

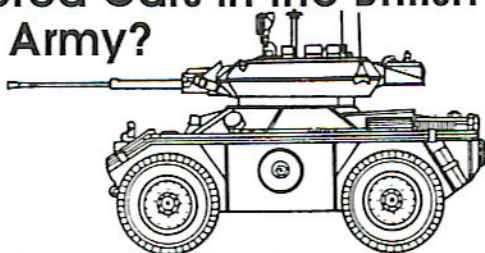
# ARMORED CAR

THE WHEELED FIGHTING VEHICLE NEWSLETTER

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## Last of the Line - No More Armored Cars in the British Army?

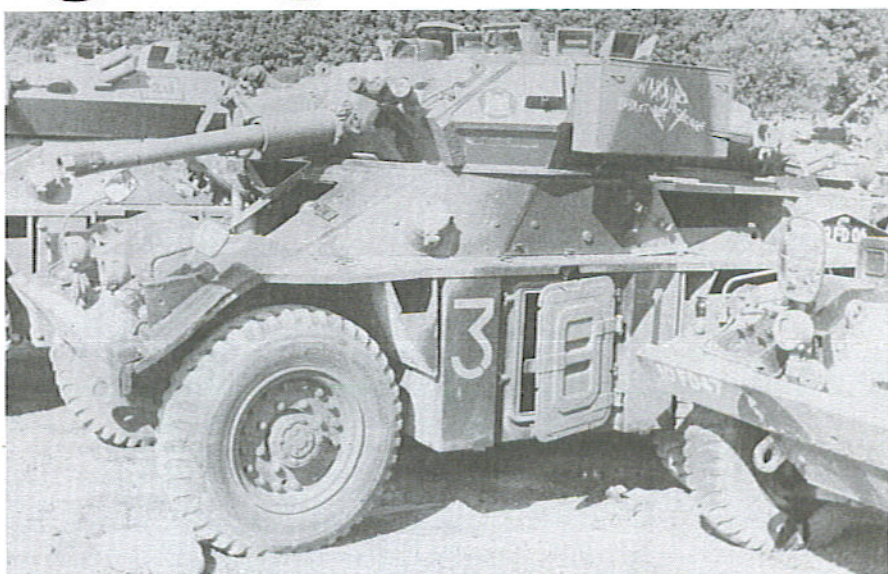
by Peter Brown



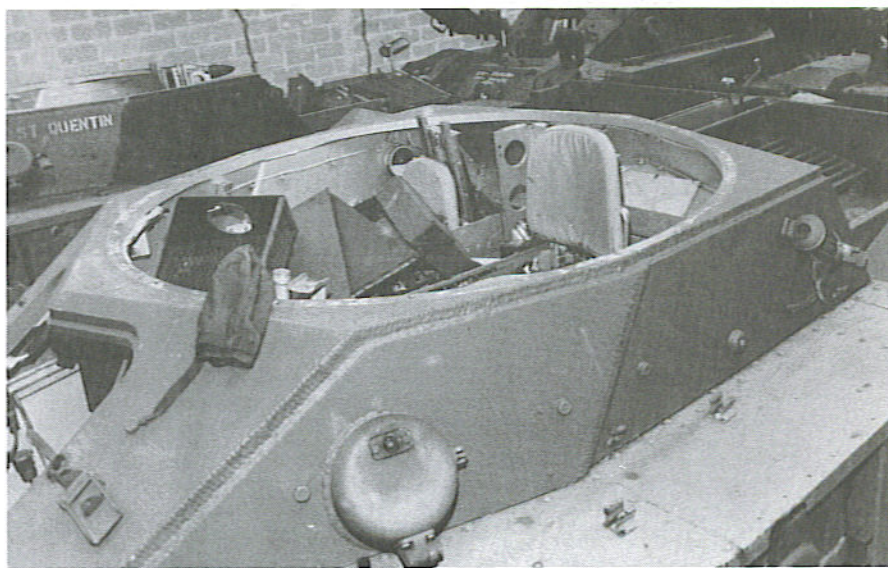
After a long tradition of using armored cars, the British Army seems to be disposing of the last of this class of vehicles with no replacement in sight. The venerable Ferret seems now to be a vehicle of the past, and its "replacement" the FV721 Combat Vehicle Reconnaissance (Wheeled) Fox will soon disappear from the inventory and order of battle. The only wheeled armor surviving will then be the Sax-on APC.

This October I was lucky enough to visit the Army Vehicle Depot at Ludgershall, which is itself due to close soon due to defense rationalization, and was able to see a large number of Foxes awaiting disposal. Many were more or less complete although with all items of removable equipment removed, as many again had their turrets removed to be mated with Scorpion hulls (also stored there) as the Sabre conversion, and there was a lone oddity, a Fox with a Scorpion turret. This vehicle was obviously the leftover parts of a Sabre, and the turret was not fitted to the hull. Close inspection showed the words "Warning - Turret not Secure" chalked on the turret side bin and "Do Not Drive" on the hull front. It is not intended to be a new Fox variant, and as the Scorpion turret is designed for a wider turret ring than that on Fox, not even a viable proposition. That said, at least one such combination has been sold on to a member of the public, and has appeared at a preserved military vehicle rally - hopefully with the turret fastened down in some way!

Note also that, despite various reports to the contrary which I think stem from a remark in George Forty's otherwise fine book The Scorpion Family - Modern Combat Vehicles: 5 (Ian Allan, Shepperton UK 1983, ISBN 0 7110 1175 3 and now out of print) - Scorpion and Scimitar turrets are very different from those on Fox.



Above: Fox chassis with Scorpion turret resting on top. Below: Foxes stripped of their turrets. Various parts and left over pieces have been piled in the interior. Photos: Peter Brown.



The tank turrets are both octagonal, while Fox has gently curved sides as can be seen on the vehicle behind the Scorpion turreted one. It is also lower, as comparing the two in the photo shows, so that when fitted to a Scorpion hull a large adapter ring is used to raise the turret as well as make up the difference in turret ring diameter. Looking at the photo, the real Fox also has a variation on the usual smoke dischargers. Many Foxes have a four-barrel launcher on the front of the turret, but several have two barrels removed and mounted in units on the turret sides just behind the halfway mark. It seems

there is no future in the British Army for the Fox hulls, so many are stored outside without turrets being effectively if slowly destroyed by the elements. At one time there was a plan to produce a small wheeled armored liaison vehicle, as mentioned in previous ACs, but this has not been adopted.

