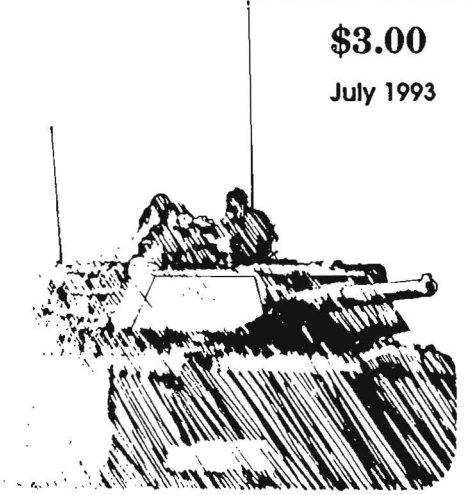
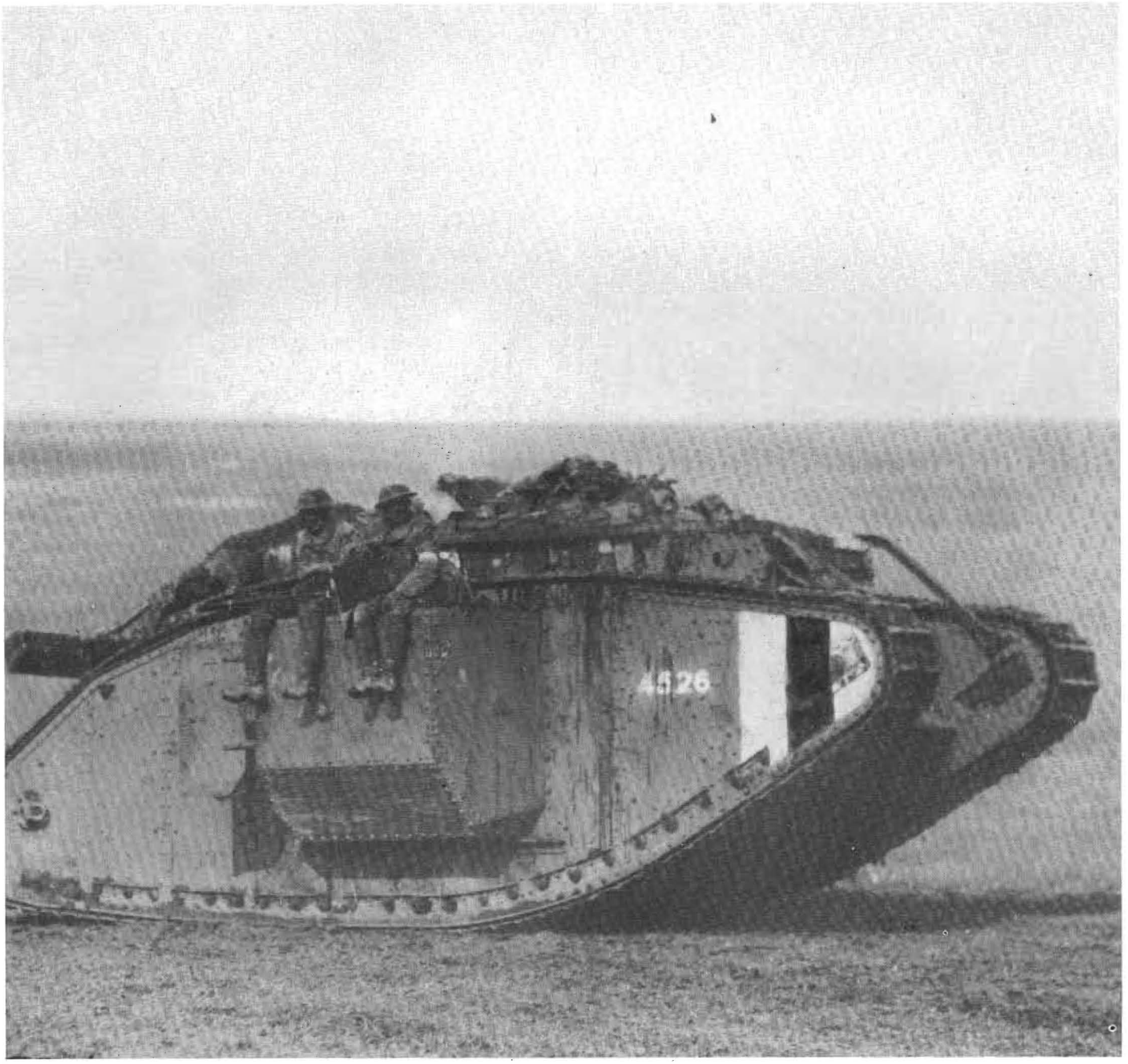
$3.00
July 1993

