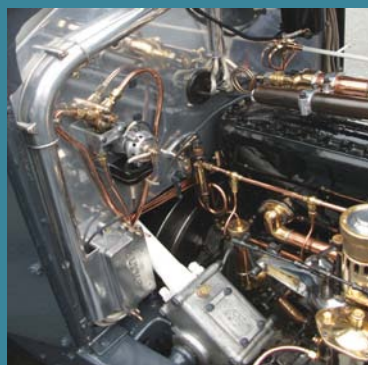
Top centre: close-up of the polished solid silver radiator under the armoured bonnet. Note the leather link fan belt.

Top right: right hand side of that glorious Rolls-Royce engine, polished within an inch of its life!

Above left: the radiator seen here is normally obscured by the armoured flaps. The starting handle is also visible.

Above right: view of the left hand side of the engine, what a fabulous site, and something that wouldn't be amiss in a classic car.

Left: rear three-quarter view of the Rolls-Royce Armoured Car showing the wooden panelled rear body. The photo was taken at the annual Cavalry Day show in 2011.



scrap man's hands off it, even though she was in perfect running condition - nothing like a soldier to find a way around the nonsense of paperwork and red tape! This appreciation of the car has been handed down from father to son all the way to today's generation.

The current Chief of Staff is a proud Cavalry man and it's fitting that he was the man at the helm when Sliabh na mBan was unveiled after her nut and bolt, chassis up restoration. The work was carried out by the staff of the Combined Vehicle Base Workshop in the Curragh Camp and Mr. James Black who has a gifted touch with Roll-Royce cars. I had always thought that Slieve na mBan was in tip top condition, but it was

only when the work was carried out that we realised just how above and beyond concours condition she now is, with every little detail such as the spotlight being correct. An amazing fact considering that she is a military vehicle that has seen hard use over the past ninety plus years. You can eat your dinner off the engine and the small details have to be seen to be believed. You could shave yourself off the shine. But it is not just cosmetic, the mechanics of the vehicle have received the same level of attention. It is with the 100th anniversary of the 1916 Rising that started Irish Independence that the Rolls-Royce looks forward to taking pride of place at the front of the parade and lead the proud tradition of the youthful Irish Defence Forces into its second century of service.

My thanks...

go to Karl Martin, Sean O'Sullivan, the staff of An Cosantoir, the Irish Defence Forces Magazine, and Liz Gillis of Kilmainham Gaol Archive and Cmdt. Martin Nolan and staff of CVBW Curragh Camp for their help with facts and pictures within this article.

Top left: the Rolls-Royce Silver Ghost Armoured Car seen here with steps for easier access to the rear whilst being used as a saluting platform. (Photo - Sean O'Sullivan)

Top centre: view of the polished bulkhead on the Rolls-Royce Armoured Car.

Above left: view of the spartan driving compartment, a sharp contrast to the highly ornate engine bay.

Right: the Rolls-Royce 'Sliabh na mBan' took pride of place during the 2011 Cavalry Day celebrations. Note the substantial leather strap holding the starting handle. Note the correct lights and spotlight, which shows the attention to detail.



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Top left: the Sd.Kfz. 10 was the smallest of the conventional half-tracks built by Germany during the Second World War. This preserved example has a few concessions to modern use, such as the indicators on the wings.

Above: this is a Saurer-built example of the Sd.Kfz. 10 photographed at the Militracks event in the Netherlands, which saw a large collection of German vehicles gathering for the weekend.

MMI takes a closer look at the Sd.Kfz.10, Germany's 'sporty' little half-track



German Sd.Kfz.10



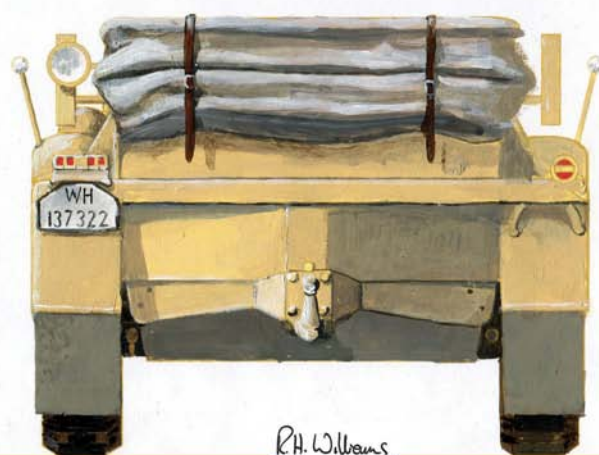
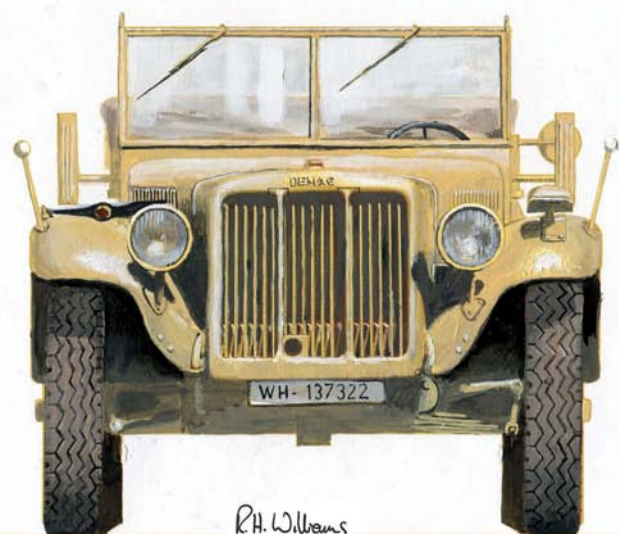
During the Second World War Germany took the concept of the half-tracked vehicle to new levels, with the introduction of numerous softskin and armoured half-tracks in all shapes and sizes. Germany's revamped and highly mechanized military machine relied heavily on a variety of half-tracked vehicles, and while the Kettenkrad was undoubtedly the smallest half-track vehicle of the time, the smallest of the 'conventional' half-tracks of the war that reached production was the Sd.Kfz. 10, often referred to under the generic term 'Demag'.

A number of prototypes of various size half-tracks were built and tested in the years leading up to the Second World War as Germany began to build its new army. This included a number of prototype vehicles that fell within

the 1-ton category, which paved the way for the Sd.Kfz. 10 before it was eventually accepted for series production. In actual fact the pre-production model of the Demag D7 that was built in 1937 was originally designated the Demag D6 and was very similar to the full production D7, but by the time the vehicle got to full series production in 1939 it had been redesignated the Demag D7.

The Demag D7 half-track was originally designed and built by the manufacturer Demag, however, as the war progressed the need to increase production levels led to Demag's production facilities being outstripped and it was decided by the powers that be that Demag should concentrate on the production of chassis for the armoured Sd.Kfz. 250, which used a modified, shortened version of the





“...production of the Sd.Kfz. 10 Demag D7 ran from 1939 to 1944...”



Sd.Kfz. 10 chassis and running gear (see the feature on the Sd.Kfz. 250 in the February 2012 issue of MMI). As a result the remaining production of the unarmoured Sd.Kfz. 10 was split between a number of other manufacturers, which included the likes of Adler, Bussing-NAG, Saurerwerke and Mechanische Werke-Cottbus. Production of the Sd.Kfz. 10 continued right up until 1944, by which time approximately 25,000 vehicles had been produced, excluding the chassis used for the armoured Sd.Kfz. 250, which numbered around 7,500.

Rated as having a 1-ton towing capacity, these lightweight half-tracks were originally designed and produced as a light prime mover, capable of

towing a range of light artillery, which included the 3.7cm and 5cm anti-tank guns, 7.5cm and 15cm infantry howitzers and 2cm anti-aircraft guns. The vehicle would also be used to tow the Sd.Ah.32 supply trailer, and went on to be adapted into more specialist variants, albeit in smaller quantities.

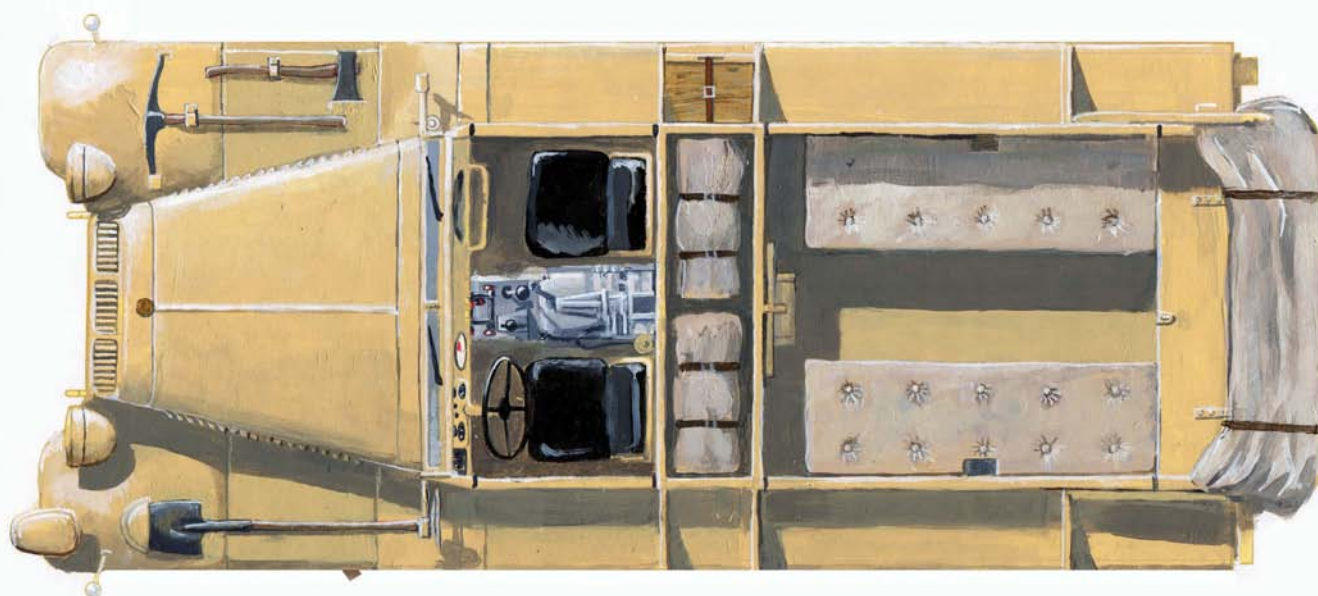
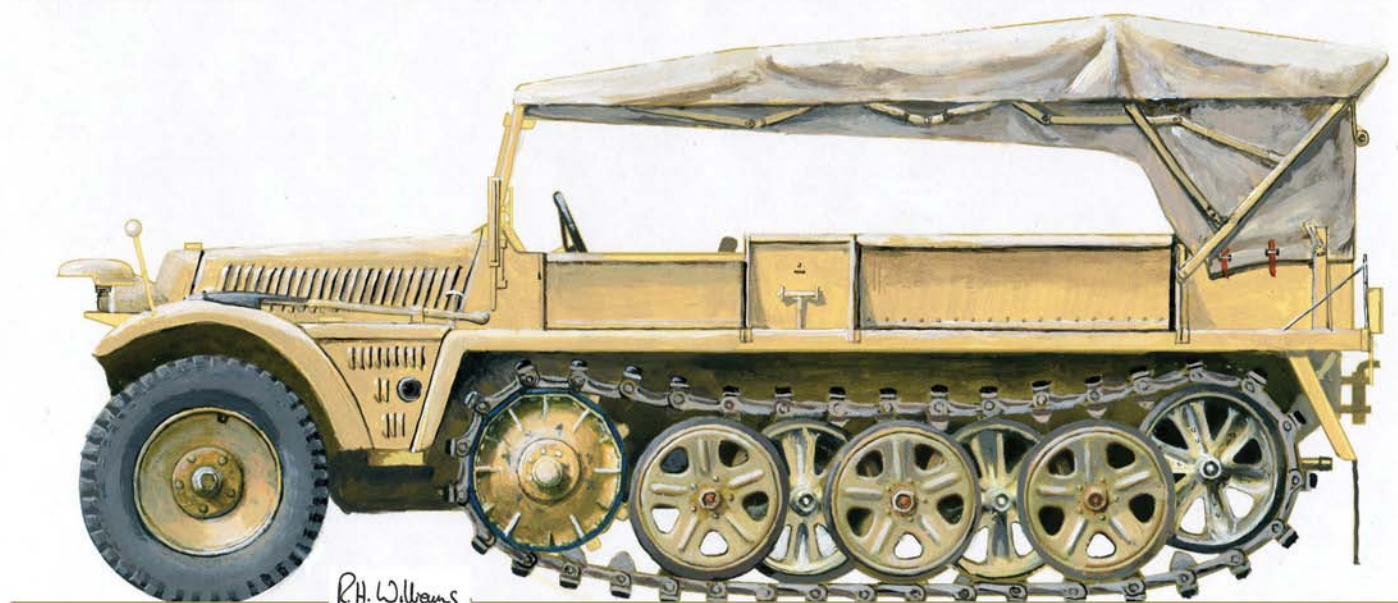
Amongst these variants the better-known variants were the Sd.Kfz. 10/4, an anti-aircraft variant armed with a 2cm Flak 30 anti-aircraft gun, and the Sd.Kfz. 10/5, another anti-aircraft variant armed with a 2cm Flak 38 anti-aircraft gun. These variants saw the crew compartment being adapted to carry a flak gun on an operating platform with fold down sides that increased the working area, and additional stowage bins mounted

Above: off-road there's very little that will stop the Demag D7 when driven by an experienced operator. I'm assured that it's a relatively easy vehicle to drive.

Right: the Sd.Kfz. 10 was built by a number of manufacturers as demand increased during wartime. Here we see the typical 'Demag' and 'Saurer' badges found on the bonnet of the vehicles.

Far right: in addition to the driver there is accommodation for a front seat passenger and up to six more passengers in the rear compartment. No doubt in times of war this number would have increased as situations dictated.





above each of the front wings. More ammunition storage was provided in the form of a series of bins mounted to the outside of the drop down side panels. In some cases these flak variants were also fitted with a rudimentary armoured cab, similar to those seen on the larger flak variants of the Sd.Kfz. 7 half-track.

Other variants included a light gas detection vehicle (Sd.Kfz. 10/1), a light decontamination vehicle (Sd.Kfz. 10/2), and a light decontamination sprayer vehicle (Sd.Kfz. 10/3), but for the purpose of this article I have decided to concentrate on the basic prime mover variant of the Sd.Kfz.10.

UP CLOSE

Over the last three years I have been lucky enough to have attended the Militracks events held at Liberty Park in Overloon in the Netherlands. This specialist event attracts a range of wartime German vehicles, which has provided me with the opportunity to take a closer look at a variety of examples of the Sd.Kfz. 10 that are in private hands in Europe, and prior to that I photographed another, privately owned example in the UK, which forms part of the Crompton Military Vehicle Collection. The photographs within this article were taken either at Militracks or the Crompton Military Vehicle Collection in Suffolk.

For a vehicle weighing almost 3.5-tonnes these little half-tracks are surprisingly quick and nimble off road, as ably demonstrated by the various owners during the Militracks events where they made short work of the off-road course in the woods surrounding the museum. In all variants, including the basic prime mover form featured here, the engine is situated under a conventional pressed steel bonnet at the front of the vehicle, the power plant being essentially the same as that used in the armoured Sd.Kfz. 250, namely the Maybach HL42 TRKM 6-cylinder, in-line, OHV petrol engine of 3.79-litres capacity developing 100bhp. It was



“...a modified and shortened version of the Sd.Kfz. 10 chassis and running gear was the basis for the armoured Sd.Kfz. 250...”