The vehicle in the article in AC#19 (and shown this page), serial 01GM10, is basically a Fox with a one-man GPMG turret as used on FV432 tracked APCs and lately on Saxons in Bosnia. This vehicle is now in the Tank Museum, Bovington, collection. When first seen there (October 1995) it had the

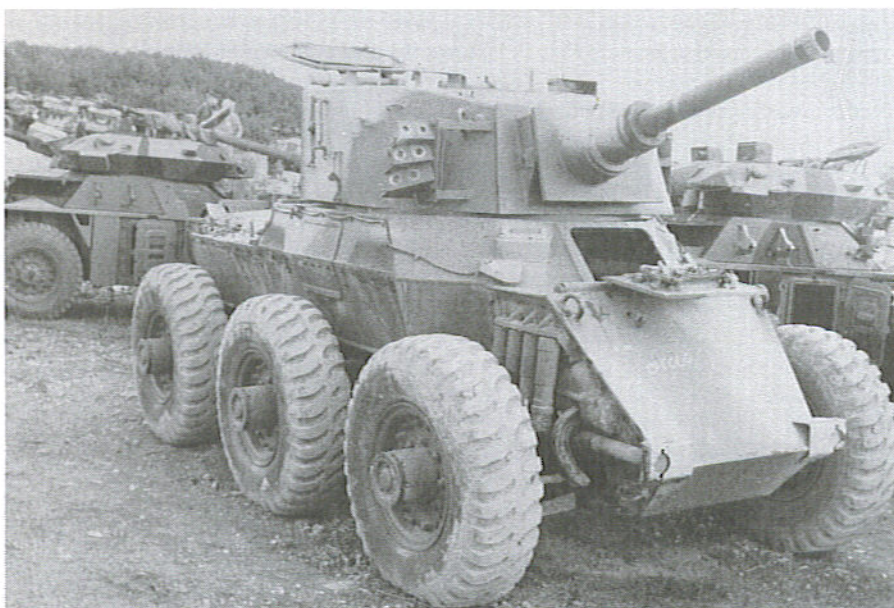
name "Polecat" chalked on the front.

It seems a lightly armed Fox version is fated never to see service, as the planned FV722 CVR(W)L Vixen, otherwise dubbed "Fat Fox" and planned as a one to one replacement for Ferret for light patrol and liaison use, was not purchased, being canceled as part of defense cuts in 1974 - things were bad even in the good old days it seems! One of the prototypes, and a prototype Fox, are also at the Tank Museum. The various commercial versions, such as Stoat (a 1976 era Fox hull with GPMG turret - basically a cheap Vixen replacement), Royal Ordnance's Panga (with a larger one man turret with .50" Browning) and various Fox hulls with different turrets mounting 25mm cannons or machine gun and other weapons, including the MILAN anti tank missile, have been equally unsuccessful, although these may not have been preserved for future generations.

Also at Ludgershall were some real oldies. The long serving Saladin has been out of British service for some time now. The final handful had been retained for use in Cyprus as a patrol vehicle with wheels and therefore not a "tank" with all the adverse propaganda that would entail. Seeing the two vehicles there was a surprise, and to see them in their sorry state was a shock. Both were missing mudguards and stowage bins, which seemed to have been removed rather than just rotted away, and one had been robbed of its middle wheels. All hatches were open to the rain, so the interiors would be badly damaged. Two fairly intact Saracen APCs were also lined up awaiting some unknown fate, probably the torch.



Above: Fox chassis with General Purpose Machine gun turret, photographed at Ludgershall in July of 1993. Below: Saladin serial number 01CC60 with the fenders removed, suspension details and escape hatch are clearly visible. Photos: Peter Brown.

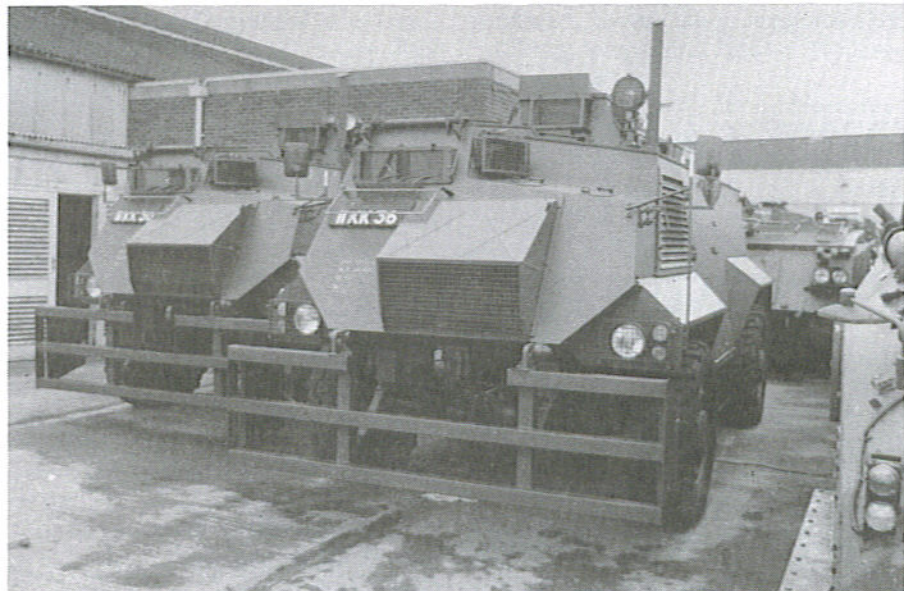


Below: Saladin '4 wheeler' awaiting disposal. Photo: Peter Brown.



There was also one lone Fig, which I could not photograph as I ran out of film! It too was in a sorry state, it had been converted with the revised rear doors seen on vehicles used in Northern Ireland, and stands or almost does on four wheels which are splayed in all directions. The cause of this I could not be certain of, as it did not seem to be mine damaged, it may simply have been due to an unloading accident or sheer old age.

Left: Saxon Internal Security vehicles photographed at Ludgershall in July 1993. The Saxon may become the only British wheeled armored vehicle in regular service. Photo: Peter Brown.



### British wheeled armor on Cyprus

The three vehicles shown here were photographed by Stelios Markides at an open house held in 1993 near Nicosia, Cyprus. Below: Saracen APC with reverse flow cooling, serial number 05FF79. Left: Saladin 07BB76. Right: Ferret 01DC10 with 7.62mm GPMG, on this vehicle the storage bin has been removed from the right side. All vehicles were painted in sand and green.



# THE "WYVERN OF WESSEX" AND THEIR ARMORED CARS



by M. McEwen Charlish

*Readers of AC # 21, January 1994, will remember that a brief history of the British World War II Reconnaissance Corps was contributed by "Mac" Charlish. He now recounts the exploits of some soldiers and how they used their armored cars in that Regiment, the 43rd (Wessex), in which he served from Normandy, France, to the gates of Bremen, Germany, 1944-45.*

To begin with, it is necessary to explain the role, during those wartime years, of an Infantry Division's Reconnaissance Regiment. Although not all Divisional GOCs employed their Recce (the favored "short" title - rhymes with "Becky") Regiment in quite the same way, in the main, such a unit could have four principal roles.