Museum Ordnance



The Magazine for the U.S. Army Ordnance Museum

Promoting the preservation and collection of information and artifacts of military ordnance from around the world.



3 #4

Dr. 'Jack' Atwater

The Curator's Column

There has been significant progress on the Foundation Front over the past several weeks, rather than steal the Foundation's thunder, I will leave it up to that organization to formally thank several people that richly deserve it. I do however, want to single out Dick Daren and the Vehicle Preservationists for their very generous gift to the Museum/Foundation. And I want to extend special thanks to Bob Clifton RA and Mike Siggins RA, along with Baseline Hobbies of Mineola, NY, Ace Hobbies of New York, NY, and Evergreen Scale Models of Kirkland, WA for their efforts and material contributed to the execution of the Proposed Teaching Theater and Museum Addition Model that now sits in our lobby. This model is 1/72 scale, with which commercially available scale models, we can "play" with placing the vehicles and other artifacts in the building. It will also allow us to make a video recording of a "tour" of the building before it is built.

There have been other significant achievements the museum has accomplished within the past several weeks. Unfortunately, our biggest achievement cannot be seen by the majority of our visitors because it is located in the Officer's Club. A member of my staff made 30 unit crests in full color on our Gerber graphics computer. Additionally, we designed 8 boxes that depict the wars of America. All of this effort went into the decoration of the Regimental Room and has received rave reviews so far. Lieutenant General Leon Solomon, Major General John Coburn and Major General Johnnie Wilson, along with several other assorted Major Generals and Brigadiers.

(Continued on Page 19)