Top: three examples of the Sd.Kfz. 10 pictured at Militracks, the vehicle furthest away is a Demag, the others are built by Saurer.

Above left: a fully loaded Demag makes short work of the off-road course during the show at Militracks.

Above right: the canvas hood that is provided for weather protection covers the full length of the crew compartment.

Right & far right: here we can see the inverted leaf spring used for the suspension of the front axle on the Sd.Kfz. 10.





1: view of the driver's compartment in the Sd.Kfz. 10. The steering wheel is in a conventional position, unlike the armoured Sd.Kfz. 250, which has the steering wheel at a reverse angle.

2: close-up of the large rev counter on the dashboard of the Sd.Kfz. 10 half-track. The coloured portions encourage inexperienced drivers to maintain the correct revs.

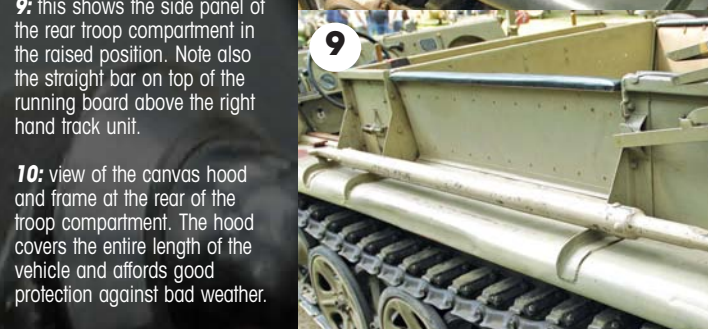
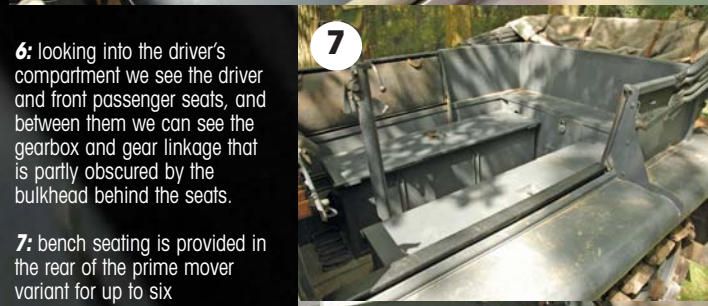


3: like the engine, the gearbox is manufactured by Maybach. Here we see the Maybach badge cast into the end of the gearbox, which is visible in the driver's compartment.



4: storage for additional jerry cans was provided either side of the bulkhead that runs between the driving compartment and the rear troop compartment.

5: here we see the bulkhead and it can clearly be seen that it is a twin wall arrangement. A set of rifle clips are provided on the rear panel for the crew's personal weapons.





Sd.Kfz.10 D7 Half-track

Crew:	1 + 7
Length:	4750mm
Width:	1930mm
Height:	1620mm
Ground Clearance:	285mm
Track Width:	240mm
Weight:	3400kg (unladen) 4900kg (laden)
Payload:	1500kg
Fuel Capacity:	115-litres
Range:	285km (on road)
Engine:	Maybach HL42 TRKM 6-cylinder, 4171cc water-cooled petrol engine producing 100bhp @ 2,800rpm
Gearbox:	Maybach Variores Manual SRG 102128 H with 7-forward and 3-reverse gears
Steering:	Manual with brake assistance
Suspension:	Transverse leaf spring (Front) Transverse torsion bar (Rear)
Tyres (Front):	6.00 x 20
Electrical System:	12 volt
Top Speed:	65kph (on road)



“...A number of different style road wheels were fitted throughout production of the Sd.Kfz. 10...”

coupled to a Maybach Variores model SRG 10218H pre-selector gearbox, with seven forward and three reverse gears that gave it a top speed on the road of 65 kilometres per hour.

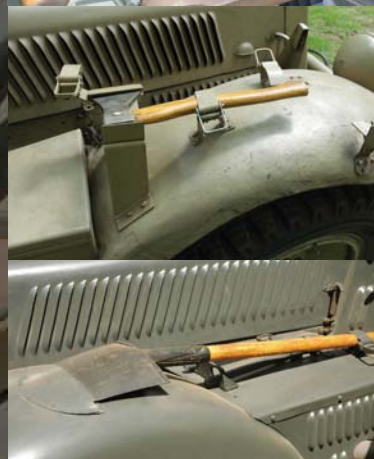
The driver and front seat passenger sit in the centre of the vehicle with the driver seated on the left and a bulkhead behind them, and the remaining crew of up to six passengers (in the prime mover variant) seated on two inward facing bench seats behind them. Access to the rear compartment is afforded via a drop-down side panel either side of the crew compartment and at the rear of the body there is a conventional canvas hood and frame that can be erected to cover the full length of the crew area in poor weather, although entering and exiting the vehicle with the hood raised requires a certain amount of athleticism, especially for the taller crew members due to the low hood height!

A variety of pioneer tools and vehicle maintenance tools are carried in clips around the vehicle's body, with some positioned to the rear of each of the front wing panels, and others on the running boards above each of the track units. A small stowage bin is located between the front wings and the rear running boards on the right hand side for the storage of additional items, and cradles for jerry cans were sometimes fitted either side of the central bulkhead behind the driver and front seat passenger. On some vehicles an angled steel hoop was fitted to the rear of the vehicle for the carrying of a reel of barbed wire.

A standard towing pintle is also fitted at the rear, however, some early production vehicles also had air reservoirs fitted above the pintle on the rear of the vehicle to enable air-actuated brakes to be used on the larger items being towed.

Like most of the German half-tracks, the front wheels provide some steering for the vehicle with input from the driver via a conventional steering wheel, which in turn can actuate the steering brakes on the track units depending on how much steering lock is being input. In the case of the Demag, like most softskin half-tracks, the steering wheel was arranged conventionally and not at a reverse angle as seen on the armoured half-tracks. This type of steering system is





Top left & right: two views of the engine compartment of an Sd.Kfz. 10 half-track showing the Maybach inline, six-cylinder petrol engine. This is actually a Saurer-built example of the half-track.

Left: the hood of a Demag is hurriedly raised during a rare shower at Militracks. There's very little space between the hood and the sides of the vehicle for the crew to get in and out of the vehicle!



Column far left: various views showing the stowage arrangements around the vehicle for the different pioneer tools that were carried on the Sd.Kfz. 10. The full compliment of tools included a small hand axe, pick axe, shovel, and wire cutters. Note also the stowage bin between the right hand side front wing and rear running boards. On the opposite side the space is occupied by the exhaust.

Left: a pair of half-tracks return from the off-road course in the woods surrounding Liberty Park in Overloon during the Militracks event. Note that the front vehicle has a bumper bar mounted at the front of the vehicle.



Left: close-up of the Sd.Kfz. 10 in the Crompton Military Vehicle Collection showing the rear towing pintle and the circular frame used to carry reels of barbed wire.





essentially the same used on all half-tracks, from the smallest to the biggest, which enables tighter turns to be made with the assistance of the track brakes. The downside is that the steering and braking system is complicated and can be prone to mechanical issues.

The track units feature a series of interleaved rubber tyred road wheels comprising of an inner and outer set of three single wheels, which sandwich an inner set of three twin road wheels with a drive sprocket at the front of the track run and the rearmost of the inner twin road wheels acting as the rear idler wheel. A number of different style road wheels were fitted throughout production life of the Sd.Kfz. 10.

The tracks fitted to the Demag D7 are typical of most German half-tracks of the Second World War period, being over complicated in comparison to Allied equivalents. They comprised of

a cast steel shoe housing the bearings in which the connecting pins run and topped by a removable rubber pad. Suspension for the track units is via six transverse torsion bar axles, while suspension for the front wheels was via an inverted transverse leaf spring.

In service the Sd.Kfz. 10 was well liked by its crews, being quick and nimble and on the whole fairly reliable if serviced regularly. It proved to be an adaptable machine, both in terms of the types of weapon it could carry or transport, and in terms of the terrain in which it was expected to operate and turned out to be a capable machine.

A surprising number of these 'sporty' little half-tracks are now in preservation around the world, both in museum collections and private hands, with a number right here in the UK and some of them are featured here, so the next time you're at a show keep an eye out for one of these 'sporty' little half-tracks.



Top left & right: although the smallest of the conventional half-tracks to be built by the Germans during the war, Sd.Kfz. 10 was a very capable machine and well-liked by those who used them in service. Even in private hands they are popular with their owners and regarded as a surprisingly 'sporty' half-track with a good turn of speed.

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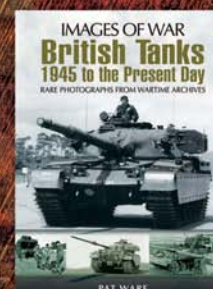
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Role Revision...

Shaun Connors examines how demands on the traditional light utility vehicle [LUV] have changed, and how these changes are becoming apparent in the latest batch of requirements



As recently as 2003 and when the UK MoD's OUVS (Operational Utility Vehicle System) programme was gaining momentum with a series of industry briefings, the MoD had outline plans to replace its core light utility vehicle (LUV) fleet of around 15,000 vehicles by a new, albeit smaller, fleet of around 9,000 vehicles. Even in a post-Cold War Europe, in terms of vehicle specification/capability it was a near-certainty that the existing fleet of tactically capable Land Rover and Pinzgauer vehicles would be replaced by equally capable current generation designs, however, as OUVS began shaping up thoughts also began to emerge as to the impact the then developing conflicts in Afghanistan and Iraq might have on such a procurement, conventional unarmoured LUVs (in their myriad roles) proving an easy target in such environments for anything from a disaffected local with an aged AK-47, to the evolving

Improvised Explosive Device (IED).

The US Army had witnessed first hand the vulnerability of unprotected light vehicles as far back as Somalia during 1993, and in what is now bracketed an asymmetric environment. However, despite this experience it subsequently paid little more than lip service the concept of protecting the light utility vehicle, and as a direct result of this, as events in Iraq and Afghanistan began their rapid downward spiral, the US Army would prove to be as ill-equipped at

meeting the protection challenge as it allies would...

As has since been well-documented, protecting light utility vehicles became a priority, the roles these vehicles performed remaining to be carried out irrespective of threat or environment. Approaches at providing this protection were varied, and from initial lightly armoured (almost Heath-Robinson) concepts, within an extremely short timeline things had evolved to deliver fully delivered protection kit options,

and more recently fully protected replacement 'light utility vehicle' types.

The Irish, Italian, Norwegian, Spanish and Swedish armies are provided excellent examples of this protection evolution, all of these having had assorted fleets of deployed LUVs quickly evolve through add-on protection to ultimate replacement by purpose-procured protected light vehicles. To this end, Italy, Norway and Spain selected IVECO's LMV, while Ireland and Sweden selected the similar BAE RG-32M. And therein is the outline of an emerging problem...

No Army, even before the current financial crisis, could have contemplated replacing a fleet of conventional tactically capable LUVs (priced at around £40,000) with a fleet of LMV/RG-32M-type vehicles (priced conservatively at around £300,000). And while it remains unthinkable that any Army will ever need to replace an entire fleet of tactically capable LUVs with protected light vehicles, it is clear that even the reasonably small numbers of protected light vehicles that are required will severely dent any procurement budget.

Returning to the UK MoD as the basis of an example, as previously mentioned the current Land Rover and Pinzgauer fleet would almost certainly have been replaced by vehicles of equal (or greater) capability. This, working to a 9,000-vehicle requirement and at an estimated unit cost of £40,000, would require a procurement budget of around £360m.

Top left: Land Rover has produced specialist Defender variants such as these UK Royal Marines Xtra Duty (XD) examples, these being waterproofed, winterised and fitted for radio (FFR). (Patrick Allen)

Top centre: this Portuguese Army Defender 90 is typical of recent military deliveries by Land Rover, it being essentially the commercial product with a coat of green paint. (Victor Barreira)

Top right: current customers for the G-Class include Algeria, Australia, Norway and Sweden. Australia will receive 1,187 examples under Land 121's Phase 3A and a further 959 under Phase 5A. (ADF)

Main image left: Volkswagen's Amarok is one of many similar designs now vying for a slice of the lucrative military light utility vehicle market. (RMMV)

Below: the make-up of many LUV fleets is most definitely changing, and is likely to continue, not simply because of the introduction of armoured protected types such as this Swedish Army RG32M. (FMV)



Right: this Portuguese Air Force Nissan Navara crewcab is extensively modernised, modifications including front-mounted winch, bull-bar, roll-over protection and ring-mount combined, blackout/infra-red lights, plus basic ballistic protection for the gunner. (Victor Barreira)



Top right: the recently introduced Jeep J8 is a much-militarised version of the COTS Jeep Wrangler. (JGMS)



Right: prior to the introduction of current generation protection kits and/or fully armoured light vehicles, expedient protection such as this fitted to a British Army Pinzgauer was the norm. (Patrick Allen)

The UK MoD is currently procuring 300 Foxhound protected light vehicles, with the first 200 costing £180 million, this including a substantial spares and support package. The designed-from-scratch Foxhound will doubtless deliver a top-end capability when it finally enters service later this year, however, for the purpose of our example a more realistic unit cost is required, and a generously low £300,000 will be used. At £300,000 each, 25% (£90m) of a projected budgetary requirement (£360m) will, with just 300 vehicles, deliver just over 3% of the future fleet...

BUDGET CONSTRAINTS

Such mathematics demonstrate the clear need for a budgetary/spending re-think, and demand that all procurement options are considered in full. These options are varied, the probable preferred one for a NATO-grade armed force still being a complete tactically capable LUV fleet, should this remain affordable. At the opposite end of the capability scale a cheaper COTS-type (Commercial Off The Shelf) product could be procured, this option possibly even including

Below: the third phase of Austria's programme to replace Pinzgauer and G-Class fleets saw five assorted vehicles trialled during 2010, these being the Jeep Wrangler Unlimited 2.8 CRD, Jeep J8 2.8 CRD, Land Rover Defender 130 DCPU, Toyota Hilux X-tra Cab and Volkswagen Amarok; a decision is pending. (Stefan Marx)



leasing which may offer some short-term savings. A further option might be a split tactically capable/COTS fleet, tactically capable vehicles supporting operations where appropriate, with COTS products used for homeland and/or third line duties.

At present, procurement choices being made are varied, however, indicators are that across NATO-grade armed forces overall fleet capabilities are likely to reduce in the tactical sense. However, supporting that capability reduction, the argument could be put forward that with highly capable protected light vehicles in an inventory, that a COTS product offers (at the very least) an affordable homeland and/or third line duty solution.

Austria appears to have started down that road already and began the replacement of Mercedes-Benz G-Class and Pinzgauer tactically capable LUVs with over 100 Volkswagen Touareg SUVs (Sport Utility Vehicle) from 2007. It then ordered 150 IVECO LMVs for delivery 2012-2016 under a contract valued at €104 million.

The third phase of Austria's replacement programme saw five assorted vehicles trialled during 2010, these the Jeep Wrangler Unlimited 2.8 CRD, Jeep J8 2.8 CRD, Land Rover Defender 130 DCPU, Toyota Hilux X-tra Cab and Volkswagen Amarok. The Jeep Wrangler, Toyota and Volkswagen selections are clearly COTS products, while the Jeep J8 is a much-enhanced military-specific Wrangler derivative. Land Rover's

Defender 130 DCPU could confuse, as while considerably more utilitarian than its COTS contemporaries, it remains a COTS product. By way of explanation, Land Rover has manufactured both military specific Defender variants (Xtra Duty (XD)) and tactically capable Defender variants (inc. full 24V FFR winterised/waterproofed models), however, recent/current product has been far more COTS orientated.