It could be used on "pure" reconnaissance, looking, searching, probing, the enemy's front, seeking out his strengths and weaknesses.

It could "seize and hold", for example a feature such as a bridge, or a cross-roads, until infantry reinforcements came up to consolidate the gain.

It could act as protector of a flank, while a larger formation was making an advance, or consolidating territory gained.

Lastly, it could act as a rear-guard, should it be necessary for a larger formation to withdraw.

Thus, it had to be flexible and this was reflected in the way it was equipped. Regiments comprised three recce squadrons, each consisting of three "scout" troops equipped with armored cars, scout cars, and tracked ("Bren") carriers and an infantry "assault" troop, mounted in M3 half-tracked vehicles, together with a headquarters squadron, which included an anti-tank battery of twelve 6-pdr guns and a mortar troop of six 3-inch mortars.

The armored cars were the Humber Light Reconnaissance Car (LRC), the Humber Armoured Car, usually called the Humber 'Heavy', and the Daimler Armoured Car. The vehicle by which Recces on the move were most immediately recognizable was the LRC (by a remarkable coincidence, the January 1994 Issue of *Armored Car* shows on page 5 the Soviet BA-20M, which in appearance closely resembles the LRC). Of the LRC, some 3 000 were built.

They had been developed from the "Humberette", based on a Humber Snipe chassis, and a similar type of car the Standard "Beaverette". Eventually arrived the Mark 3, four-wheel drive with WD type wheels and heavy-duty tires. The engine was a Humber 6-cylinder, 85 bhp which gave the car a road speed of about 70 mph. The open top turret, rotated by the gunner's legs and shoulders, mounted a Bren LMG. In the early days a Boys anti-tank rifle was mounted in the hull front. With a crew of three the vehicle weighed 3.8 tons. The majority of LRCs built were used by the Recces, but a few were delivered to the Royal Air Force Regiment, a formation trained and tasked like infantry to protect airfields, but on the strength of and under the command of the RAF.

At times LRCs of that Regiment were employed on flank protection duties, to assist Army ground forces. Readers of *Armored Car* will probably be familiar with the Humber "Heavy" and the Daimler armored cars, whose technical descriptions are available in the publications of the Tank Museum, Bovington, Dorset, England, and which have also been featured in many standard works on armored vehicles.

By contrast, this article deals with how the armored cars were deployed on the march and employed in action, and especially, how their crews acted on those occasions when the vehicles were disabled or otherwise diverted from their intended course of action. Brigadier Francis Henn writes: "5th Battalion, the Gloucestershire Regiment returned from Dunkirk in 1940 with a distinguished reputation gained while fighting in France and Belgium as part of 48 (South Midland) Infantry Division. A consequence was its selection a year later for conversion to the role of a divisional reconnaissance regiment, initially for 48 Division before transfer to 43 (Wessex) Infantry Division to become formally the "43rd Reconnaissance Regiment (The Gloucestershire Regiment)" in the new Reconnaissance Corps (later absorbed into the Royal Armoured Corps)".

"43rd Division was earmarked as a follow-up formation for the invasion of Normandy and was trained to an exceptionally high pitch. This was especially true of its Reconnaissance Regiment, which, under a brilliant Commanding Officer, Lt Col A D Ward (later General Sir Dudley Ward) devised tactics and operational procedures and set standards that were adopted by other similar regiments. Throughout the campaign in NW Europe 43 Recce Regt operated directly under the personal hand of the Divisional Commander, the dynamic Major General G I Thomas, who reposed special confidence in it. During the major run of the

campaign the Regiment was commanded by Lt Col F Lane Fox (Royal Horse Guards The Blues), a brave Commanding Officer held in high regard and affection by all ranks".

Tragedy struck the 43rd Division's armored formation, the Reconnaissance Regiment, while it was waiting off-shore to land in Normandy. The transport carrying all but one of its Squadrons activated an acoustic mine off SWORD Beach on 24 June 1944 which broke the ship's back. 189 men and all its vehicles were lost at sea in a few seconds. Immediately a complete Squadron of the Green Howards, the 161st Reconnaissance Regiment, then training in Northern Ireland, was ordered to embark to replace the severely-damaged "A" Squadron and all Reconnaissance men in transit at the time (of which this writer was one, his "home" Regiment being the 15th (Scottish) to replace the others lost, were sent to Pouligny, Normandy, where the survivors of the tragedy were recovering. Within five weeks the 43rd Regiment had reformed and re-trained. It moved into action on 2 August 1944.

#### RECONNAISSANCE IN ACTION

Examples of such actions now follow. The first is again taken from the narrative of Brigadier Francis Henn.

"Both skill and courage of the highest order were demanded of the scout troops for, as they edged cautiously forward on roads not yet cleared of mines, the first that they were likely to discover of the enemy's presence was when the leading scout car either struck one of these or became the target of well-concealed rocket -launchers, machine guns and anti-tank guns or tanks, if not snipers lurking in buildings or up trees; all the while they would be reporting back information on the enemy and the going. The close nature of the country inevitably made progress slow, for so tenacious and skillful in defense were the Germans that Recce Squadrons sometimes gained only a little ground before encountering positions that they were able neither to by-pass nor to drive back with their own troops. Set-piece attacks by the following infantry were then

required, these being supported by artillery, tanks and fighter ground-attack aircraft.

"4 August, 1944, Normandy: Colonel Lane Fox ordered C Squadron to loop west through the Bois du Homme and find a route back to the original axis at Le Mesnil Auzouf. Led by Major Faircloth, C Squadron set off accordingly and in parallel, B Squadron advanced south from Jurques.

"Sgt. J T Jones led the advance of 5 Troop which moved fast up the hill, the cars spraying with machinegun fire the bushy scrub which lined the road. Beyond the hill crest 5 troop turned down the Ondefontaine road without incident, followed by 7 troop. 6 Troop passed the turning and moved on down the main road to secure the next junction. 5 Troop, commanded by Lt. Shutler, made good progress into Ondefontaine through thickly wooded country. In the village Sgt Jones's car patrol moved cautiously to a road junction at which their route lay down the right-hand turning, but it was found to be full of dead Germans and craters and quite impassable. They moved on to the next crossroads where Sgt Thurgood spotted a section of the enemy digging in and scattered them with machinegun fire.

"Lt Banks, commanding 7 Troop, came up with a foot patrol at this juncture and went forward with Sgt Jones to investigate the crossroads, which now seemed deserted. As they approached it they heard the clattering of tracks and dived into the hedge just in time to avoid a German Mark IV tank which rumbled past, spattering them with dust. They were able to identify the German unit which had been occupying the village as part of the Panzer Lehr Division. While they were sending back this information, a Volkswagen full of Germans drove up and seeing them, turned and drove off, sprayed by machinegun fire.