Museum Ordnance

Features

Departments

Museum Ordnance
Volume 3, Number 4
July 1993

Jeffrey D. McKaughan
Editor

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Mk IV

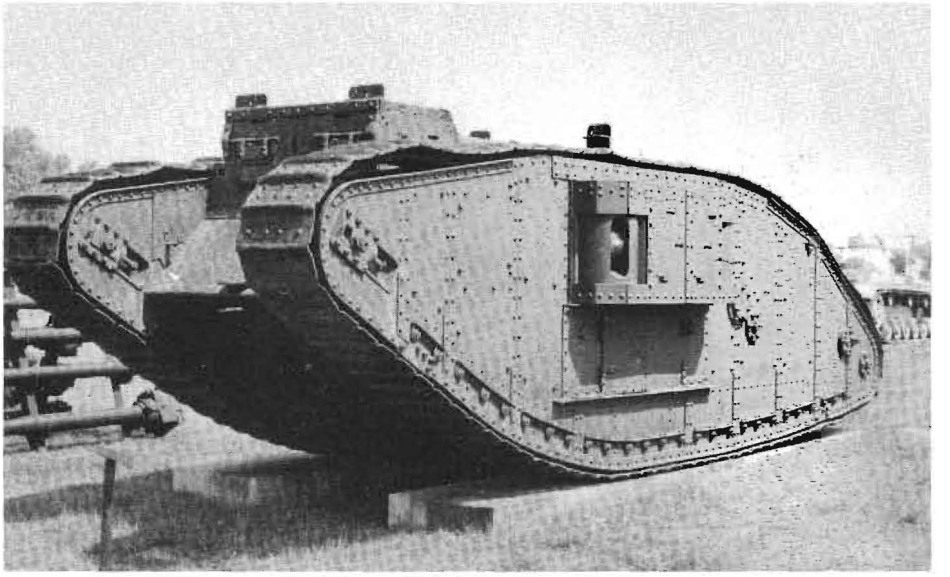
A Photo Essay

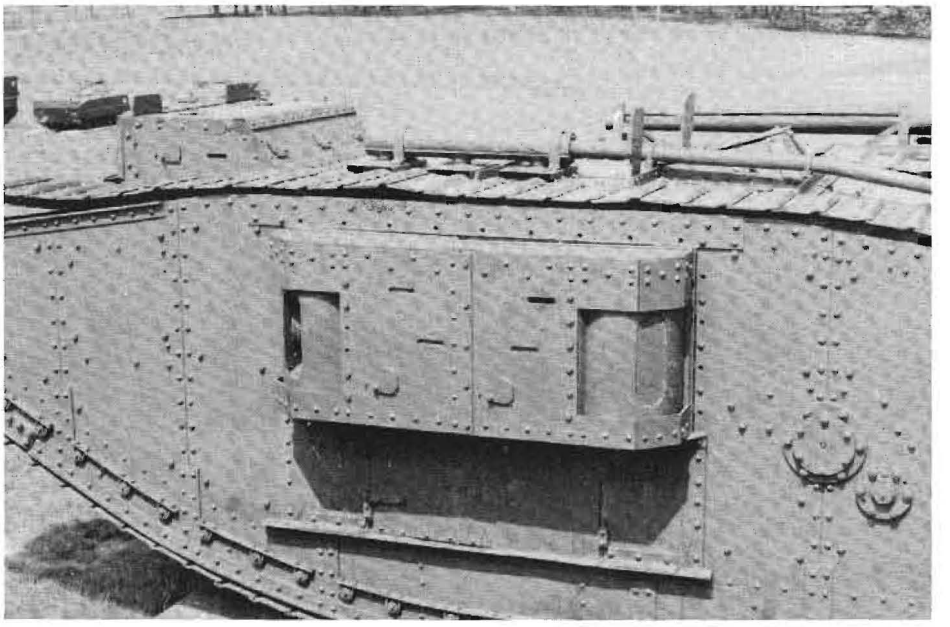
The British Mk. IV, an improved version of earlier variants, went into combat for the first time at the Battle of Messines Ridge, in France on June 7, 1917. The U.S. Army Ordnance Museum has one of only three remaining examples left in the world (the British and Australians have the others).

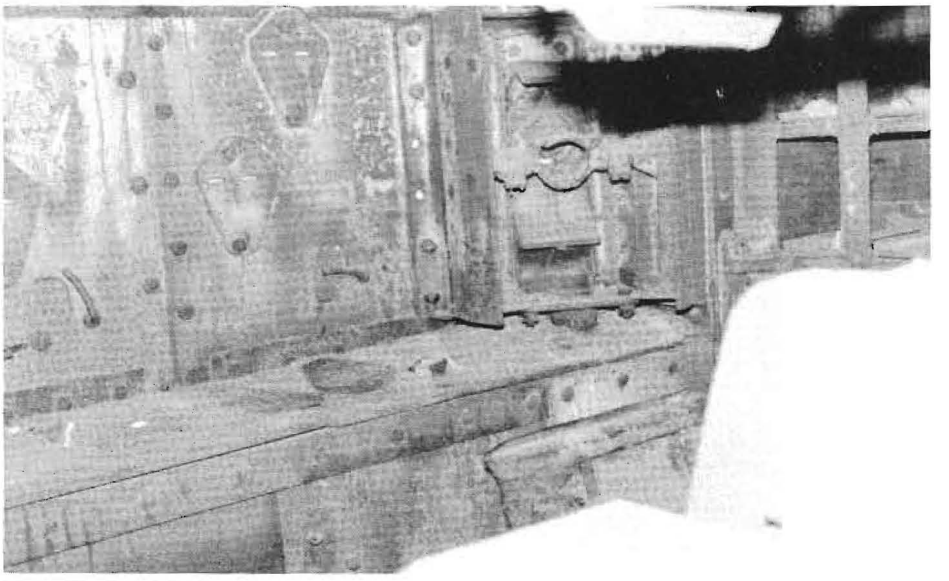
As with others within its type, the Mk. IV came in two versions; a male and female. The male was armed with two Hotchkiss short 6 pdr., 23 cal. QF guns mounted in the forward cradles of the side sponsons. They were also armed with four Lewis .303 in. machine guns, one mounted in the rear cradles of the sponsons, one in the forward position and one spare.