Switzerland also plans to replace a fleet of G-Class and Pinzgauer tactically capable LUVs, and the current four competitors that are understood to be lined up for trials starting June/July 2012 are as eclectic as those competing for the Austrian requirement.

The Jeep J8 offered by Jeep Government and Military Sales (JGMS) will compete against a Volkswagen Amarok uprated by Austria's Achleitner, a G-Class, and an unspecified vehicle (probably VAM-TL) from Spain's URO.

Outside of Europe there are also signs of change, with the likes of Malaysia and Singapore both selecting true COTS products to replace more militarised designs. Singapore is understood to have received an initial 870 Ford Ranger-based Everest SUVs from late-2007 (with an option for an additional 500), these part-replacing a Land Rover fleet procured throughout the 1980s and 90s. Malaysia announced in March 2012 that with the Weststar GSC (a localised Ford-based COTS chassis built in Thailand) it was to replace its assorted LUV fleet, this primarily Land Rover based.

"...a cheaper COTS-type (Commercial Off The Shelf) product could be procured..."



Left: France has a pending requirement to replace its current Peugeot P4 fleet, the P4 a licence-built Mercedes-Benz G-Class. The complex Vehicule Léger de Transport Polyvalent (VLTP) programme, will with three sub-projects (VLTP 1, 2 & 3), replace the P4, Peugeot J5 Dangle and Renault TRM 2000 light truck with a mix of COTS softskin (possibly leased) and protected light vehicles. Current estimates for VLTP are 4,900-5,100 vehicles, this currently split 2,500 COTS (VLTP 1), 2,100 light armoured (VLTP 2) and 300-500 light armoured (VLTP 3) vehicles. France's current LUV of choice is the Land Rover Defender, over 2,000 of which have been delivered since 2000.

Below: the UK MoD is believed to be considering a part COTS option when the programme to replace the current Land Rover and Pinzgauer fleets again picks up speed. (Shaun Connors)

Land Rover's Defender and Mercedes' G-Class have long been staple LUVs of many armed forces, especially the better-equipped, with the likes of Australia, Austria, Canada, Denmark, France, Greece (licence-built), Netherlands, Norway, Pakistan, Sweden and Turkey examples of global first and second tier users with sizeable fleets.

Land Rover's military Defender has perhaps not received the investment its military heritage might suggest it should have in recent years, and with production to cease in favour of a more SUV-type design in 2015, the near-term future of the current

incarnation of the type remains unclear. Options include transferring production to India (Land Rover owned by India's Tata) or possibly Turkey, Turkey's Otokar a well-established assembler of CKD Defenders for the Turkish Army and others. However, whatever option (if any...) is exercised, it is probable that sooner rather than later, and with non-EU compliance pending, the Defender will be difficult for NATO-grade armed forces to procure in an environment where compliance with environmental and civilian legislation are now deemed more important than tactical capability...



Mercedes' G-Class on the other hand, and despite a blip a couple of years back when its future was unclear for a short while, now looks to have a secure future, the commercial base product having just received its first full facelift in ten years... Military (461) and commercial (463) G-Class ranges are produced in the same factory and on the same production line, however, while still technically a militarised commercial product, the utilitarian design origins of the G-Class still allow for it to be enhanced to deliver a fully tactically capable product.

Far left: the Dutch MoD is understood to have initially favoured a COTS solution to replace its G-Class and Land Rover fleets, however, latest reports suggest a mixed fleet is now the preferred choice in a project that recently saw movement. (Shaun Connors)





There are of course a limited number of military-specific LUVs to which the COTS label can never be applied, although these are few and far between...AM General's HMMWV is one, the HMMWV-like NIMR another, as is URO's HMMWV-like VAMTAC. IVECO's 7.5-tonne GVW LMV and Renault's much larger Sherpa are a couple of others. A few exotic examples such as the Joint Light Tactical Vehicle (JLTV) candidates aside, the list pretty much runs dry there, the selection of expensive to develop (and subsequently procure) military-specific LUVs continuing to reduce in an ever-shrinking cost-sensitive market. Alongside this reduction the once ubiquitous 'basic 4x4' is also becoming an endangered species, consumerism calling for more and more style and luxury in all types of commercial 4x4.

With potential military sales only ever equating to a fraction of any commercial types sales, it is increasingly unlikely that any commercial manufacturer will expend too much time, effort and money on the development of a low-volume basic product targeted at the occasional military customer...

And so while options for the cheaper-to-procure more COTS-like products are on the increase and look likely to continuing increasing, recent history could perhaps offer up some words of caution to those that may

believe, no matter how capable it may be..., that a €30,000 COTS product can ever match the capabilities of something like a HMMWV when push really comes to shove... The US Army tried this with its Commercial Utility Cargo Vehicle programme, this (for all intents and purposes) ending in tears...

“...alongside this reduction the once ubiquitous ‘basic 4x4’ is also becoming an endangered species...”

Top right: starting in 1981 the US Army carried out a 14-month programme (referred to as WHEELS) to find a commercial vehicle that could be procured for US Army use in areas where extreme environmental conditions would not be met and where expensive tactical vehicles like the HMMWV were not necessary...

Top left: ...this approach was tried with the CUCV, however, without any true definition as to what each type (CUCV/HMMWV) could and should do, and where, the essentially off-the-shelf CUCVs failed to survive the rigours of the military environment, albeit an environment they should never have been exposed to...

Above: a much-modified Toyota Hilux in use by Czech special forces. (Greg Holdanowicz)

Right: Volkswagen's Amarok is one of many similar designs now vying for a slice of the lucrative military light utility vehicle market. (RMMV)

COTS

At this point in proceedings the term COTS should perhaps be given a cursory examination. Precisely what does Commercial Off-The-Shelf translate to in terms in LUV product? The answer in simple terms is pretty much whatever the procurer or manufacturer wishes it to... An off-the-production line Toyota Hilux or Nissan Navara at circa €30,000 is clearly a COTS product, however, it is arguable that a >€55,000 G-Class (even in base 461 spec) meets the COTS definition (if required), it coming down the same production line as the latest G65 AMG with its 6-litre V12 621 hp engine...



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The M151A1 MUTT

The American M151 1/4-ton 4x4 MUTT (Multi-Utility Tactical Truck), was developed by Ford in the early 1950s as a replacement for the M38 and M38A1 Jeeps then in service. The M151 underwent a series of upgrades after various in-service problems, not least with the suspension. The MUTT first served in Vietnam and went on to serve around the world with the US military and numerous other countries before being phased out and largely replaced by the Hummer in the 1980s, although some special variants continued to serve well into the 1990s. The privately owned example shown here was photographed at the recent Overlord Show.



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SERIES 3 LAND ROVER

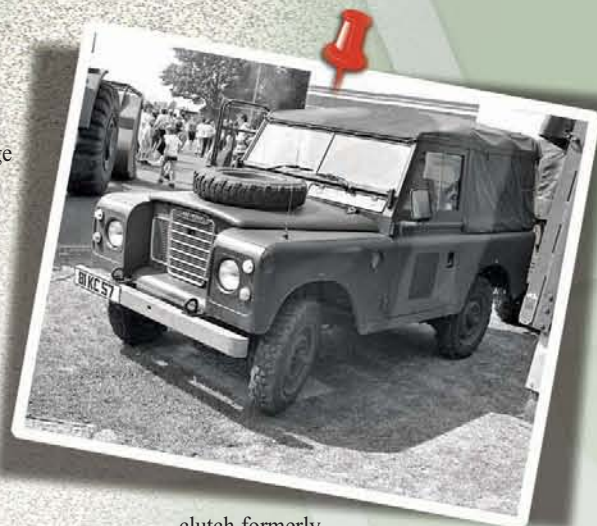
**Geoff Fletcher
looks back at the
British Army's
leaf sprung Series
3 Land Rover**

The Land Rover Series 3 was purchased in large numbers from 1971 when the Series 3 was introduced until 1985 when the Defender began to be procured. Given that I've already covered the Lightweight (including the Series 3 version), in this article I will be focussing most attention on the long wheelbase (109 inch) Series 3.

In September 1971 Land Rover launched a face-lifted version of its eponymous Land Rover range. The Series 3 was intended to address some of the shortcomings of the Series 2A thus enabling it to combat the increasing tide of competition from Japan in the civilian marketplace, particularly abroad. The most important change was an all-new synchromesh gearbox, but alongside this the 9 1/2-inch diameter heavy-duty

clutch formerly fitted to only the diesel and 6-cylinder models became standard across the range. New, stronger, half-shafts were also introduced on the long wheelbase model and a tougher rear axle. A new brake system was fitted with revised brake drums, re-routed brake pipes and a translucent brake fluid reservoir to ease inspection.

Externally the recognition point for the new model was the new silver-grey injection-moulded ABS radiator grille replacing the galvanised wire mesh of



Top right: one of the very last Series 3 88 CL's to enter service was seen at Honington in May 1990. It was used by 218 Squadron Royal Engineers (V) who were in the Airfield Damage Repair (ADR) role and based at RAF Honington.

Below: even now the occasional Series 3 comes up for disposal!





Left: 27 FL 13 was a 'Car, Utility, 3/4-ton, 4x4, Rover Series 3' in army parlance. It was photographed at Vehicle Depot Ashchurch in June 1972 shortly after delivery and was issued to the Parachute Squadron RAC in 1973.

earlier models. The door hinges were also tidied up to reduce protrusion and a circular heater inlet appeared on the nearside wing just ahead of the front door. Internally the fascia was revised and offered a full width parcel shelf, and there was relocation of controls and switches so that they could all be reached whilst wearing a seat belt. In general attempts were made to improve interior comfort from the previous rather spartan levels.

The Army began to receive its first Series 3 models in December 1971. The MoD appeared to take the change in its stride and when Series 3 models came down the production line they

slipped into service seamlessly! The contract for 'administrative' Land Rovers and Rover cars - WV8765 - started delivering civilian specification 109s, Station Wagons on both the 88 and 109 chassis, from early 1972 following on from deliveries of Series IIA models. The first military specification Series 3s were a mixed batch of General Service Utility 109 vehicles, Fitted For Radio (FFR) 109 vehicles and some Lightweights. Most of these models were also acquired in Left Hand Drive (LHD) form so that they could be deployed to BAOR and other places.



Top right: 01 GB 67 was a CL version of the Series 3 88. This type of vehicle was used for 'administrative tasks' and this one was used for driver training by 12 Regiment, RCT in Aldershot. (Courtesy RLC Museum, Deepcut)

Above right: this is a 'Cargo/2 stretcher (MDJR)' version of the 109 Series 3. MDJR stands for Mountain, Desert and Jungle rescue. It was with the RAF Mountain Rescue team at RAF Valley in July 1987.

Left: a late model Series 3 on the skid pan at Chertsey. (Courtesy Tank Museum, Bovington)



Top right: a 109 Station Wagon at Earls Court during the Royal Tournament in August 1981. The vehicle belonged to 44 Squadron RCT of Blackdown.

Below: 41 FL 20 was a 109 GS Series 3 seen at Airborne Forces Day in June 1975. It was not camouflaged and is in 'as delivered' condition.

Bottom left: hard tops were popular to provide security for valuable equipment such as radios and also protection against severe weather. This Series 3 FFR belonged to 249 Signal Squadron, Royal Corps of Signals who had a role with AMF(L).

The Lightweight also appeared in Series 3 form. The first batches to be delivered were for 'Utility' versions 45 FL 36 to 51 FL 39 (RHD) and 51 FL 40 to 54 FL 54 (LHD) in early summer 1972 followed quickly by the 'FFR' versions that autumn.

The 'Utility' version - cargo with soft top - and FFR models were capable of carrying out a number of roles with little or no modification. Most army units had the 'Utility' for cargo carrying but until the arrival of the Land Rover 101 gun tractor the Series 3 also towed the 105mm Pack Howitzer in light artillery regiments. The FFR was also used for command roles in almost all tactical units such as infantry battalions, Royal Armoured Corps regiments and artillery regiments.



The Army and RAF at this time used a standard civil version of both the 88 and the 109. These versions had the designation 'Truck, Utility, CL,...' where CL indicates 'Commercial' rather than the military version. These CL versions were cheaper to procure and were allocated to units who did not need the full military specification. They were often used by Garrison Transport Units and Driver Training units - many ending up at Leconfield with the Army School of Mechanical Transport.

The 88 in CL form was quite a contrast to the military specification Lightweight but the 109 CL is remarkably similar. The 109 CL can be distinguished, however, by noting

that the NATO bumperettes at the front and rear of the vehicle are missing. The 109 CL was also used in 'Hard Top' and also 'Hard Top with Windows' form. Notable users were Explosive Ordnance Disposal units of the Royal Engineers whilst the RAF Police often used the 'Hard Top with Windows' version.

In addition, the Station Wagon version of the Series 3 also was used in various roles being known in army parlance as the 'Car, Utility, 1/4-tonne' or 'Car, Utility, 3/4-tonne' depending on wheelbase. The 1/4-tonne was used by various field commanders, by research and development establishments and also by Military Attachés. The 3/4-tonne was used by Postal & Courier detachments of the Royal Engineers and by Army Youth Teams. The role of Army Youth Teams was to take groups of young potential recruits on adventure training. These 'Car, Utilities' had only a few military modifications to the civilian specification.

MORE CHANGES

More major modifications to the Series 3 enabled it to carry out several other roles. One of the more interesting modifications carried out was to provide vehicles for 94 Locating Regiment, Royal Artillery. The regiment was organised as three batteries each equipped with the Midge Drone. The Command section of each Battery consisted of a Command Post (CP), the Photographic Interpretation Facility (PPIF) and the Photographic Interpretation Vehicle (PPIV). The PPIF was a Land Rover 109 with a special body and the PPIV a 4-ton flat platform with specialist container. In addition, there was another specialist vehicle with a van body based on a Land Rover 109, which was used for Drone recovery.



Tactical Command Post

Shown below is a 'Tactical Command Post' as delivered with a cream hard top. This vehicle was awaiting final fitting out at 18 Command Workshop in July 1980 before delivery via Antwerp to the Commander of 7 Armoured Brigade in BAOR.



Above: the 'Tactical Command Post' or 'Carawagon' has found favour with private collectors who find it useful for camping whilst at military vehicle events.



CARAWAGON

Another scarce version was the 'Tactical Command Post'. This provided a field commander with a mobile office and living accommodation. The bodywork changes were carried out by Carawagon Ltd to a standard vehicle. The changes involved fitting a curved roof of aluminium that could be raised to provide extra height. Inside the body there was room for a bench seat/bed, map table, storage and a basic kitchen. A tented extension could be fitted at the rear to provide additional space for briefings. Over the bonnet and windscreen a large roof rack or basket was fitted to carry the tentage and camouflage scrim. The army acquired 35 of these vehicles and all but three were LHD for use by senior commanders in BAOR.

The RAF developed a 'Truck, Airfield Crash Rescue' TACR based on the Series IIA 109 1-ton chassis and some were also built on the Series 3 chassis. Once the Range Rover TACR2 was introduced the 109 version became the TACR1. The TACR1 was intended as a Rapid Intervention Vehicle (RIV) on all RAF and FAA air

stations. The concept was that the vehicle would go rapidly to the aircraft crash site by the most direct route given its cross-country capability. Most crashes of this type were to be expected on-base or in close proximity to the runways.