Infantry were now reported to be approaching from the north and the carrier men laid an ambush - but the infantry turned out to be British - the 5th Duke of Cornwall's Light Infantry (DCLI). Suddenly two German Panther tanks came round the corner, followed by infantry. Our infantry

men dived for cover, leaving their Bren carriers blocking the road and also the retreat of Sgt Jones, who was still in his car. The tanks were fifty yards off, covering his vehicle with their guns, while his own turret was traversed away, so he can count himself lucky to have got his crew back, pursued as they were by spandau fire from the moment they bailed out..."

The next example of the reconnaissance and associated role in action of the LRC is a first-hand account by Trooper Alan Dracup, who writes: "Foot patrol into Appeldorn, February 28, 1945.

"The normal armament on a Mk III Light Reconnaissance Car, was a standard Bren gun, mounted on a topless turret, and a 3" smoke grenade, mounted on the front of the vehicle, a Verey pistol, plus the crew of three's side-arms. "At this stage of the war, fighting was very fluid, with the enemy impeding the progress of our vehicles by blowing huge craters in the roads. We were meeting little in the way of heavy artillery, but encountering much mortar and machine gun fire.

"11 Troop, 'C' Squadron, 43rd Recce, were given the task of probing into Appeldorn from the village of Hanselaer. As usual, it was 'Move at first light' and B patrol moved out. Soon the LRC was halted by a huge crater. Lt. Groves ordered a strong foot patrol of carrier men under Lt. Goodman to search the village. Soon they were out of sight of the cars, the crews of which were worried when they heard the sounds of heavy firing. The foot patrol had spotted a tracked anti tank gun tower moving on the main road through the village. An ambush was set up for it, killing some of the crew, and taking one prisoner. Most of the ammunition was used in this action, and when a German patrol was spotted advancing at the double, Sgt Woodward remained on the road with his Bren, covering the patrol and its prisoner as they took to the fields, where he caught up with them. As the party appeared from the houses, they were sighted by Trooper Dracup in the leading car. The patrol was fired at from an orchard as they crossed a stream and Tpr Tiernan, the leading scout, had his Bren shot from his hand.

Tpr Dracup engaged the enemy guns with his sights at maximum range, and the patrol with its prisoner came panting up to the hedge to the left of the car.

"Lt. Goodman called for Tpr. Dracup to lay down smoke, but Dracup replied 'Sorry, Sir, but it is in for repair'. He then cried, 'When I say "GO", run like Hell!' He then put a full magazine on the gun, lined it up again on the enemy, and yelled 'GO!' Patrol and prisoner were behind the supporting heavy car before the burst had ended!

"The cars then pasted the enemy machine guns with both light and heavy weapons until they were silenced.

"Appeldorn resisted the combined efforts of both 'C' and 'A' Squadrons for yet another couple of days, with the Germans cratering every road into the small town".

#### FLANK PROTECTION

After the failure of Operation "Market-Garden", the attempt to seize the road-bridge at Arnhem, the 43rd Division was re-deployed.

Brigadier Henn continues: "The force under (GOC 43rd Division) General Thomas's command for the defense of the central part of the "Island" which covered the approach to Nijmegen, comprised five infantry brigades, an armored brigade and four artillery regiments in addition to his own.

"43 Recce Regt continued to be responsible for watching over the Division's open west flank for the next week. [late September into early October 1944]. This was a rel-

atively quiet period with activities generally confined to vigilant observation and to energetic patrolling. Initiative and ingenuity were displayed, as in the case where a LRC was covered with hay and towed by two horses along a dike wall to a house where its crew remained in observation, unseen by the unsuspecting enemy. However, two notable events occurred. On the night of 29 September German frogmen [who had been specially trained in Venice] swam down the Waal to lay explosive charges under the two bridges at Nijmegen; the road bridge received only slight damage but a span of the railway bridge was destroyed. Swimming away down-stream the frogmen emerged too early and were spotted by B Squadron, who opened fire. One surrendered but others tried to escape, only to be captured by men of B Squadron further down river. Next, on the night of 3/4 October a foot patrol under Lt. Wood had a sharp encounter at close quarters with the enemy at the village of Ochten, (on the Waal, 15 miles downstream from Nijmegen) when Trooper Sandell particularly distinguished himself in the fight, killing several enemy single-handed, for which he was awarded the Military Medal.

"Soon afterwards the Regiment handed over its responsibilities to the 101st (US) Airborne Division, which relieved 43rd Division on the Island". Both the 82nd [All American] and the 101st [Screaming Eagles] Airborne Divisions were in the vicinity, having

also been fiercely engaged in Operation "Market Garden".

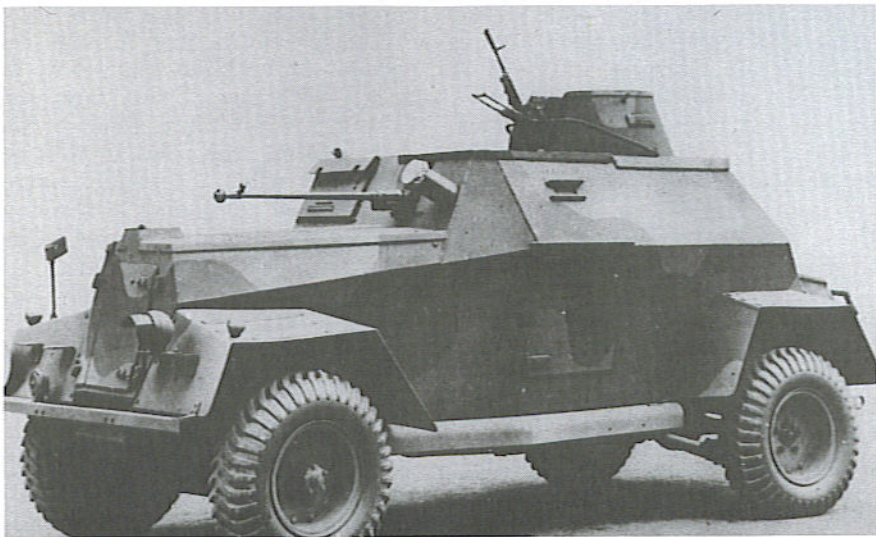
These examples show some of the diversity of tasks and roles for which armored cars can be deployed. TV coverage of the UNPROFOR activities in Bosnia has shown the difficulty which vehicles of any sort can face. Only a few mines - or even dummy-mines - need to be placed across a road or track and the crew is forced either to halt, dismount and investigate, or withdraw. To attempt to destroy the mines by gunfire can result in the road being cratered and so rendered impassable. At the same time, in close country, such as the "bocage" of Normandy and the heavily-wooded parts of Bosnia, crews are vulnerable to ambush. However technologically sophisticated and developed is the armored car or other fighting vehicle, the ability to use ground and to fight a dismounted action may be the only way a crew can survive, and get themselves and the information back to base.