The Female was similarly armed with the exception that the 6 pdrs. were replaced with machine guns. Proving unsuitable, the Lewis guns were later replaced by Hotchkiss makes.

The Metropolitan Carriage Wagon and Finance Company and Williams Foster and Company, Ltd. produced 420 male and 595 female tanks before ceasing production.







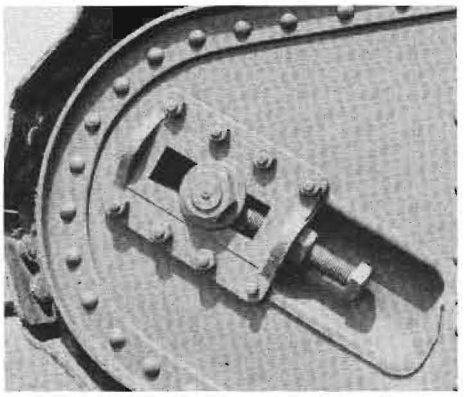
ON THE COVER: *A Mk IV supply carrier tank, believed to be used to supply the U.S. 301st Tank battalion. This photo shows two American photographers being given a lift to the battlefield between Villerot and Bellicourt, September, 1918.*

RIGHT, TOP: *When you see the Ordnance Museum's Mk IV you are looking at one of the last three in the world. The unditching rails are missing from this example.*

RIGHT, MIDDLE: *The sponsons on the Mk IV were modified from earlier models to swing inward so that for rail movement they would not have to be removed. The sponsons on the female tank were also smaller than those on the male. There were a few examples of female tanks that had the right sponson of the male tank fitted.*

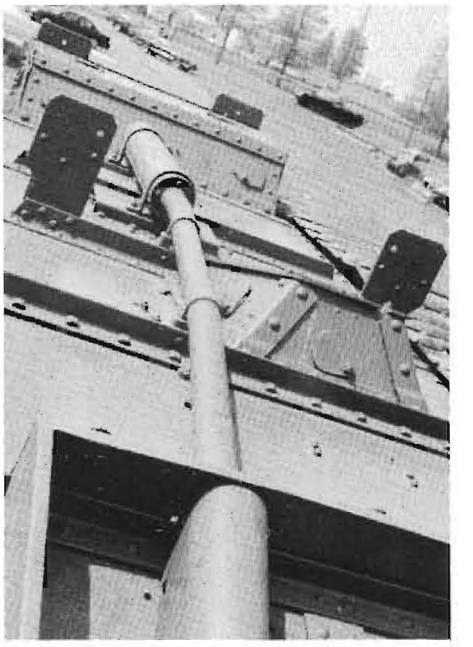
RIGHT: *View of the inside of the left sponson looking at the forward machine gun mount. Vision slit covers and the racks for ammunition cans can be clearly seen.*

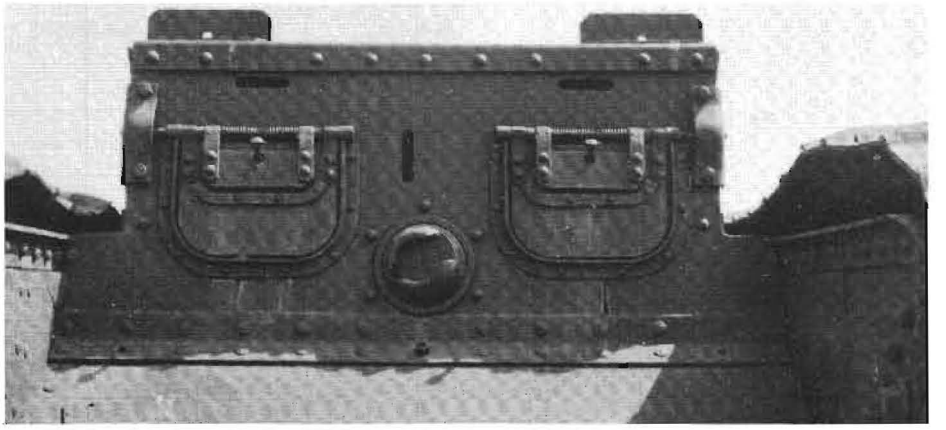
By Jeff McKaughan



LEFT: *The outside adjuster on the left forward horn. One nut is missing from the holding plate. The track width was 20.5 in., and pitch was 7.5 in. Special wider tracks could be fitted for better soft ground performance with a width of 26.5 in.*