As a RIV and a small vehicle, the TACR1 was designed 'cut a path' through the flames to the cockpit and recover the aircrew as quickly as possible. By the time crew rescue had been effected larger fire vehicles would have arrived to extinguish the

Below: a Photographic Interpretation Facility (PIF) for use with the Midge Drone system. (Courtesy Tank Museum, Bovington)





Top left: a Series 3 Field Ambulance stands alongside a Land Rover 101 Field Ambulance outside British Military Hospital, Stanley in the Falklands Islands. (Courtesy RLC Museum, Deepcut)

Above left: a TACR1 in Army service at Dhekelia in Cyprus. It was operated by 20 Army Fire Brigade in Episkopi.

Right: since disposal the Series 3 has found a new home with many military vehicle and military Land Rover enthusiasts. This is actually a specialist communications variant. Note the air conditioning unit and radio mast on the roof.

Above right: the Series 3 ambulance has also been preserved in relatively large numbers. Civilian owners often find them useful as camper vehicles!

main fire. TACR1 was designed to accommodate a crew of three (two in the cab with a further crew member on a rear facing seat at the rear), plus tools and stowage for loose equipment and 100 gallons of foam.

The Field Ambulance was built by Marshall of Cambridge who took the Series 3 109 chassis/cab and built an ambulance body at the rear. All Series 3 ambulances had Marshall bodies although some bodies on Series II chassis were by Mickleover. The bodywork extends over the cab area and is equipped with extra heating and ventilation. Casualty accommodation is variable and can be either two or four stretchers or two stretchers and three seated casualties. Alternatively all the stretchers can be folded away and six seated casualties can then be carried. There is also a small seat for a medical orderly, and if necessary extra casualties could be seated next to the driver bringing total walking wounded accommodation to eight.

The Royal Air Force and Royal Navy were also large-scale users of the Land Rover in Series 3 form. A couple of RAF versions which merit a mention were the Mountain, Desert and Jungle Rescue (MDJR) versions which equipped the various rescue teams around the world including the UK-based Mountain Rescue Teams. At least two such versions are known - a command and control vehicle and a two-stretcher ambulance.

It is worth mentioning that Series 3 versions of both the Lightweight and the 109 were purchased by the Senāt for the Berlin Garrison. Although these vehicles were identical to the ones purchased by the Ministry of Defence they were not on normal contracts. Some were retained after the Berlin Garrison closed in September 1994.

The last Series 3 vehicles were delivered to the Army in early 1985 just before the Defenders entered service with their diesel engines. The last of the Series 3's soldiered on until about 1998 when the pressure to move to an all diesel fleet led to their withdrawal.

It is worth noting that some Defenders that replaced those Series 3 109's and Lightweights are still in service today some 20 years later. Many of them have gone through a rebuild programme under Project 'Tithonus' and they themselves are currently being disposed of in relatively small numbers via Witham Specialist Vehicles Ltd.



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Making a return visit for the third holding of Militracks was this second, early example of the Sd.Kfz. 7 half-track, making a nice contrast to the later variant also at the event.

MILITRACKS

RUMBLE IN THE JUNGLE

2012

MMI travelled to the Netherlands for the third holding of this popular event

When it was first suggested that the woods surrounded the world-famous Liberty Park Museum in Overloon should be opened up to allow an invite-only collection of wartime Wehrmacht vehicles drive an off-road course while giving rides to the paying public, few knew whether or not it would work. That was in 2010 and the huge success of the first year saw the Militracks event repeated in 2011 and again in 2012, with planning for 2013 well under way and it would seem the fears surrounding the first show were unfounded!

The event is unlike anything held in the UK or indeed the rest of Europe. A select group of original, wartime German vehicles gathered at the museum, providing the owners, who



The Crompton Collection Sd.Kfz. 250 Neu half-track was back for a third year...



...and this year was joined by a second example of the Sd.Kfz. 250 Neu half-track!



Militracks has gained a reputation for attracting some rare and interesting wartime German vehicles and this newly restored early Sd.Kfz. 6 half-track was new to the show and definitely fell into the rare and interesting category.



“...with the show attracting some real vehicle ‘Royalty’ from around Europe, it is a mark of the importance of the Militracks event.”

Top left: for 2012 there were a number of newcomers to the show, including this Panzer 38(t) tank brought along by the same owner of the Einheits Diesel truck.

Above right: the Sd.Kfz. 7 8-ton half-track from the Crompton Military Vehicle Collection was at the show for a third time and continued to prove popular with visitors.

Right: another UK collector, Kevin Wheatcroft of the Wheatcroft Collection came along to Militracks for the first time and brought with him his Trippel SG-6 amphibious car.

the opportunity to demonstrate the off-road capabilities of these special vehicles, and as usual it included a number of rare types.

Despite the stratospheric value of this collection of vehicles (some estimated the 60 plus vehicles at the event to be worth more than the 3,000 plus vehicles that attend the War & Peace show!), the attending public were able to purchase tickets to ride in their favourite vehicles, which this year ranged from the smaller BMW and Zundapp motorcycle combinations to the mighty Hetzer and T-34/85 tank and there was certainly no shortage of takers!

In 2012 Militracks once again attracted large crowds and the threatened thunder storms slipped quietly by leaving Overlook bathing in glorious sunshine throughout the weekend, much to the relief of the





Top right: the Crompton Collection Hetzer rumbles through the 'jungle'.

Above left: Bruce Crompton's Sd.Kfz. 250 half-track returned for a third time...

Above right: ...as did his Sd.Kfz. 251, much to the delight of visitors to Militracks.

Above left: another of the Schwimmwagen that turned up for Militracks 2012.

Far left: superb example of the classic Einheits Diesel 6x6 truck put in an appearance.

Left: another Volkswagen softskin, this being one of several Kubelwagen there.



organisers. While many of the vehicles there were now old hands, having appeared at the previous shows, including an 8-ton half-track, Hetzer, Sd.Kfz. 251 half-track, Sd.Kfz. 250 half-track, and Schwimmwagen brought along to the show by UK collector Bruce Crompton of The Crompton Military Vehicle Collection, this year also saw another well-known UK collector attending, namely Kevin Wheatcroft of the Wheatcroft Collection, who brought along his Trippel SG-6 amphibious car and one of his Kettenkrad collection, and can be seen as a mark of the esteem in which this still young event is now held.

The majority of the exhibitors attending the show were made up from noted European collectors travelling to the event from Germany, Belgium, Luxembourg and of course the

Netherlands, with the show attracting some real vehicle 'Royalty', it is a mark of the importance of the Militracks event.

Throughout the weekend there were a number of events in addition to the main event,

and I'll speak more about this in the second of our show reports from Overloon next month, but in the meantime please enjoy this month's selection of photos from the event.

"The event is unlike anything held in the UK or indeed the rest of Europe."

Top left: visitors to the show get to see a range of vehicles, from tanks to softskins like this Kubelwagen.

Top right: a new exhibit inside the museum was this rare prototype sWS, which belongs to a private collector.

Above left: UK collector Bruce Crompton (right) chats with his team of drivers brought along to man the six vehicles brought to the show.

Above right: the largest vehicle wasn't actually German, being the museum's own T-34/85 tank, but it was a popular choice with visitors.

Right: as well as Kubelwagens, there a number of Schwimmwagens were at Militracks 2012 too.

Right: one of the more unusual ways that a vehicle was transported to the show!

Far right: Bruce Crompton (right), heads off with son Max (left) on his Kettenkrad, which was brought along for the record attempt.



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MOTO

Italian Flair

Derek Harvey describes the Italian Moto Guzzi Superalce Military Motorcycle

Top left: Derek Harvey pictured here with his wife Mary not long after he had acquired his faithful military Moto Guzzi, which very soon would become known as 'The Smiley Bike'.

Main photo right: Italian motorcycles don't always get the attention they deserve, but they were excellent bikes for the time and featured numerous innovations in comparison to many other motorcycles of the time. (Photo - Simon Thomson)

In the years leading up to WW1, the motorcycle had developed from what was essentially a bicycle with an engine bolted on, to a machine much more recognisable as the forerunner of today's models. On the battlefields amongst the mud and morass of roads churned up by heavy horses gallantly pulling even heavier loads, the largely unsurfaced tracks soon became virtually impassable. The relatively light weight, softly powered motorcycle that could be pushed, pulled or paddled through the quagmire became an important communication lifeline, and at the eventual ceasefire, the decimated armies returned to their respective homelands. However, the desire for a cheap and fairly reliable means of transport resulted in a surge of motorcycle manufacturers throughout Europe.

In Britain alone, some three hundred motorcycle makes were recorded, within a few years. Inevitably, in the forthcoming worldwide recession, the majority of these marques rode into obscurity, with only the strong surviving. In the 1920s, Italy saw the rise to power of Benito Mussolini, and among his promises was the intention to enlarge the Italian Army and tenders were put out to manufacturers for the design of suitable vehicles. On the motorcycle scene, companies of the standing of

Gilera, Benelli and Moto Guzzi took up the challenge, with both two and three wheeled offerings. Guzzi had already shown original thinking in the form of its' early 1920's horizontal single cylinder engine, and the use of sprung frames and by 1935 the model GT 17 had served with the Italian Army in their Military Campaign in Abyssinia, starting a 'military Guzzi' connection, which remains to this day. The GT 17 had many features that carried over to the 1939 Alce (pronounced Alchee), which served throughout WW2 and with further improvement became the Superalce, which was officially launched in 1946.

OFF-ROAD ABILITY

Experiences from WW1 showed that a high degree of 'go-anywhere ability' was a priority, along with a reliable, easily maintained engine and drive unit, and consideration of rider comfort. This requirement meant that ground clearance should be as large as is practicable, but with a low seat height, to enable 'footing' when required. The Alce has an unladen ground clearance of around 11-inches, and this coupled with an engine height of only 14-inches, allows the rider to sit low on the machine, but still clear rocks and muddy troughs without bottoming.





Above right: close-up of the rear stowage rack showing the small tool boxes.
(Photo - Simon Thomson)

Right: the bike is full of stylish details such as the Moto Guzzi name on the handlebar grips.
(Photo - Simon Thomson)





Above: the Moto Guzzi Alce may not have been the fastest motorcycle of the war, but it was a very capable vehicle, especially off-road.
(Photo - Simon Thomson)

Right: here we can clearly see the secondary pair of handlebars positioned behind the front seat for the pillion passenger - very thoughtful.
(Photo - Simon Thomson)

Below: Derek has been regularly attending military vehicle shows up and down the country for many years and his faithful Moto Guzzi has rarely let him down.
(Photo - Simon Thomson)



When designing the engine, the quality of the available fuel was a prime consideration, bearing in mind that in the 1920's octane ratings varied from around 60-70. A low compression ratio of 4.7:1 results in a very 'soft' output, which, with a heavy flywheel makes the engine very tractable. The 500cc engine breathing through a small bore carburettor resulted in a reliable 13 bhp, which may not seem much by modern standards, but was enough for the job in hand, in 1920. More power would mean more fuel used and more weight

in fuel carried. The valve arrangement of one overhead valve and one side valve was adopted. Although seen in other engines of that era, notably the Rolls Royce and Rover car units, it was usual for the inlet valve to be the overhead one, giving a better inlet tract with the exhaust valve at the side for ease of exit. With Italian logic, Guzzi decided that the hottest valve, the exhaust, should get the coolest air, which on a horizontal engine would be at the front of the unit, with the inlet getting a short tract on the side.

The Superalce moved to two overhead valves, with the rockers having a feed from the engine oil, with a small bleed to the inlet valve guide. The exhaust valve has no oil bleed, but relies on the considerable surface area of its' large, 11mm diameter valve stem to transmit heat to the guide and thence to the cylinder head. The compression was raised to 5.5:1, producing a heady 17 bhp. Internally, the engine was designed with long life in mind. By using an external flywheel, the crankcases can be made quite narrow, improving the strength and rigidity without adding weight. The external flywheel gives rise to the universal term 'bacon slicer' engine. The crankshaft to which this flywheel is fixed runs in huge main bearings working well below their maximum design load. Interestingly, the split big-end bearing runs plain needle rollers, without the benefit of the usual needle cage, this being the only bearing with a direct oil feed. The gearbox is lubricated by the engine oil, which was quite daring in the 1920's, when thick oil or even grease were the norm. The Alce also gained an extra gear over the GT 17, the four-speed box carrying on to the Superalce. Both the magneto and dynamo are gear driven, as is the clutch primary, and with the integral gearbox, makes for a low, compact unit.

FIELD REPAIR

A further indication of the 'repair in the field' design is the ease of access to the engine. In the event of work being needed on the unit, with the bike on the centre stand, by disconnecting a couple of oil pipes and the frame down-tubes, the whole front of the bike can be pivoted about the steering head, and brought to rest over the saddle, leaving the engine exposed. Even without this facility, the overall design is such that a replacement kick-start return spring can be fitted in about five minutes, and a magneto replaced in fifteen!

The front suspension is a standard-looking girder fork design, but with special features for its service duties.



In the event of damage, the legs either side of the forks can be changed independently of each other, whilst the front and rear wheels are interchangeable and each can be removed without disturbing the brake assembly. A small, but interesting point concerns the wheel spacer found on the front spindle, to prevent the hub fouling the fork leg. On most bikes when removing the wheel, the spacer almost invariably drops onto the ground and rolls out of reach, however, on the Guzzi, the spacer is retained on its' own swinging bracket. Pull out the axle, swing the spacer out of the way, and when replacing the axle, the spacer swings back in the right place every time - simple!

These girder forks are sprung by courtesy of one large, fixed rate, coil spring on compression, with two smaller adjustable coils in tension on the rebound. Damping is by an Andre type dry-friction damper, adjustable by large-eared hand screws.

At the rear, there is the forefather of many modern cantilever-type swinging arms. Here, a complete sub-frame is pivoted at a point near the top end of a large, box-type sheet steel unit, which runs beneath the crank cases and which contains no fewer than eight large coil springs. These in turn are compressed by pull-rods pivoting in the lower section of the sub frame. Again, damping is by means of adjustable friction dampers. The springs can be pre-loaded when carrying a passenger, by a simple half turn of the small knob seen on the right hand-side of the box frame.

Another unique feature, continued through all the military models, is the adjustable handlebar for the pillion passenger. As can be seen, the pillion seat is considerably higher than the rider's, as are the foot rests, and the provision of a suitable hand grip gives comfort and confidence to both rider and passenger.

On the right hand side of the frame is fitted a rifle clamp, the other fitting being on the front leg shield. Over the life span of these models, many such extras have been fitted. The crack Alpini (Alpine Corps) riders have shown that these bikes can be fitted with skis for use in snowy conditions. Curiously, sidecars have been fitted on either side of the machine, irrespective of whether you're driving on the left or right hand side of the road! There are also pictures of a solo Alce, fully armour-plated, with a light machine gun firing through the front slot!

Apart from the rifle clips, there is evidence that first aid kits, fire extinguishers, water bottles and toolboxes have all found homes on the steel leg shields.



Top left: close-up of the highly effective rear brake on the Moto Guzzi.

Top right: the engine is old fashioned in comparison to many other bikes of the time

Left: here we see the rifle stored in the supplied rifle clips on the motorcycle.