Few LRCs remain. One, in damaged condition, is on display at a museum in Holland. One, in desert camouflage, and bearing Royal Air Force roundels was offered for sale some three years ago. One was dug up, in fragments, from a farmer's field and rebuilt to similar appearance as an original. Some of the Humber "Heavies" and Daimlers are lodged at the Tank Museum, Bovington. As for their crews, their numbers inevitably dwindle. The Reconnaissance Corps was disbanded on 1 August 1946. The Corps is commemorated in the stained-glass window, bearing the Lightning-Spearhead Corps Badge, in the Church of All Hallows by the Tower, London, where, in the Baptistery, is lodged the Roll of Honor. (At least one restored LRC is in private hands, see photo on page 11 -ed.)

#### THE WYVERN OF WESSEX

If labels come off cans of food in the larder, chaos theory takes over. All cans look alike, be the contents beans or fruit. Thus, at the first pitched battle of knights

...continued on page 11



Left: Humber Mk III Light Reconnaissance Car. Photo via: LTC (Ret) James Loop.



Brand new ASLAV with 25mm turret and all modifications in place photographed in 1995. Photo: Barry Marriott.

To some extent the LAV in Australian service had its roots back in the mid 1980s when Project WALER first came into being. The aim of Project WALER was to design two types of indigenous armed vehicle, one wheeled and one tracked. This was done and the project later canceled, I assume on the grounds that it was too expensive.

Separate from this but I feel related, was the Wheeled Armored Fighting Vehicle Project; which was aimed at replacing the aging M113 armored personnel carriers of 2 Cavalry Regiment then based at Holsworthy, New South Wales on the outskirts of Sydney. 2 Cavalry Regiment was relocated from Holsworthy to a new base at Palmerston just south of Darwin. The Swiss designed MOWAG 8x8 Piranha was selected to fulfill the role of a reconnaissance vehicle for the regiment in northern Australia.

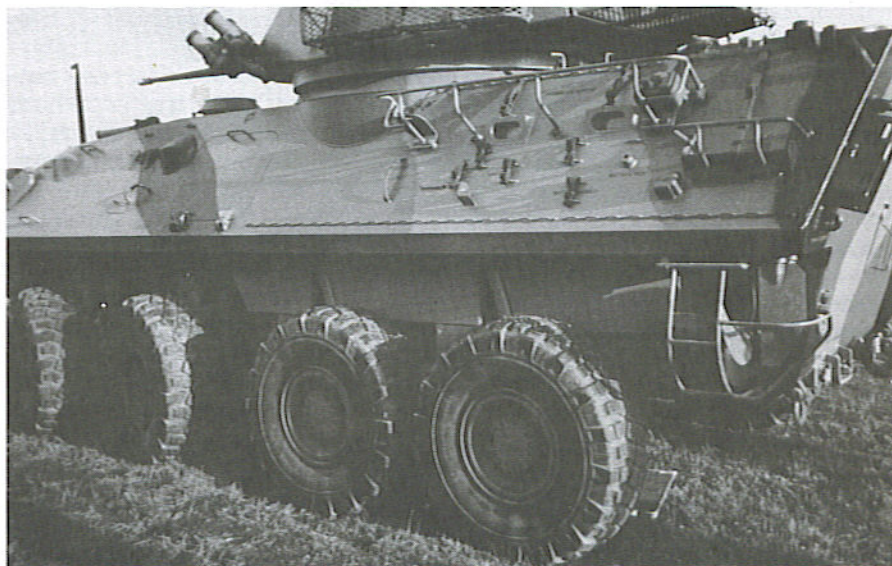
In May 1990 the Australian Army purchased 15 LAVs from United States Marine Corps stocks. One of these vehicles was on display at AIDEX 1991 in Canberra still in standard USMC camouflage. Exact numbers and types of vehicles received are unknown, but at least the LAV-25 and LAV Recovery versions were acquired.

Right: - Left and Rear of ASLAV. Note the chunkier XML tires, propeller cage, turret storage, jerry can rack and second stowage larger rack. Note the proportional steering with the front two sets of wheels on each side. Combined the other photos, the new camouflage pattern could be duplicated. Photo: Shane Lovell, May 1995.

These vehicles were trialed for 12 months to test the vehicle in Australian conditions, test the concept of operations, and develop logistical support requirements.

The other vehicle that has been trialed and may have been included in the initial purchase of 15 LAVs was the BISON (LAV-APC). These vehicles have been tested similarly to the LAV-25s. One vehicle was tested by the RAEME for mechanical support.

On 11 December 1992 a contract for 112 LAVs in various configurations was signed with the Canadian Commercial Corporation who will sub contract to the Diesel Division of General Motors of Canada, who manufacture the LAV under license from MOWAG. Pro-



# THE LIGHT ARMORED VEHICLE (LAV) IN AUSTRALIAN SERVICE

by John Myszka

duction commenced in 1993 and it is expected that the LAVs will be operational with 2 Cavalry Regiment by the end of 1995. Although most vehicles will be allocated to 2 Cavalry Regiment some will go to training schools and operational reserve.

The trial period had shown up some improvements needed to address unique Australian conditions, and there is scope to take advantage of product improvements implemented since the first LAVs were produced. These improvements /modifications will be added to vehicles being built as standard. In early 1995 the Assistant Chief of the General Staff- Materiel had approved the option to sell the 10 year old LAV-25s used for evaluation and replace them with 14 new ASLAVs.

There will be six variants of the 8x8 LAV which make up the

112 vehicles. They are based on three different hull types, namely the LAV-25, the Bison and one other yet to be decided. The Bison will be converted to its role through unit level nonpermanent Mission Role Installation Kits (MRIK).

**ASLAV-** The basic LAV-25 turreted vehicle for reconnaissance duties with a crew of 3. The vehicle will be armed with the M242 25mm Bushmaster chain gun and two 7.62mm MAG 58 machine guns (one coaxial and one externally in the commander's or gunners station) in the Delco turret. This 8x8 vehicle is in service with the USMC and is being built for the Canadian and Saudi Arabian Armies; 47 are to be acquired

**ASLAV-PC** The vehicle will have a crew of 2 and carry 7 assault troops and will be armed with a 12.7mm machine gun on the commanders cupola. This weapon will be capable of being operated from behind armored protection, a locally designed weapons station may added later. This vehicle is in service with the Canadian Army. Based on the Bison, the vehicle has a rear ramp and weighs 13 tons. Provision for 33 MRIKs has been made.

**ASLAV-C** The command variant will be converted to its role by a non-permanent kit. It will have radio masts, map boards, radios and appropriate seating. This vehicle has a crew of 5 and is in service with the Canadian Army. The vehicle is based on the Bison. Provision of 9 MRIKs has been made.

**ASLAV-S** This will be a unique Australian variant based on the BISON. A RASIT radar sensor head on a retractable mast will be the main external difference. The vehicle will have a crew of four. The vehicle is based on the Bison and provision for 10 MRIKs has been made.