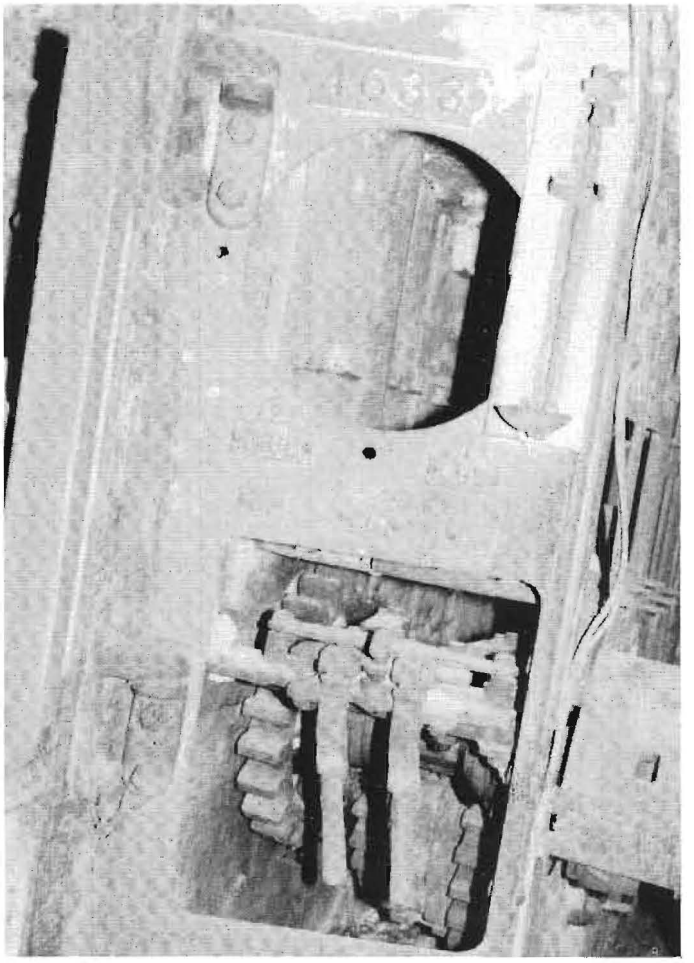
RIGHT: *The exhaust system was improved with this mark. The muffler (silencer) was added for the first time. The engine pulled air from the tank enterior and forced it out through the pipe to the tank's rear. The manhole turret is visible in the right center of the photo.*