Above right: close-up of the fuel tank on the Moto Guzzi with twin filler caps.

Left: the driver and passenger have comfortable, well-sprung seating!

Bottom left: two extremely sturdy stands are provided for the bike.

Below: here we see the front girder forks with its three coil springs.





MOTO GUZZI



RIDING

So what's it like to ride? Certainly all three models get top marks for suspension and comfort, with three springs on the forks, two more coil springs under each saddle and eight more on the rear suspension! With the spring rates and friction dampers being so adjustable, you can tune the bike to suit individual tastes.

Starting the low compression engine is straight forward, and first gear is engaged by pressing down on the rear of the rocking gear lever and the inertia will pull you steadily into motion. Press down on the front of the rocker and you immediately learn the meaning of 'crash gearbox'. Grit your teeth and press down again and second gear gnashes teeth with third, repeat and you're in top gear! All this, and you need only be doing about 15mph, however, the actual speed is guesswork, since military versions were not fitted with a speedometer!

The very effective rear brake is operated by the rider's heel, not the usual toe, and by pressing down with straight leg, and leaning well back you can lock the rear wheel, even on a dry road! The 8-inch front brake is 'adequate', but with a top speed of only 55mph, one tends to cruise around 45, so there is time to plan ahead. The centre stand was obviously designed by a bridge builder with an artistic sense of style, with a long, curving foot, the 420lb bike rolls easily into a very safe position. Should you decide to just lean the bike

sideways, there's a kick out triangular 17-inch long side stand, against yet another man-sized spring. While the horizontal, forward facing engine benefits a low C of G it does result in a long wheelbase machine, the overall length of a Superalce being just over 7-feet!

Overall, the military Guzzi singles have an endearing charm, in fact my wife and I refer to ours as 'The Smiley Bike'. At the many shows we cover, almost without exception, visitors approach the Guzzi with that smile normally reserved for Austin Sevens and old English sheepdogs.

Once, when returning to my bike, with tea in hand, I found two smartly dressed Veterans on their hands and knees around the machine, while one of the patient wives filmed their antics. "Oh, we never thought we'd see one of these again – we were Desert Rats, and after the Battle of El Alamein we captured loads of Guzzis – we rode them everywhere." I offered to take them around the site and up the hills surrounding the farm, an offer accepted in a flash. Each in turn chuckled their way around the impromptu circuit, while the video played on! After much hand shaking and farewells, one of the wives whispered "Thank you so much – you've made their holiday. When we get home, their mates are going to have to sit through this video time and time again."

The Smiley Bike wins again!



Top left: Derek (far left) and fellow military motorcyclists prepare for an outing. (Photo - Simon Thomson)

Above: the Moto Guzzi exhibits typical Italian flair for design, and while it may not be the most modern looking of motorcycles, it does have many modern features. (Photo - Simon Thomson)

Right: the large external flywheel visible in this side view gave rise to the bike being given the universal nickname 'Bacon Slicer', I'm sure our older readers can see why it got the name, but younger readers may be more used to plastic packaging from the supermarket! (Photo - Simon Thomson)



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HEAVY METAL

MMI popped along to check on the restoration of a British Challenger 1 Main Battle Tank that's in private hands!

Top right: standing atop his latest acquisition, Andrew Baker's expression says it all "What have I done?"

Above & right: two views of the Challenger 1 when it was on display outside the Armour and IFV storage hangar at the Defence Academy at Shrivenham, home of the famous teaching collection of tanks at Shrivenham's School of Tank Technology. (Photos courtesy Tim Neate)

When completed later this year, Andrew Baker will be the first private owner of a fully restored, ex-British Army Challenger 1 Main Battle Tank, and I popped along to his premises in Warwickshire to catch up with him during preparations to get the Challenger ready for the forthcoming Tanks, Trucks and Firepower show in August, which is scheduled to be the Challenger's first public outing and just happens to be held on Andrew's land!

So how on earth did Andrew get to own a genuine, ex-British Army Challenger 1 Main Battle Tank, the first in private hands? Well it all started when to the surprise of many the Challenger was first advertised for sale on the Witham Specialist Vehicles' website. For most of those who saw the tank being offered for sale with dreams of owning such a beast (myself included), their hopes of owning such a beast will no doubt have been



dampened by those dreaded words at the end of the advert - 'Price on Application', which let's face it usually means it's very expensive!

Almost as quickly as it appeared on the website the Challenger disappeared, and my assumption was that it had been sold. My initial plans to pay a visit to Withams to take some photos were thwarted by this disappearance from the website within days of the advert appearing, but unbeknown to me someone who also saw the advert and shot up to the Lincolnshire-based ex-MoD vehicle dealers to view the Challenger was Andrew Baker. Soon

after a deal had been done and Andrew found himself the proud owner of a very large chunk of metal, but it was some time later before I discovered that Andrew was the mysterious new owner of the Challenger.

The purchase of the ex-British Army Challenger was something of a departure from the vehicles Andrew is normally drawn to, with Andrew perhaps better known for his love of the CVR(T) family, having been instrumental in the founding of the Alvis Fighting Vehicle Society and the proud owner of a complete set of fully restored CVR(T)s, including his

personal favourite, a diesel powered Scimitar. Although fully au fait with the CVR(T) family and used to working on armoured vehicles, branching out into larger vehicles came as something of a shock with change being akin to moving from a bicycle to truck! Even the logistics of collecting the 60-tonne tank proved to be 'Challenging' in comparison with a CVR(T) and the manoeuvring of the tank into the large shed where it is being restored took a great deal of planning and skill, thanks to the fact that the Challenger didn't have an engine pack!

Top left & centre: the Challenger 1 is loaded onto the low loader at Witham Specialist Vehicles.

Below: the Challenger pictured shortly after arrival and prior to being placed in the storage shed.



Right: Andrew (left) and his team of helpers discuss the tank in hand shortly after the tank has arrived.

Below & bottom right: two views of the Challenger's interior, which is in surprisingly good condition.



THE PLAN

When I dropped in on Andrew in May to see how the restoration was going, work on the Challenger was well under way. Even though I have seen Challenger tanks many times before, both in service and in museums, seeing one in a shed on a farm surrounded by the much smaller CVR(T)s put the size of this 60-tonne leviathan into sharp contrast, and served to highlight the mammoth task Andrew has on his hands. Everything on this tank is big (and heavy) and even the most mundane of tasks require heavy lifting equipment and a number of people to complete the jobs in hand.

On the day of my visit many of the smaller external parts had been removed for cleaning prior to painting, and the interior was in the process of being cleaned up too. Fortunately for Andrew the vehicle was largely intact when he bought it, with very little having been stripped from it whilst with the MoD, making Andrew's job that much easier, after all, you don't tend to see that many spare parts for Challenger tanks for sale! Obviously the biggest headache for Andrew is the lack of an engine pack, and so long as the Challenger is engineless it makes

the job of moving the vehicle around that much harder, but efforts are underway to try and track down a suitable item.

At first it wasn't clear as to where the Challenger had been and how it had come to be released by the MoD, especially when the vast majority of the British Army's Challenger 1 fleet had been passed on to the Jordanian Army many years ago, leaving very few on UK shores, but after a little research it became apparent that this particular Challenger 1 had stood outside the Armour and IFV storage hangar at the Defence Academy at Shrivenham, home of the famous teaching collection of tanks at Shrivenham's School of Tank Technology.

The exact service history of the Challenger was unknown at the time of writing, but research is underway to find out more, but it was known to have previously served as a training tank with the RAC in the UK. It is clear from the level of mechanical fitment on the vehicle that this is not a prototype vehicle and carries a regular British Army registration number rather than an 'SP' registration plate, as used on prototype and development vehicles.

Engine Compartment

Below: the empty engine bay for the Challenger is a huge hole, but hopefully it will soon be full of engine!

Bottom: the auxilliary power units were easier to source than the main powerpack for the Challenger.





The stripping down of the vehicle during initial investigations before the restoration began revealed that the tank was in surprisingly good condition, with many new or nearly new parts having been fitted, and considering the Challenger had been stood outdoors open to the elements for many years, the bodywork was in surprisingly good condition, suffering only from flaking paint and some minor corrosion. There are one or two smaller parts missing or in need of replacement, but Andrew told me that they are in the process of being located and with luck should be on the vehicle in time for the Tanks, Trucks and Firepower show held at Dunchurch

near Rugby over the late August Bank Holiday (see Mission Briefing for details). There is an outside chance that the Challenger may be running in time for the show, it's not guaranteed and contingency plans are in place to have the Challenger on display regardless, so if you want the chance to take a closer look at a Challenger tank get yourself along to the show!

There's still work to do to get the Challenger fully up and running so if anyone out there has any spares or information on the Challenger, Andrew would love to hear from you. You can contact him via the MMI Editorial office we'll pass on the information to Andrew.

Fittings

Below: some of the turret baskets awaiting cleaning and painting.

Below centre: the engine covers laid out for shotblasting and painting.

Bottom: here we see the mountings for the rear mounted fuel drums.



Top left: owner Andrew Baker perched on the turret of his latest (and biggest) project. It gives a good indication of the size of the Challenger MBT.

Below: at the time of my visit the preparation of the Challenger's exterior was well under way, with various parts removed for shot blasting and repainting in preparation for the first public outing in August at the Tanks, Trucks & Firepower Show.





RAF REFUELLER

We take a closer look at a rare wartime Bedford QL RAF refueller currently in private hands



Bedford's first attempt at a forward control, four-wheel drive vehicle was the QL, and while it wasn't deemed a particularly important project by the factory, the outbreak of war brought with it an increased need for military trucks and the QL would ideally suit the needs of the military. Design of the QL didn't really start in earnest until late 1939, after the war had started, but by February 1940 the first prototype was up and running, such was the importance now placed on the project.

Following a series of exhaustive trials at the MEE (Mechanization Experimental Establishment) over the next year, which involved three pilot models, the QL was accepted for production and the first of more than 50,000 Bedford QLs started rolling off the production line in February 1941.

Almost as soon as the QL entered production it was developed into a number of variants, although the basic cargo and troop carrying variants remained a large percentage of QL

production. The specialist types included the likes of the QLB Bofors tractor, the subject of the first War Department contract for the QL, and the QLR signals bodied vehicles, built in a variety of guises by a number of specialist body builders. Another variant, the QLC, was designed to be used in conjunction with a 6-ton semi-trailer, however, the QLC also went on to form the basis of the various QL fuel tankers produced during WW2.

With the outbreak of World War Two came an increased need for fuel tankers to be used in conjunction with the many types of aircraft being operated by the RAF at the time.

RAF TANKERS

The RAF's QL tankers were on the whole used to refuel the smaller fighter and fighter bomber aircraft, due mainly to the limited capacity of the fuel tank carried, which fell into two general categories, 950 and 1000-gallon capacities. While the QL would have

Above: Adrian Robins demonstrates how the boom swings out from the truck, making it easier to get the hose over the wings of the aircraft being refuelled. Apparently the spring loaded booms can lift a man off his feet if it catches you unaware!



Below: although Adrian only owned the vehicle for around ten years, it's been on the military vehicle scene for many years and has even appeared in some books.



been responsible for the likes of the Hurricane and Spitfire, it was also used on some larger types such as the Mosquito, as depicted in the box artwork for the Airfix RAF Refuelling Set model kit, however, this depiction went on to confuse many people with regard to the correct colour scheme used on the QL tankers during the war, but more of this later.

The first types of QL tankers differed to the late-war type featured

here, the most obvious difference being a lack of overhead booms. The vehicles were built by Butterfields of Shipley in Yorkshire, with the Zwicky pumping equipment located in lockers to the side of the tank, and the fuel hoses stored in a compartment to the rear of the tank. Walkways either side of the tank (which were carried over to the later types), provided access for the crew when filling the tanker, and storage racks below held four, large, pyramid form funnels.

Later tankers featured two or three spring loaded overhead booms that enabled the operators to easily swing the hoses over the tops of the wings of the aircraft being refuelled. In the case of those tankers fitted with the 950-gallon tank and three booms, the third central boom was used to deliver oil, the tank being divided into two sections, at the front end, one with 100-gallons of oil and the other with 850-gallons of fuel. When converted to dispense AVTUR instead of the original AVGAS, the oil tank became redundant and the third boom was often removed, as in the case of the vehicle featured here, although the original three-leg cradle remains. Two main types of fuel were dispensed from the QL tankers, AVGAS, (AViation GASoline for piston engined aircraft), and AVTUR (AViation fuel for TURbine engines), although a number of other types of fuel were also dispensed.

External Fittings

Right: the fuel is dispensed via a pair of hoses fitted with trigger nozzles. **Below left to right:** a pair of steps at the rear provide access to the top of the vehicle; close-up of the tank content gauge; racks either side below the walkways provide storage for the pyramid form funnels.



IN PRESERVATION

An advert for a '1944 Bedford QL RAF Refueller' that appeared on Milweb in May this year caught my attention, partly because it was a rare vehicle, with very few in preservation (the only other example I've ever seen



Pumping Equipment

in the flesh was at IWM Duxford displayed in one of their hangars, and partly because it was located in Worcestershire, just stones throw away from the MMI Editorial Office! A couple of emails and a phone call later and I found myself heading off to meet owner Adrian Robins to take a closer look at this QL with a view to taking some photos of this rare vehicle.

It turned out that Adrian had purchased the QL from collector Ray Caunt of Bournemouth ten years ago, who in turn had purchased it from John Ward in Poole a few years before that. John was apparently well known for his QL refueller on the show circuit in the 1980s and photographs of the same QL refueller have appeared in several books, including the fabled 'Kaleidoscope of Bedford & Vauxhall Vehicle' by Bart Vanderveen. Delving into the history of the vehicle further, it was apparently purchased as a batch of five by Poole & District Council for use as a water tanker after the end of the war, and once they had reached the end of their useful life were sent for scrap before being rescued by John Ward from the scrap man and subjected to a thorough restoration. The fate of the other four vehicles from the same batch is unknown.

After Adrian purchased the vehicle he set about solving one or two minor mechanical issues, but essentially the



Left: access to the rear pump chamber is via two doors. Note the three-leg cradle for the booms is also visible.

Below left: here we see the two overhead booms that distinguish the later refueller from the early types, which had none.

Bottom left: the bank of gate valves are still fitted in the rear of the vehicle, but other items have been removed.

Bottom centre: these two gauges meter the amount of the fuel being dispensed.

Below: close-up of the 'Zwicky' badge found on the end of the boom.



Airfix RAF Refuelling Set

While the classic Airfix RAF Refuelling Set was the first of many models of the Bedford QL refueller to be released, many more have been released since in a variety of scales to suit all tastes. While undoubtedly a superb illustration, the box artwork on the Airfix did, however, serve to cause some confusion as to the correct colour scheme for a wartime QL refueller!



vehicle was already restored so there was very little to do other than some tidying up and routine maintenance. Adrian regularly took the QL to shows around the country, but a lack of time in recent years has seen it sidelined and rather than see it deteriorate through lack of use reluctantly decided to put the QL up for sale.

Some of the vehicle's equipment was still in place, including two of the overhead booms and some of the metering equipment in the rear, but sadly some of the original pumping equipment and small petrol engine used to drive the two drum pumps from the rear pump chamber had been removed by persons unknown at some time before it came into preservation. The fact that some of this equipment was manufactured from solid phosphor bronze would suggest that it was probably weighed in for scrap!

There has been some debate as to the age of these vehicles, a debate often fuelled (please pardon the pun) by the distinctive blue and yellow colour scheme.