**ASLAV-A** This ambulance version, based on the Bison, will be a non-permanent installation kit. The vehicle crew of three will be able to carry up to six patients, provision for 2 MRIKs has been made.

**ASLAV-F** This will be a RAEME operated vehicle based on either the Bison or LAV-25 and will either carry a crane (fitters) or winch (recovery). The vehicle will

be strengthened for its role. A total of 10 MRIKs will be purchased. The ASLAV-R based on the LAV-25 is in service with the USMC and the fitters variant based on the Bison hull is in service with the Canadian Army. A final decision on which type or types to be acquired, has yet to be made.

#### TECHNOLOGICAL DEVELOPMENTS

The Australian Army is to take advantage of the latest developments available to the LAV family of vehicles as well as some specific improvements unique to operations in the north of Australia.

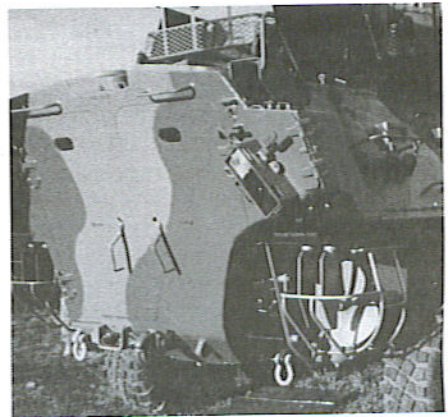
All eight wheels of the Piranha LAV have a run flat tire insert system which will enable the vehicle to remain mobile even with all eight wheels are punctured. Each vehicle will have a repair kit which will enable the crew to repair tires themselves as part of crew vehicle maintenance. Each five vehicle troop, will carry eight spare wheel assemblies.

Michelin has produced a new tire to address the problem of stake penetration of the tires. The standard LAV tire is called the XL and the new tire is the XML. The XL tire is narrower and has a uni-directional tire pattern. This means that there are right and left tire patterns. The efficiency of the tread pattern is reduced when a left tire is fitted to the right side of the vehicle. The new XML tire is wider with an omnidirectional aggressive tread pattern which extends up the side wall making the tire more resistant to stake penetration. The XML tire is being evaluated by the US, Canadian and Australian armies. The physical difference between XL and XML tires is 280mm versus a 326mm wheel assembly width and 166mm versus 228mm rim for XL and XML respectively.

The LAV will have a climate control system to combat the 55°C temperatures encountered in northern Australia. This technology exists and will also be installed in Saudi Arabian LAVs currently being produced.

Protection for the crew will be enhanced by the addition of ceramic tile applique armor. The add on armor will increase protection against small arms and armor piercing ammunition. This type of

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Above: - Rear and right side of ASLAV Points to note include: metal rod cage around propeller and rudders, large civilian type turn signals/stop lights, XML tires, infantry telephone above RHS propeller. Also the continuous tie down rod running along the top and bottom edges of the hull. Also turret stowage. Photo: Shane Lovell, May 1995.



Above: - Left front of ASLAV This shows the new light arrangement noting that the light guards are bolted to the chassis and not welded directly to it. Behind the left light cluster is the external drivers instrument panel and the front round turn signals. Note the new Bushmaster barrel with cooling ribs and the round muzzle brake. Photo: Shane Lovell, May 1995.

additional armor is currently in service with the USMC. The purchase of this armor will be deferred until operationally required.

#### CAMOUFLAGE

The Australian LAV family of vehicles will be painted in a camouflage pattern developed by the Defense Science and Technology Organization. The pattern detailed below is based on three colors for the LAV-25:

Camouflage Green - identical to Olive Drab Lusterless  
Camouflage Brown - US Federal Standard 595a color- FS30219  
Black - US Federal Standard 595a color- FS37038

...continued on page 12



## DAF YP-408 Up-date\*

by J.w.l. Heesakkers

### HISTORY

In the 1950's the Royal Dutch Army's search for a new armored personnel carrier, lead to the Van Doorne Automobielen Fabriek N.V. (DAF). DAF had already built an armored car before World War Two (the Pantrado 3, better known under the army designation M-39\*\*) and was at that time building a range of military trucks for the Dutch armed forces.

In 1956 technicians of DAF and the army's technical branch started to develop the new personnel carrier. At the time it wasn't clear if it should be wheeled or tracked, however the new design had to incorporate as many components as possible of the DAF YA-328 6x6 truck/artillery tractor then in production.

After some consideration it was decided to build a wheeled APC. The prototype was an 8x6 configuration, powered by a Hercules JXLD, 131hp gasoline engine, and based on the YA-328 chassis. After some years of experimenting and testing, the biggest change was the use of a DAF built diesel engine to replace the original Hercules power plant.

In 1961 an order for 250 vehicles was given to DAF, however the armor on the first production vehicles showed signs of cracking. It was then decided to use armor plates produced by AMX (the

French firm having already delivered acceptable vehicles of the AMX-13 series to the Dutch Army). This change in armor source delayed production and delivery of the vehicle, and it was not until July, 31 1964 that the first operational YP-408 was handed over to the 11th Battalion "Garde Grenadiers". During 1964 a second order of 349 vehicles was placed, followed by a third and final order of 151 vehicles in 1965.

The production vehicle was slightly bigger and heavier than the prototype, but still used the 8x6 configuration with the second axle being non-driven, although both the first and second axles were steerable. The engine was a DAF DS-575 diesel producing 165hp, while the welded armored superstructure was a minimum 8 mm and maximum of 15 mm thick; resisting up to 12.7 mm projectiles.