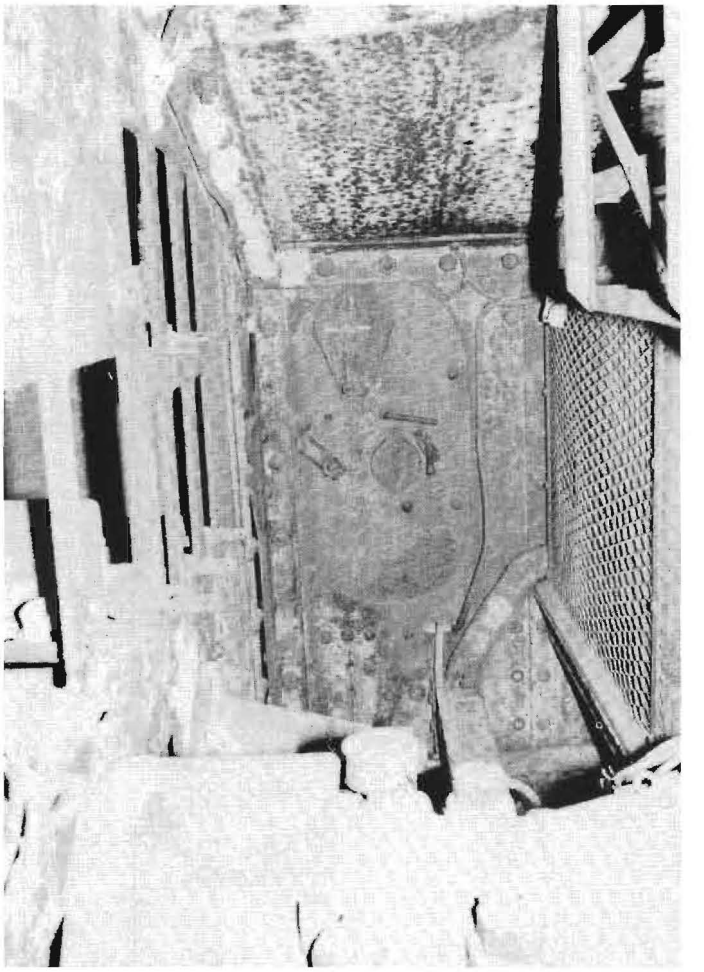


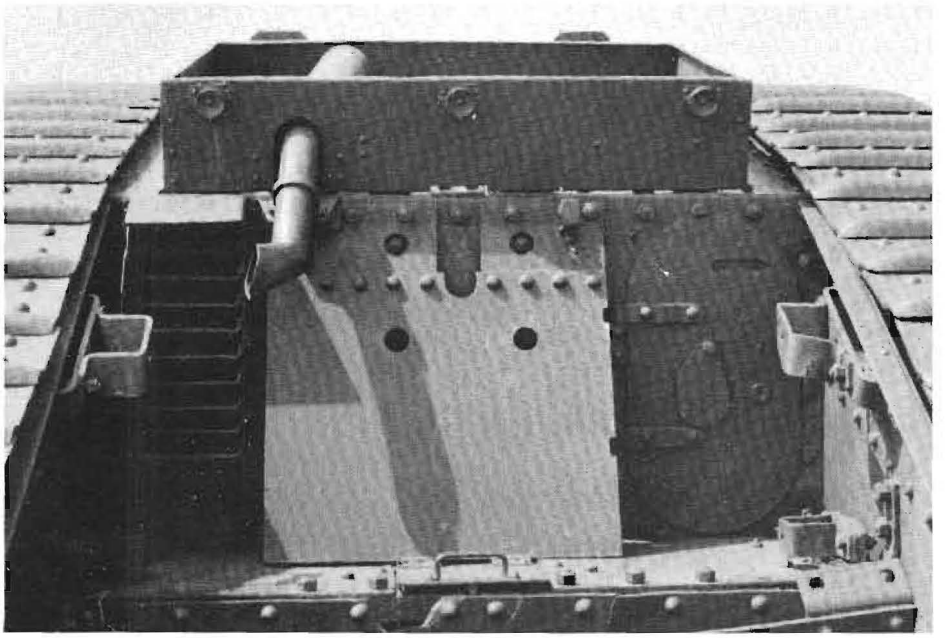
LEFT: *Head-on view of the front "command turret." The driver sat on the left in this photo with the commander on the right. The commander also acted as the machine gunner and brakeman.*

BELOW: *Looking back at the door in the rear hull plate. The tubular radiator can be seen to the right. The transmission arm is at the extreme bottom.*

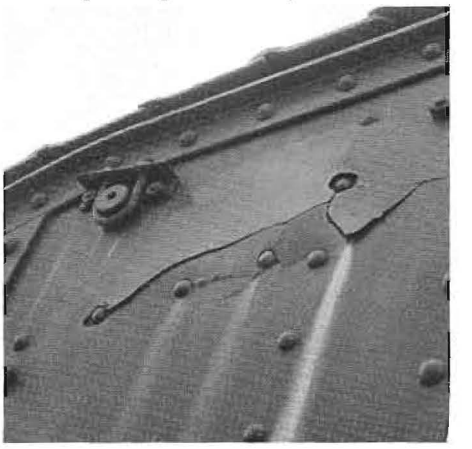


Gear selector controls, which are duplicated on both sides of the tank. The Mk. IV had two "gearsmen," one for each track.