Having consulted with several experts in this field during the researching of this item we can confirm that the QL is indeed a late war 1944 example, indeed all Bedford

QLs, including the refuellers were built during the war, the last ones being built in 1945, however, after the end of WW2 a great many continued to be used by the RAF and many passed into civilian life via the various disposal sales to be used as fuel tankers or water tankers.

The RAF Blue scheme with yellow upper surfaces, which according to some sources was introduced following collisions between aircraft propellers and ground equipment, is a different matter and it would seem that the scheme wasn't introduced until after WW2. Again, consulting with experts in this field I am assured that BS.33 RAF Blue Grey did not come into use post-war until 1946. AMO A.302/46 'Painting of Mechanical Transport': Semi-gloss RAF Blue Grey - Cab & body: Semi-gloss Black - Wings, Valances and Chassis.' Up until then AMO A.897/44 was current 'Painting of Mechanical Transport'. The yellow top surfaces (BS.381: C No.537 Golden Yellow) did not come into use until 1954 when the basic finish for vehicles working on airfields was RAF Blue Grey BS.633 in UK and Deep Bronze Green BS.381 No. 224 in 2nd TAF in Germany. No doubt others may have a different opinion, but until I am presented with some hard facts to the contrary I believe this to be the case regarding the blue and yellow scheme featured here.

At the time of going to press it would seem that the refueller had been sold, the new owners being the Lytham St. Annes Spitfire replica, which regularly attends shows and events and aims to raise awareness of the work of Fighter Command on the Fylde coast. As to whether the vehicle will retain the distinctive blue and yellow scheme or is returned to a drab wartime camouflage scheme remains to be seen, but what is good is that this rare vehicle appears to have found a good home for the foreseeable future.

My thanks to Adrian Robins, Mike Shackleton, Mike Starmer, Simon Thomson, Wil Elbers, and Paul Lomax for their help with this article.

Top left: there are remarkably few examples of this rare Bedford QL Refueller in existence now.

Above centre: view showing the typically sparse interior of a wartime truck - no frills here!

Above: walkways either side of the tank provide easier access for the crew when working on the vehicle.

Right: special attention was paid to the routing of the exhaust and an extended fire wall was placed behind the cab to prevent any potential accidents.

Far right: the spare wheel is carried in a rack behind the cab of the Bedford refueller.





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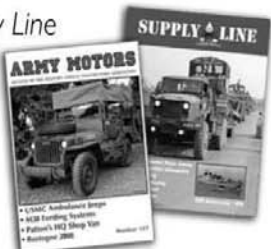
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Overlord 2012

MMI reports from this popular south coast show

Above: exhibitors travel far and wide to attend the Overlord show, this half-track is a regular at the show and came down from Bristol.

Below: a few finishing touches are made to the freshly restored Caterpillar, which looks especially good in the authentic surroundings of the living history field.

Organizers of the many Jubilee events around the country must have been cursing the British summer weather when the scorching temperatures enjoyed across the UK just a week before were predicted to be replaced by wind and rain across most of the country. Fortunately for the Solent Overlord Executive's annual military show, the forecast rain first predicted was far less intense over the weekend and in some cases none existent. Since moving to

its new location, the show has grown in size, with many vehicles now attending the event. The spacious show site has seen many exhibitors returning year after year and it now attracts a number of rare and unusual types of vehicles seldom seen elsewhere, making this event that much more attractive to the vehicle enthusiast. Amongst the exhibits were some particularly interesting wartime British and German vehicles, a great many of which took to the arena during the regular arena events laid on throughout the weekend.

There was also a varied collection of wartime American vehicles to be found too. Post-war vehicles were also well represented, with a generous mix of wheeled and tracked vehicles, including a number of newcomers to the show.

The show was certainly busy on the day I attended and I'm told that the rest of the weekend was equally busy, which has to be good news for the organizers, especially when they had to contend not only with rival Jubilee celebrations, but the good old British weather too!



Film strip right: amongst the smaller 4x4s were this lovely post-war Dodge, M151A1 MUTT, and a cracking pair of Bedford MWs, including a rare and original Bedford MWR.

Below: the Morris-Commercial D-Type truck that appeared at Overlord for the first time last year was back again, this time with some Air Cadet passengers. (Photo - Simon Thomson)



Lovely pair of US Navy Jeeps, including one with a hard top enclosure.

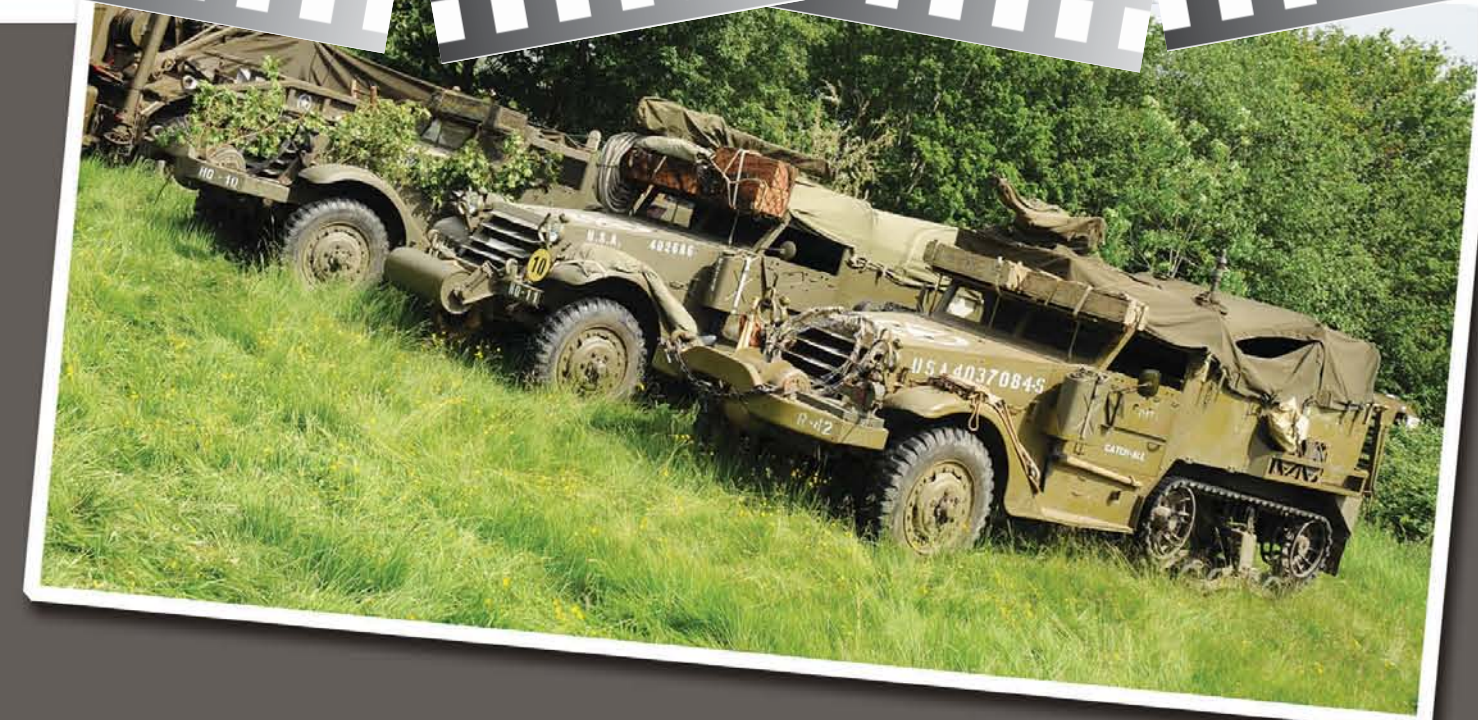


Top left: this newly restored Caterpillar D7 bulldozer was one of the stars of the show.
(Photo - Simon Thomson)

Left: Alvis Saladin armoured car, one of the many post-war vehicles that turned up.

Far left: superb 'Burma' Jeep, which if I'm correct has appeared before.
(Photo - Simon Thomson)

Bottom: three of the four American half-tracks I managed to spot at the Overlord show.



Group of three right: three German staff cars, from the top, a 1937 Wanderer W24, 1938 Ford V8 Model 48, and a 1938 Opel Olympia, all belonging to local collector and regular at the show, Dave Hucklebridge.

Top right: another local collector, Paul Hocking, has been a regular at the show for many years and once again he brought along his beautifully restored 1940 Stoeper Typ R200 Special. (Photo - Simon Thomson)

Far right: not one, not two, but three Hillman Minx staff cars, with one finished in RAF colours, another in Home Guard markings and a third in typical Army scheme.



Left: an attractive Austin saloon finished in distinctive Bomb Disposal livery. (Photo - Simon Thomson)

Below left: this imaginatively displayed Matchless motorcycle was spotted at this year's Overlord show.

Right: the show attracted a number of wartime British softskins, including this Morris-Commercial C4.

Below left: this Fordson WOT2 was another of the fine selection of British WW2 softskins at Overlord.

Below right: another stunning Morris-Commercial, this time the six-wheeled CD/SW breakdown truck. (Photo - Simon Thomson)





Top left: unusual militarised Citroën 2CV armed with a recoilless rifle! Although a replica, it is a faithful replica based on reference material relating to those converted for use in Algeria.



Left: nice example of the post-war British Bombardier Can-Am motorcycle, complete with authentic rider, which makes such a difference to the overall appearance. (Photo - Simon Thomson)

Centre left: there weren't a huge number of large trucks at the show, but this American M816 wrecker was amongst the best there.



Left: another of the larger trucks at Overlord was this Leyland DAF DROPS vehicle. There was also a Foden DROPS at the show.



Inset far left: two of the tracked armoured vehicles in the arena. To the left is a CVR(T) Sabre, to the right is a Russian MTLB.



Left: the Land Rover has seen widespread service across the world, and this Luxembourg Army Forward Control Ambulance was in the arena.

Bottom left: the Australian Defence Force Land Rover Series 3 is a rare sight in the UK, and yet there were two examples at Overlord.



Left: a good selection of vehicles took the arena to show off in front of the watching hords.

Below: this rare little beast is an early 1952 Unimog 401, that was apparently built by Daimler Benz rather than Mercedes Benz.



Into the Archives

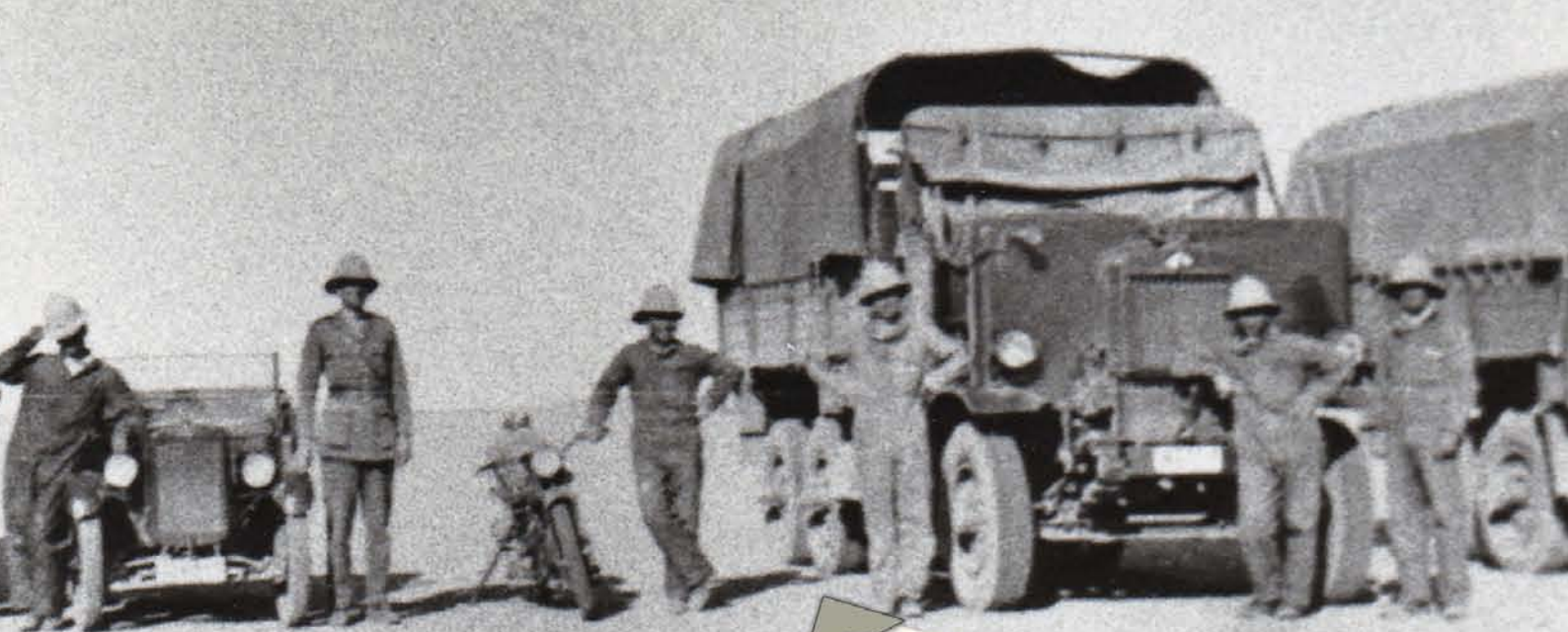
Les Freathy delves into the archives and brings us another selection of mainly British vehicles

This month I've gathered together another varied collection of photos depicting a variety of British military vehicles, covering both armoured and softskin vehicles during World War Two and post-war. Within the selection I have chosen a number of pictures that depict more than one vehicle or type in each image, including post-war and convoys. As usual I've included what information I have relating to each of the images, but if you're able to add more then we would love to hear from you.

Below left: Ford WOT 6 3-ton 4x4 trucks engaged in the movement of civilians in 1944, probably somewhere in Holland or Belgium.

Main photo below: World War Two and the river Rhine, amongst all the wreckage and ruins are a number of Universal Carriers, a Ford WOT 15cwt truck and Leyland Retriever pontoon bridge carrier.





Right: Allied water filling station in Korea with an assortment of GMC 6x6 tankers and Bedford MW 15cwt 200-gallon tankers. A Bedford QL is also visible at the rear of the convoy. I am not sure if the vehicles are a mixture of American and Commonwealth forces or just Commonwealth, as during the later stages of the conflict many US vehicles were issued to all forces.

Below: a convoy of Austin K2 ambulances of the Red Cross photographed during a presentation in Paris. At least eleven vehicles are visible in this shot.





Above: this view shows an RAOC vehicle storage depot around the 1939-40 period, many different types are visible including Bedford OX 30cwt, Ford 7V, Ford WOT3 30cwt, Austin K4, Humber utility, a Morris commercial and in the foreground a Ford tractor unit and what I think is a Guy van.

Right: post-war shot of British vehicles built in the late 1950 early 1960s for British Army trials starting with I think a Triumph 350cc motorcycle, Austin Champ, Land Rover Series 2, Austin Gypsy, Ferret Scout Car Mk1, Humber armoured truck (Pig), and Saladin armoured car.



Above: Royal Corps of Transport gathering showing an Eager Beaver rough terrain forklift truck with two Foden 8x4 low mobility trucks and an AEC Militant Mk1. The motorcycle could be a BSA Mk1 350cc.

Right: a convoy of vehicles including Bedford MK trucks and Land Rovers leaving Connaught Barracks, Dover, heading for the docks during the build up for Exercise Lion Heart in 1984.