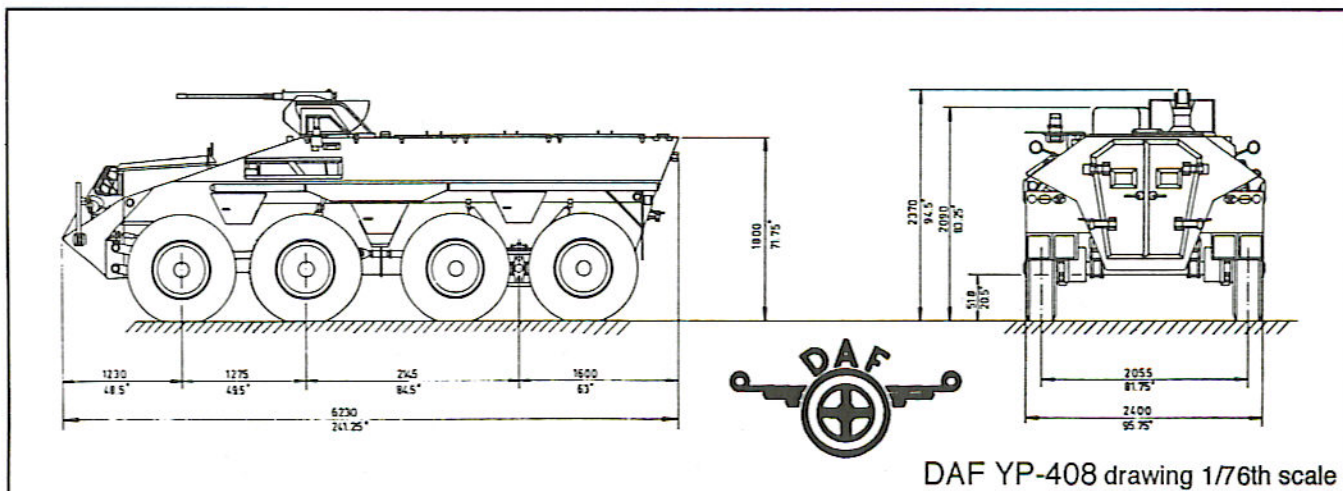
### DESCRIPTION

The YP-408 itself was of a conventional design, with the engine placed in the front, and the driver behind the firewall and to the left, and at the right the commander/gunner. The crew compartment in the back had space for 10 fully equipped soldiers.

In the roof there was a square driver's hatch with a periscope capable of 360° rotation. The commander/gunner had a round hatch, split in two pieces. When opened the hatch gave some protection when operating the machine gun under enemy fire. The infantry compartment had three square hatches left and three right in the roof.

In the back of the hull were two large doors opening to the left and right. Both doors gave some protection to the infantry section when leaving or entering under

Below: YP-408 PWI-S (GR) in UNIFIL markings. Photo: Hans Heesakkers.





Above right: YP-408 PWI (GR) of a mechanized infantry company.  
Above left: YP-408 PWGWT ambulance. Vision/firing ports are visible in the twin rear doors. Left: YP-328 6x6 cargo truck that was the basis of the YP-408 chassis. All photos: Hans Heesakkers.

2. PWI-S(PC) platoon command apc
3. PWCO command car (179)
4. PWGWT ambulance (28)
5. PWV cargo (28)
6. PWMT 120 mm mortar (86)
7. PWAT rebuilt apc carrying : anti tank missile TOW (55 approx.)
8. PW RDR rebuilt apc carrying : ground radar (29 approx.)

#### Tabulated data

Dimensions: LxWxH:  
6.23x2.40x1.83m  
Weight: 9500 Kg. empty - 12000 Kg. loaded  
Range on road: 500 Km.  
Max speed road: 82 Km/hr  
-country: 35 km/hr.  
Vertical obstacle: .7m  
Maximum gradient: 60%  
Fording: 1.2m  
Turning radius: 9m.  
Trench width: 1.2m.  
Diagonal: 2.9m.

\*- see AC #2 Nov 1990, "DAF YP-408 Nederlandse troepencarrier".

\*\* - see AC #15 Jan 1993, "The Dutch Pantserwagen M39 Armored Car".

## Museum Ordnance

*Museum Ordnance* is the publication of the US Army Ordnance Museum and the Ordnance Museum Foundation, Inc. Published six times per year, this 32 page magazine is loaded with historical articles on armor and artillery — past, present, and future. Fifty+ photos in every issue.

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for its configuration, high road speed and relatively good cross-country performance. For the time, it was an excellent APC and it is unbelievable that there were no sales to foreign countries. Strangely, it took many years before countries like France, Germany, Spain and many others were convinced of the use of wheeled APC's, and started to develop their own vehicles.

#### SERVICE

The Dutch Army used the YP-408 in operational service for almost 30 years and the last vehicles were released from service in 1990. Some cars were sent to Portugal as military aid where they now serve the Portuguese Army. YP-408s were also used with the Dutch Army in Suriname, and in 1975 when Suriname became independent they were handed over to the S.K.M. (Armed Forces of Suriname, also the Dutch contingent of UNIFIL U.N. Interim Force In Lebanon) used the YP-408 during 1979-1983.

The Dutch Army used the YP-408 in eight versions:

1. PWI-S(GR) standard apc 429 (includes both PWI-S versions)

fire. Each door also had a small opening to fire through.

When driving under fire the vision was supplied by two fixed periscopes in the front and one each at the left and right side of the vehicle, the driver also had a periscope capable of 360° rotation. This periscope could be replaced by an infrared night driving kit. While the YP-408 had five reserve periscopes as standard aboard the vehicle, the infrared kit was not standard issue.

The Command vehicle and Infantry Platoon Command vehicle both had a 360° turn able telescope placed at the right end of the roof. Armament consisted of a FN MAG 7.62mm or a Browning HB 12.7mm machine gun placed on a 360° turn able m.g. mount.

On the front of the hull the YP-408 carried six smoke grenade launchers, three each above the left and right headlights. The tires were of a run-flat type which allowed the vehicle to keep up a speed of 50 km/hr, on roads when being hit. If necessary the tires of the second axle could be used to replace other tires to keep the vehicle operational.

At the time of its introduction, the international military press gave the YP-408 good marks

## WORLD WHEELED FIGHTING VEHICLE NOTES



**HMMWV.** AM General, South Bend, Indiana, has been awarded an incremental delivery order as part of an estimated \$524 million fixed price contract for high mobility, multi-purpose, wheeled vehicle (HMMWV), models M1025A2, M1035A2, M1043A2, M1045A2, M1097A2, expanded capacity vehicle chassis, and ECX XM1113; and various equipment kits. Total maximum estimated quantity of vehicles is 8,799. Work will be performed in South Bend, Indiana, and is expected to be completed by November 30, 2000. DoD December 1995.

**LAV-25 TRAINER FOR SAUDI ARABIA.** Lockheed Martin Corp., Orlando, Florida has been awarded a \$15 million modification contract for 12 advanced gunnery training systems for the Light Armored Vehicle (LAV-25) for the Kingdom of Saudi Arabia. DoD August 1995.

**CHINESE VEHICLES FOR HUNGARY.** Hungary's border guard has asked for 100 armored carriers (type not specified) from China in exchange for China's state debt to Hungary. The vehicles would be assigned to the nineteen border patrol companies.

**HMMWVs TO THAILAND.** DoD announced it had authorized the sale of 646 HMMWVs to Thailand for a cost of \$50 million dollars plus. Defense Daily, March 1995.

**UP-GUNNED LAVS.** Saudi Arabia has ordered 130 90mm Turret Weapon Systems to compliment their recent LAV orders. It isn't clear if these turrets are for new vehicles or as a retrofit to existing chassis. Defense Daily, March 1995.

**ALGERIA TO BUY AKREP.** Algeria has ordered 700 Turkish built Otakar AKREP (Scorpion) 4x4 armored cars. Based on the Land Rover Defender 90/110 chassis, the all-welded steel hull provides protection against up-to 7.62mm ball ammunition and shell fragments. May 1995.



Restored Humber Mk III LRC photographed by Peter Brown in 1992.

*Wyvern, continued from page 6*  
in shining armor, glittering, but unlabeled, no one knew friend from foe. Rubbing their visors in perplexity, the knights stomped off, to do battle another day. Recognition, on the battlefield, not only of the foe, but of one's friends, is essential. The knights quickly learned that if their soldiers were to rally round when needed, they had to be recognized quickly. Thus, the shield, painted with its emblem of recognition, the similarly-embellished cloth coat-of-arms, over the armor itself, became the fashionable, even essential, accouterment of any self-respecting knight of old and with him, his standard-bearer showing that same mark of recognition. Thus was born the art and science of armory, or heraldry, developing into the appointment, or position, of heralds, and the science of describing coats of arms, called blazoning.

The urge for recognition is as strong to-day. The personalized number-plate on one's automobile. The customized car. So with armies and armor. Major-General Hubert Essame has written:

"The choice of a divisional sign...if possible...should call to mind the region from which the division comes and the spirit which has animated its past triumphs in war. The choice of the Wyvern in 1935 as the sign of the 43rd (Wessex) Division must therefore be considered particularly fortunate and appropriate". Of this fabulous creature the General continued:

"In both Eastern and Northern mythologies the dragon is the bringer of death and the serpent of guile. When the West Saxons landed in the West Country in the

fifth century (AD), they bore dragons painted on their shields and carved on the heads of their long ships. Sometime in the Dark Ages, realizing that in the grim business of war the will to destroy must be combined with cunning, they blended the snake with the dragon and the Wyvern was born. Thus the winged dragon, with two feet like those of an eagle and a serpentine barbed tail, became the emblem of the Wessex\* Kings". That sign, the Wyvern, was borne upon the battle-dress sleeves of the troops and upon the vehicles of the 43rd (Wessex) Infantry Division when it went to war in Normandy on 24 June 1944.

\*(The kingdom of Wessex, an area once containing almost all the southernmost third of England, no longer exists geographically. It is commemorated in the dramatic but somber novels of Thomas Hardy. Fragments of it remain, in the counties named Sussex (the south Saxons), Essex (the east Saxons) and Middlesex, the latter now being almost wholly absorbed by the sprawling Greater London area).

### Sources and references:

The late Major-General H Essame CBE, DSO, MC, commanded 214 Infantry Brigade of the 43rd Wessex Infantry Division, 1944-45; a distinguished military historian. Wrote (*inter alia*) "The 43rd Wessex Division at War 1944-1945", 1952, (pub. Wm. Clowes & Sons).

Brigadier Francis Henn, CBE., served with 43rd Recce Regt through the entire campaign, followed by many active assignments, terminating as Chief of Staff to the United Nations Force in Cyprus, 1972-74. Brigadier Henn is a highly-respected and consulted authority on the deployment of United Nations peace-keeping activities and resources. The narratives are taken from his account of the 43rd Recce Regt's exploits, now in course of serial publication in "The Sphinx and Dragon", the Regimental Journal of the newly-amalgamated Royal Gloucestershire, Berkshire and Wiltshire Regiment. (This amalgamation, like others affecting the British Army lately, stems from the perceived reduction in international tension after the easing of the so-called "cold war").

Trooper A Dracup, a personal narrative. (Alan Dracup incidentally, is Organizing Secretary of the Dracup International Club; President, J F Dracup, Arizona, USA).

"Armoured Cars, 1900 - 1963", published by the Royal Armoured Corps Tank Museum, 1964. Address: The Tank Museum, Royal Armoured Corps Center, Bovington Camp, WAREHAM, Dorset BH20 6JG, England.

The colors are applied in almost equal proportions over the sides and top of the hull and turret. It should be noted that the wheel hubs are all green. The "wheel wells" are predominantly painted in camouflage brown. The aim here is to reduce the effect of dark shadows by using a lighter colored paint. The camouflage green paint has been renamed from Olive Drab lusterless because it has different gloss and infrared reflecting capabilities.

### MINOR DETAIL CHANGES

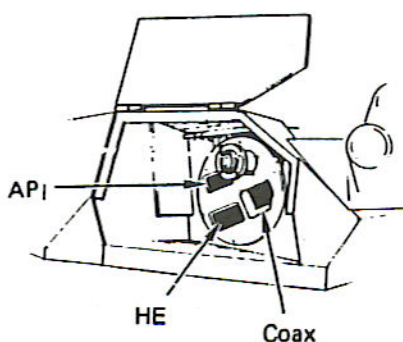
A range of minor changes that have been identified by observation:

- The exhaust muffler system on the right hand side of the basic LAV will be replaced with a shorter BISON version
- Bison main lights
- Side mounted traffic indicators at front
- There will be a protective guard around the rear rudders/propellers.
- Civil type turn signals will be added to the rear
- Additional turret storage on both sides
- Continuous tie down strips along top and bottom of hull sides;
- XML tires
- External driver's instrument panel (as per Bison)
- Different aerial mounting positions
- Turret machine gun mounts for commander/gunner
- 25mm Bushmaster gun has cooling ribs along barrel
- 25mm gun has round perforated flash eliminator
- Large circular ventilator at rear under turret overhang
- Infantry telephone on right rear corner
- AMU (Aerial mounting unit) on rear telephone box with barrel deflector.

Australian military personnel have stated that there are some 60 differences between the USMC LAV-25 and the ASLAV version.

### KIT BITS

Both the two LAV-25s on the market at present fall short on turret detail. In particular the ejection ports on the front right hand side of the turret. This has a flap which



LAV-25 turret drawing Delco

covers a recessed area where there are four ejection holes. These holes are for (i) 25mm brass cases, (ii) coaxial machine gun brass cases, (iii) coaxial machine gun metal belt links and (iv) exhaust gases. I've included a sketch of the area in question from Delco turret promotional material. This applies to all LAV-25s, not only the Australian versions.

### AS A FINAL COMMENT

I believe that the military of all countries have a dedicated conspiracy against modelers and model makers. They don't seem to be able to buy a piece of equipment from anywhere, without making it different, from all other vehicles of the same type.

## LETTERS

**HELP ON THE WHITE T-7/M1 SCOUT CAR.** I have found the "remains" of a T-7 scout car, a "basket case". I am in need of any photos, data, information or parts for the T-7 or 12X4 (four wheel drive truck). I particularly need any photos showing the interior layout of the vehicle. Any photos that show the hood registration number will also help as I'm trying to ascertain how many were produced, so any information on production or deployment would help. Richard Basore, PO Box 21, Bently KS 67016.

**ANSALDO AB40 INFO.** I'm looking for information on the Ansaldo AB40 Italian armored car, if anyone can help I'd be very grateful. Brown Wright, 121 Red Oak Rd., Asheville NC 28804.

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