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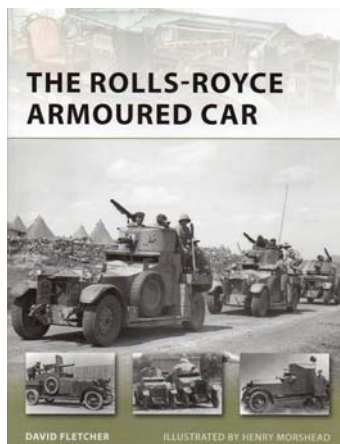
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Dogfight Double



The latest addition to the Osprey 'Duel' series (Duel - 42) pits the WW1 British and German DH 2 and Albatros D1/DII fighter aircraft against each other, comparing design, weapons, famous pilots and the battles in which they fought. The 80-page book is well illustrated throughout, with B&W photos accompanying colour illustrations and maps. If you're into your WW1 fighter aircraft this £12.99 book could well be of interest to you. For details see the website at: www.ospreypublishing.com



A Classic Vehicle from the Battlefield

The Rolls-Royce Armoured Car goes under the spotlight for this new book from Osprey, number 189 in the New Vanguard series. The 48-page softback book looks at the development and subsequent modifications of the famous Rolls-Royce armoured car, with some superb photos and illustrations that offer an intriguing insight into this famous vehicle. Author David Fletcher has an intimate knowledge of the Rolls-Royce due to the fact that he works for the Tank Museum, who have a preserved example. For details see the website at: www.ospreypublishing.com

Title: New Vanguard 189 - The Rolls-Royce Armoured Car

By: David Fletcher

ISBN: 9781849085809

Price: £9.99

Format: Softback

Available From: Osprey Publishing Ltd.
www.ospreypublishing.com

Sherman vs Type 97 Chi-Ha Tanks

Title: Osprey Duel 43 - M4 Sherman vs Type 97 Chi-Ha

By: Steven J. Zaloga

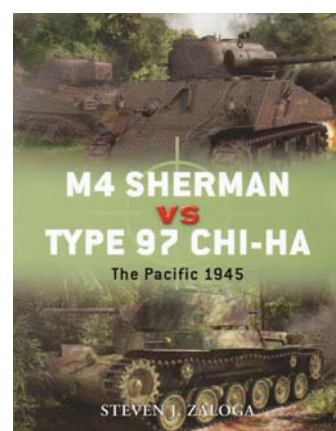
ISBN: 9781849086387

Price: £12.99

Format: Softback

Available From: Osprey Publishing Ltd.
www.ospreypublishing.com

The Pacific War saw the American Sherman and Japanese Type 97 Chi-Ha tanks pitted against each other in fierce jungle combat. This new book, Duel - 43, compares these two tanks by looking at the armament, armour protection, tactics and statistics, providing the reader with an in-depth analysis of the two vehicles. Period black and white photographs and a series of colour illustrations accompany the text in this 80-page softback book written by none other than Steven Zaloga. For further details about the series see the website at: www.ospreypublishing.com

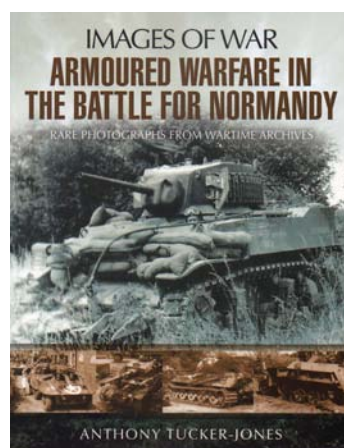


Wartime Cruisers

BRITISH HEAVY CRUISERS 1939-45



A new addition to the Osprey Books 'New Vanguard' series is this fine book on British Heavy Cruisers 1939-45 (New Vanguard - 190) by Angus Konstam and illustrated by Paul Wright. With an rrp of £9.99, this 48-page softback book profiles a number of the British heavy cruisers of WW2 using a selection of black and white archive images and colour illustrations to describe the various classes of heavy cruisers. It's an interesting book that will no doubt appeal to naval enthusiasts or even marine modellers. see the website at: www.ospreypublishing.com



Images of War from Pen & Sword Books

A new addition to Pen & Sword Books' well established 'Images of War' series is this super book that looks at 'Armoured Warfare in the Battle for Normandy' by Anthony Tucker-Jones. The 166-page book is crammed with black and white photos from the time, with many different types of vehicle covered from both sides, and while the emphasis is undoubtedly on armoured vehicles, there are quite a few images of softskin vehicles to be found too. It's a fascinating book and a good insight into the heavy fighting that took place in Normandy. The book is widely available from most good book sellers.

Title: Armoured Warfare in the Battle for Normandy

By: Anthony Tucker Jones

ISBN: 9781848845176

Price: £14.99

Format: Softback

Available From: Pen & Sword Books Ltd.
www.pen-and-sword.co.uk

Modern British Tanks in Camera

Title: British Tanks 1945 to the Present Day

By: Pat Ware

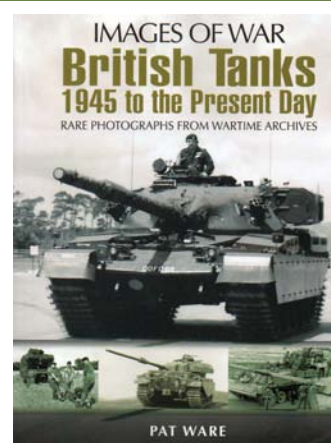
ISBN: 9781848845664

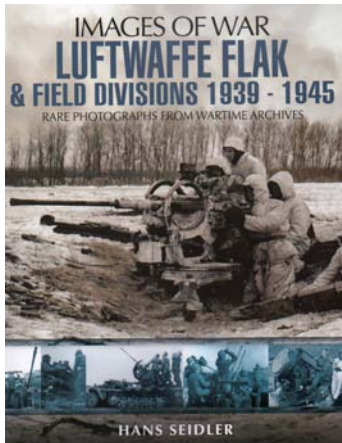
Price: £14.99

Format: Softback

Available From: Pen & Sword Books Ltd.
www.pen-and-sword.co.uk

Fans of post-war British tanks will be interested in this new book, which once again comes from the Pen & Sword 'Images of War' series. The book, by well-known author Pat Ware, looks at a variety of vehicles, from the Centurion to the Conqueror, Chieftain, CVR(T), Challenger and a lot more besides. In addition to the many photos contained within the book you'll find a decent amount of written information relating to the various subjects, making this a good, all-round book at a sensible price. The book is available from most good book sellers.





Rare Photographs From Wartime Archives

The third addition to the Pen & Sword 'Images of War' series this month is this 126-page book that deals with the various flak and field divisions of the German army during the Second World War. As with the rest of the books in this series, it is profusely illustrated with wartime images depicting a wide range of German artillery pieces and the soldiers operating them. Of the weapons featured the book includes many photos of vehicle mounted flak guns, as well as ground weapons, and a number of chapters cover operations on various battlefronts, which include Russia and the Eastern Front. Well worth a look.

Title: Luftwaffe Flak & Field Divisions 1939-1945

By: Hans Seidler

ISBN: 9781848846869

Price: £14.99

Format: Softback

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www.pen-and-sword.co.uk

The Big Cats Prowling in Normandy

Title: Tigers in Normandy

By: Wolfgang Schneider

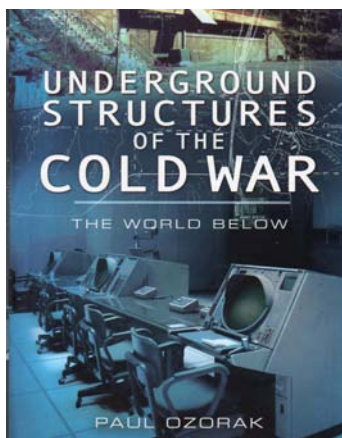
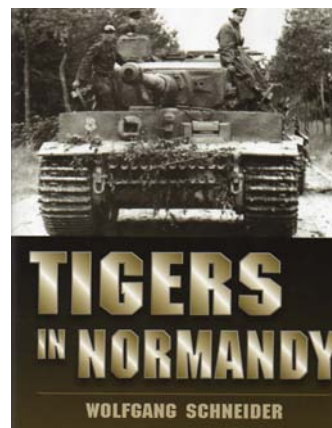
ISBN: 9781848848023

Price: £25.00

Format: Hardback

Available From:
Pen & Sword Books Ltd.
www.pen-and-sword.co.uk

The German Tiger tank never ceases to fascinate historians and this new, 320-page book takes look at the use of the Tiger in Normandy. Rather than concentrating on the mechanics of the vehicle itself, author and tank expert Wolfgang Schneider, who is also a Colonel in the modern German Army, details the orders of battle, provides tank inventories, maps of the battles and a series of then-and-now images of the terrain in which the Tigers fought, which combines to offer an in-depth and well illustrated appreciation of the Tiger in combat during the Normandy campaign.



Fascinating Insight into the Cold War

Given the secrecy that once surrounded these installations, this book is truly remarkable in that it offers a fascinating insight into the secret world of the underground structures of the Cold War. What's perhaps more incredible is the number of installations detailed within this book, which covers structures in Europe, North America, Africa, Asia, the Middle East and the Far East and includes various government and public shelters, military and weapons bases, storage depots, medical facilities and communications centres! An amazing read offering a rare glimpse into a secret world!

Title: Underground Structures of the Cold War - The World Below

By: Paul Ozorak

ISBN: 978184884803

Price: £25.00

Format: Hardback

Available From:
Pen & Sword Books Ltd.
www.pen-and-sword.co.uk

Ground Operations in the South Atlantic

Title: The Falklands 1982

By: G. Fremont-Barnes

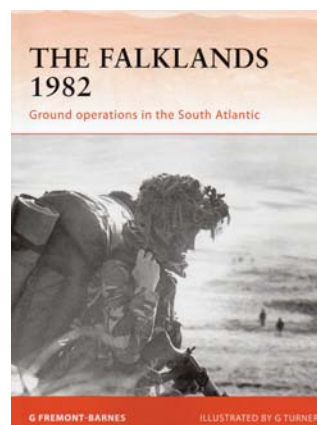
ISBN: 9781849086073

Price: £14.99

Format: Softback

Available From:
Osprey Publishing Ltd.
www.ospreypublishing.com

With 2012 seeing the marking of the 30th Anniversary of the Falklands War, it has come as no surprise to find that a number of books have been released to mark the event. This 96-page book from Osprey is part of their well-established Campaign series, and using a series of photographic images, maps of the area and illustrations, tells the story of ground operations in the South Atlantic during the battle to take the Falklands Islands back from invading Argentine forces. Campaign - 244 offers a concise, but authoritative account of the events of thirty years ago in a user-friendly format.



IPMS Magazine



The latest issue of the IPMS (UK) Magazine is out and as usual it features a varied collection of articles and features. For instance you'll find a well-illustrated feature on the Caunter camouflage scheme, with additional articles on a VW Camper conversion and a Bell Airacobra aircraft! Regular news and reviews are also included in the 36-page magazine, which is available to IPMS members. For details on how to join the IPMS see: www.ipmsuk.co.uk

Plane Spotter's Guide



70 of the world's greatest aircraft are featured in this new 'Plane Spotter's Guide' from Osprey Publishing. The 216-page paperback features no less than 140 side profile colour illustrations that describe some of the best-known aircraft of the 20th Century, which includes the likes of the Fokker Tri-Plane, Spitfire, Stuka, Vulcan and F-117 Stealth Fighter. Each of the entries is provided with a brief description and a technical chart detailing key specifications, making this an ideal entry-level book for young enthusiasts just starting out and wanting to learn more about military aircraft. At just £5.99 it's an inexpensive book that would make an ideal present for someone.

MISSION BRIEFING

DATES FOR YOUR DIARY

JULY 2012

Friday 6 Saturday 7 Sunday 8 July 2012: **Military Vehicle Trust Show, Caple, Surrey:** Show staged by the East Surrey & West Kent Area, Temple Lane, Caple, Surrey, RH5 5HJ. For details contact Yvonne on: Tel: 01306 711 907 yvonne@g-j-anstee.demon.co.uk

Friday 6 Saturday 7 Sunday 8 July 2012: **Operation Home Guard:** for further or to book in please contact John & Elaine Ward on: Tel: 01524241024 www.ingletonhomeguard.co.uk

Friday 13 Saturday 14 July 2012: **Meltham Memories:** Meltham, West Yorkshire, HD9 4AE, living history, vehicles etc. Vehicle bookings call Steve Aldred on: Tel: 07542331945 Stalls/Tickets call Pam Cox on: Tel: 07841426945

Saturday 14 July 2012: **Vulcan Day:** held at the Bournemouth Aviation Museum, Merritown Lane, Hurn, Christchurch, Dorset, BH23 6BA. Open 10.00am, sit in the Vulcan cockpit plus lots more, see: www.aviation-museum.co.uk

Saturday 14 Sunday 15 July 2012: **Dunkeswell Aero Rally:** held by the South West Airfield Heritage Trust at Dunkeswell Airfield, Honiton, Devon. For more details call: Tel: 07776075996

Saturday 14 Sunday 15 July 2012: **Manchester Airport Aviation & Transport Fair:** in association with Ace Mobile Living History Group & H4H at the Runway Visitor Park. Tel: 07952 176134 www.tasmanchester.com/TAS_Fair.html

Wednesday 18 to Sunday 22 July 2012: **The War & Peace Show:** The Hop Farm, Paddock Wood, Kent. The world's largest military vehicle show. For details contact: Tel: 01304 813945 www.thewarandpeaceshow.com Tel: 01622 872068 www.thehopfarm.co.uk

JULY 2012

Saturday 21 July 2012: **Cheffins Public Auction:** sale on instructions from Manor Park Farms and Dave & Peter Ingalls to include military vehicles, steam engines, vintage & classic tractors & commercials. Held at Manor Park Farm, Rand, Market Rasen, Lincs, LN8 5NJ. Catalogues available from: www.cheffins.co.uk or call Tel: 01223 213777 vintage@cheffins.co.uk

Saturday 21 Sunday 22 July 2012: **Woodhall Spa 1940's Festival:** Held at Jubilee Park, Stixwold Road, Woodhall Spa, Lincs, LN10 6QH. Contact Stuart Holmes on: Tel: 01526 353215 (after 6pm) stupot667@talktalk.net

Saturday 21 Sunday 22 July 2012: **Much Marcle Steam Rally:** Rye Meadows, Much Marcle, Ledbury, Herefordshire, HR8 2LX. www.muchmarclesteamrally.com

Friday 27 Saturday 28 Sunday 29 July 2012: **Welland Steam and Country Rally:** held at Woodside Farm, Welland, Worcs, between Upton-on-Severn & Malvern, WR13 6LN. For further details: Tel: 01531 890762 www.wellandsteamrally.co.uk

Saturday 28 Sunday 29 July 2012: **Erewash Steam & 40's Show:** held at West Park Leisure Centre, Wilsthorpe Road, NG10 4AA. For further details call: Tel: 01159 135823 dave.hoyles@ntlworld.com www.midlandeventsclub.co.uk

Saturday 28 Sunday 29 July 2012: **War Machines at Davidstow:** Davidstow Airfield & Cornwall at War Museum, Davidstow, Camelford, Cornwall, PL32 9YF. Call: Mob: 07799 194918 www.cornwallatwarmuseum.co.uk

Sunday 29 July 2012: **History on Wheels Motor Museum:** Open Day, located at Longclose House, Common Road, Eton Wick, nr. Windsor, Berks, SL4 6QY. For details: Tel: 01753 862637/833833

AUGUST 2012

Friday 3 Saturday 4 Sunday 5 August 2012: **Gloucestershire Steam & Vintage Extravaganza:** held at South Cerney Airfield, Cirencester. For details visit the website at: www.steamextravaganza.com

Saturday 4 Sunday 5 August 2012: **Croft Nostalgia Weekend:** For further details check out the website at: www.croftmilitary.co.uk

Friday 3 Saturday 4 Sunday 5 August 2012: **Woodvale International Rally:** Southport, Merseyside. See the website for more information, or contact Jimmy Vasco at: mg1966uk@hotmail.com www.westlancsmvf.com

Saturday 4 Sunday 5 August 2012: **Military & Flying Machines Show:** held at Damyns Hall Aerodrome, Aveley Road, Upminster, Essex, RM14 2TN. Open between 10.00am and 5.00pm both days. For further details see: www.militaryandflyingmachines.org.uk

Saturday August 4 2012: **MVPA 2012 Alaska Highway Convoy:** MVPA 70th Anniversary Convoy on the famous Alaska Highway. For details contact: hq@mvpa.org www.mvpa.org

Saturday 11 Sunday 12 August 2012: **Cobbaton Combat VJ Weekend:** Cobbaton Combat Collection, Chittlehampton, Umberleigh, N. Devon, EX37 9RZ. For details contact Tim Isaac on: Tel: 01769 540740 info@cobbatoncombat.co.uk www.cobbatoncombat.co.uk

Saturday 11 Sunday 12 August 2012: **Combined Ops 2012:** IMPS Military show & Classic Aircraft weekend, held at Headcorn Aerodrome, near Maidstone, Kent. Call Malcolm Dunlop on Tel: 01303 267271 mgdunlop@aol.com www.imps.org.uk

Saturday 11 Sunday 12 August 2012: **Langleybury Farm Military Vehicle Show:** held at Langleybury Lane, nr Kings Langley, Herts, WD4 8RW. For further details contact: Tel: 07860245699 burrowes@btinternet.com

AUGUST 2012

Sunday 12 August: **Preston Arms Fair:** held at Mercure Dunkenhagh Hotel, Blackburn Road, Clayton Le Moors, Lancashire, BB5 5JP, Accrington. For details call: Tel: 01254 263260 www.prestonarmsfair.co.uk

Saturday 18 Sunday 19 August 2012: **Lacock at War:** held at the Parish Council Playing Field, High Street, Lacock, Wiltshire, SN15 2LQ. For more details please contact John Wardle on: Tel: 07754235482 www.westwiltsmvf.co.uk

Sunday 19 August 2012: **Panshanger Revival Day:** held at Panshanger Aerodrome, organised by the North London Flying School. The show opens from 10.00am. For details call: Tel: 01707 391791 www.northlondonflying.school.com

Sunday 19 August 2012: **Militaria & Medal Fair:** held at Yate Leisure Centre, Kennedy Way, Yate, nr Chipping Sodbury, Bristol, BS37 4DQ. Doors open from 10.30am till 2.30pm. Tel: 01753 534777

Saturday 25 Sunday 26 Monday 27 August 2012: **Rauceby Forties Weekend:** For further details about the show contact the organisers on: Tel: 01529 488354 www.raucebywarweekend@hotmail.co.uk

Saturday 25 Sunday 26 August 2012: **Eastnor Castle Land Rover Show:** held in the picturesque setting of the Deer Park, Eastnor, Nr Ledbury, Herefordshire, HR8 1RL. For further details contact the organiser Mark Woodward: Tel: 016974 51882 www.4x4sparesday.co.uk

Saturday 25 Sunday 26 Monday 27 August 2012: **Tanks, Trucks and Firepower Show:** military vehicle show, situated just 1 mile from Dunchurch in Warwickshire on the A426 Southam Road, approx 5 miles from Rugby with access off the A45 and M45. For further details or to book in for the event call: Tel: 0780 3080028 www.tankstrucksandfirepower.co.uk

AUGUST 2012

Saturday 25 Sunday 26 August 2012: **Military Odyssey 2012:** held at the Kent Show Ground, Detling, Kent, ME14 3JF. The world's largest multi-period living history show spanning all periods. For further details call: Tel: 01268 772448 www.military-odyssey.com

Sunday 26 Monday 27 August 2012: **History on Wheels Motor Museum:** Open Day, located at Longclose House, Common Road, Eton Wick, nr. Windsor, Berks, SL4 6QY. For details: Tel: 01753 862637/833833 www.historyonwheels.co.uk

Sunday 26 Monday 27 August 2012: **Northeast Military Vehicle Show:** held at the Durham Light Infantry Museum, Durham City. For further details about the event contact: nemvc@hotmail.com

SEPTEMBER 2012

Sunday 2 September 2012: **Militaria & Medal Fair:** held at The Princes Hall, Princes Way, Aldershot, Hampshire, GU11 1NX. Tel: 01753 534777

Saturday 15 Sunday 16 September 2012: **Salute to the 40's:** held at The Historic Dockyard Chatham. Participants should call the enquiry line on: Tel: 01634 823816 Visitor information line: Tel: 01634 823807 www.thedockyard.co.uk

Friday 21 Saturday 22 Sunday 23 September 2012: **Middlewich Wartime Weekend:** held in Middlewich Town Centre, Civic Hall & Royal British Legion Club. For further details contact Dave Thompson: Tel: 01606 833434 Mob: 07765 025596 www.middlewich.org.uk

Saturday 22 Sunday 23 September 2012: **Iowa All Breeds Jeep Show and 4x4 Swapmeet:** held in Nevada, Iowa, hosted by the Jeep Outdoor Club of Central Iowa. For further details call: Tel: 515 708 0080 or see the website at: www.iowajeepshow.com

SEPTEMBER 2012

Sunday 30 September 2012: **Newbury 4x4 and Vintage Spares Day:** Newbury Showground, Chieveley, Berkshire, RG18 9QZ. Call further details contact Mark Woodward on: Tel: 016974 51882 www.4x4sparesday.co.uk

Sunday 30 September 2012: **History on Wheels Motor Museum:** Open Day, located at Longclose House, Common Road, Eton Wick, nr. Windsor, Berks, SL4 6QY. For details: Tel: 01753 862637/833833 info@historyonwheels.co.uk www.historyonwheels.co.uk

Sunday 30 September 2012: **Manchester Militaria Fair:** held at Event City, Phoenix Way, Urmston, Manchester, M41 7TB. Located next door to the Trafford centre. For Further details contact Amanda on: Tel: 01743 762266 www.militaryconvention.co.uk

Sunday 30 September 2012: **Military Vehicle Road Run:** in aid of Help for Heroes, meet at the White Lion Pub, Baldock High Street, Baldock, Herts at 10.00am. Road run starts at 11.00am, meeting back at the White Lion. For details call Mr Baker: Tel: 01462 630214 Mob: 07963 09143

OCTOBER 2012

Sunday 7 October 2012: **Hack Green Secret Nuclear Bunker Rally:** French Lane, Nantwich, Cheshire, CW5 8BL. For details call Rod on: Tel: 01270 623353 www.hackgreen.co.uk

Sunday 21 October 2012: **Militaria & Medal Fair:** held at Stratford Leisure Centre, Bridgefoot, Stratford on Avon, Warks, CV37 6YY. For further details contact: Tel: 01753 534777

Sunday 28 October 2012: **Dallas Dig Out:** famous Dallas Dig Out held at Dallas Autos, Cold Ash Farm, Long Lane, Hermitage, Newbury, RG18 9LT. For details call: Tel: 01635 201124 admin@dallasautoparts.com www.dallasautoparts.com

Why not email your show details direct to the Editor at:
ian.young@keypublishing.com
or post them to the Editorial Office - details found on page 3

OCTOBER 2012

Sunday 28 October 2012: **History on Wheels Motor Museum:** Open Day, located at Longclose House, Common Road, Eton Wick, nr. Windsor, Berks, SL4 6QY. For details: Tel: 01753 862637/833833 info@historyonwheels.co.uk www.historyonwheels.co.uk

NOVEMBER 2012

Sunday 4 November 2012: **Northern Military Expo:** Newark Country Show Ground, Notts, 2 minutes off the A1M (NG24 2NY). For details call: Tel: 01302 739000 www.northernmilitaryexpo.co.uk

Sunday 4 November 2012: **Militaria & Medal Fair:** held at The Princes Hall, Princes Way, Aldershot, Hampshire, GU11 1NX. For details contact: Tel: 01753 534777

Sunday 18 November 2012: **Military Vehicle Day at Brooklands Museum:** held at the Brooklands Museum, Brooklands Road, Weybridge, Surrey, KT13 0ON. For details see: www.brooklandsmuseum.com

Sunday 18 November 2012: **Malvern Militaria Fair:** large, indoor militaria event held at the Three Counties Showground, Wye Hall, Malvern, Worcs, WR13 6NW. For further details or to book in contact Amanda on: Tel: 01743 762266 amanda@jeeparts.co.uk

Sunday 25 November 2012: **History on Wheels Motor Museum:** Open Day, located at Longclose House, Common Road, Eton Wick, nr. Windsor, Berks, SL4 6QY. For details: Tel: 01753 862637/833833 info@historyonwheels.co.uk www.historyonwheels.co.uk

NOVEMBER 2012

Sunday 25 November 2012: **Militaria & Medal Fair:** held at Yate Leisure Centre, Kennedy Way, Yate, nr Chipping Sodbury, Bristol, BS37 4DQ. For further details contact: Tel: 01753 534777

DECEMBER 2012

Sunday 16 December 2012: **History on Wheels Motor Museum:** Open Day, located at Longclose House, Common Road, Eton Wick, nr. Windsor, Berks, SL4 6QY. For details: Tel: 01753 862637/833833 info@historyonwheels.co.uk www.historyonwheels.co.uk

MoD SALES

Government Surplus Sales: **Witham Specialist Vehicles:** Regular auctions of ex-military vehicles, equipment and spares. For further details contact Witham Specialist Vehicles, Honeypot Lane, Colsterworth, Lincs or check out the website for details. www.mod-sales.com

If travelling long distances to events we would advise people to check for cancellations before leaving home, MMI cannot be held responsible for any errors, omissions or cancellations. Submissions for Mission Briefing should be sent at least two months prior to the event and we would also ask event organisers to notify us of any changes as soon as possible.

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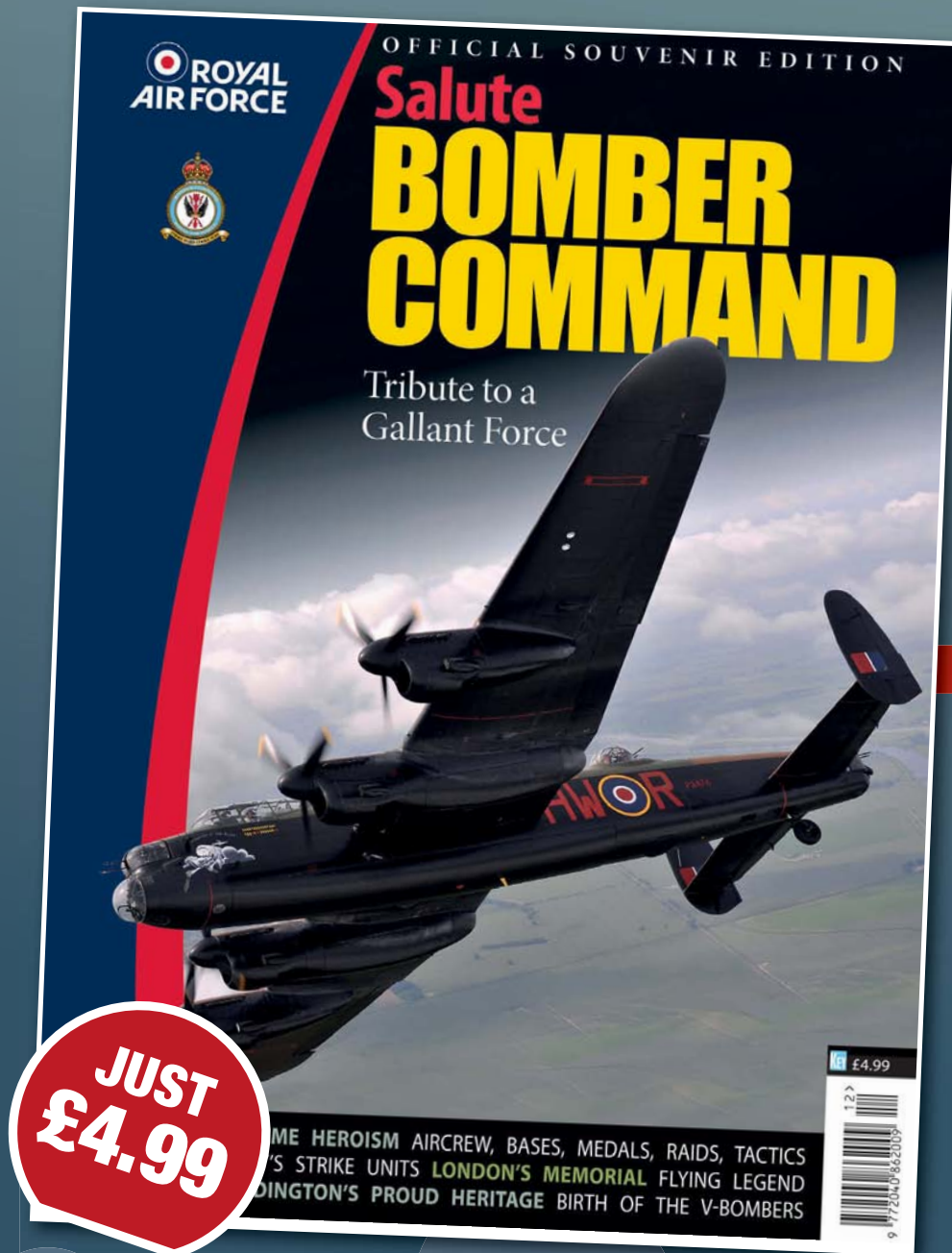
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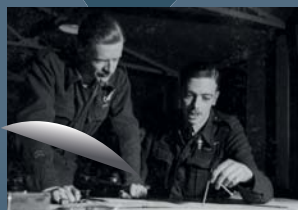
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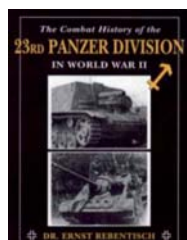


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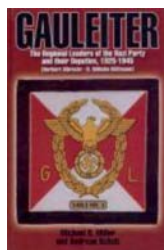


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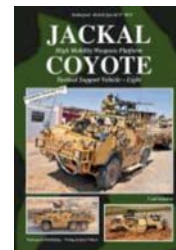
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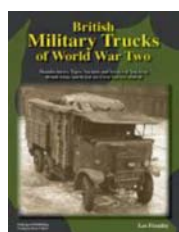
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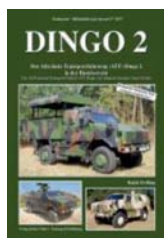
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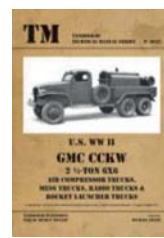
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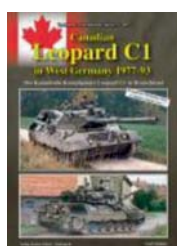
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