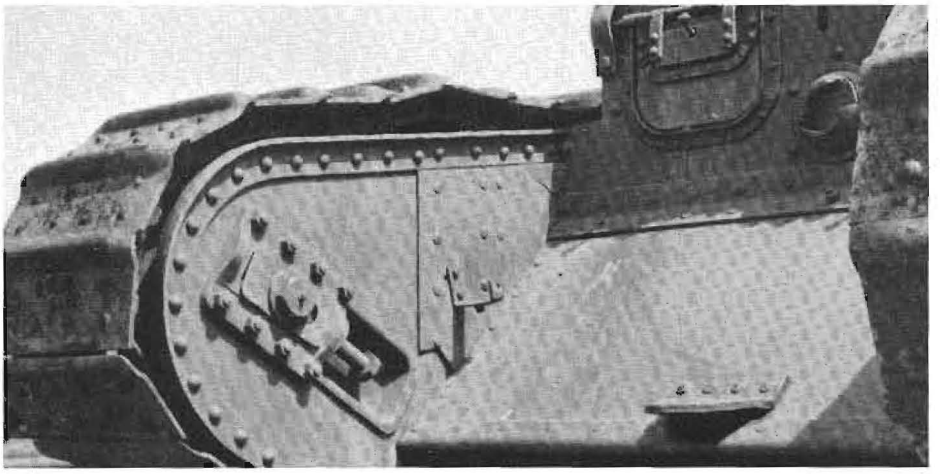


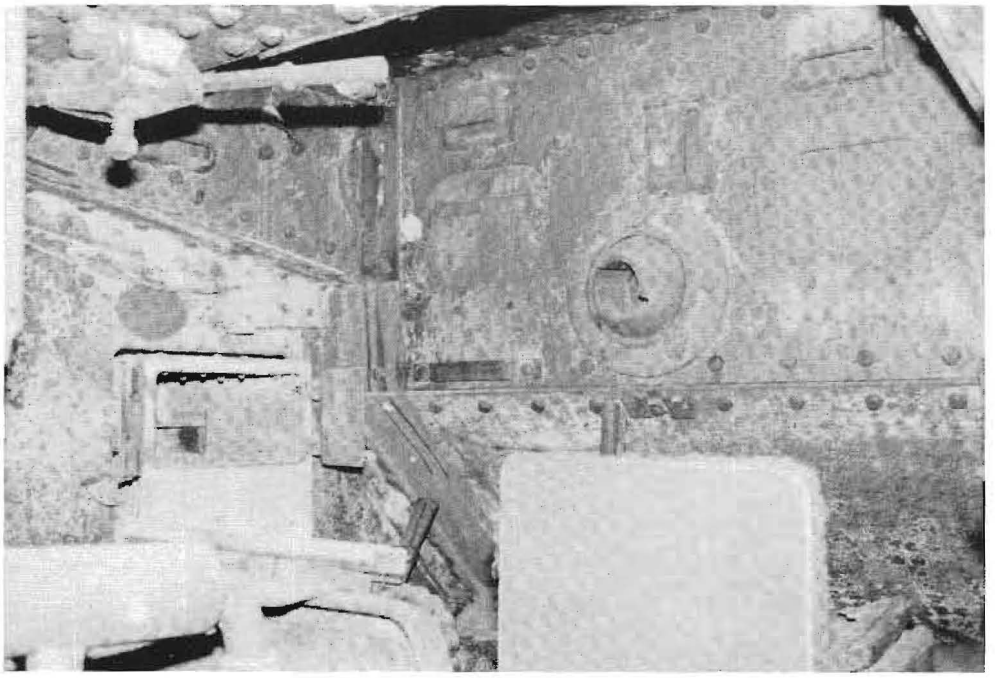
BELOW: *The Mk. IV is one of the artifacts that The Ordnance Museum Foundation uses in its presentations on the need to better protect and preserve the vehicles now stored outside. This stress crack is the result of internal rust that has eaten away at the hardened steel plate for 74+ years. Engineers have detemined that in its current condition any attempt to move the tank could seriously damage what is left.*



ABOVE: *The rear hull plate of the Mk. IV. The access door is on the right and the ventilation louver is on the left. The exhaust system tail pipe comes over the top of the vehicle. The box on the top was used for tow ropes and other tools needed for unditching. One of the more important features marking the Mk. IV variant was the fuel tank was moved to the outside rear deck and an Autovac fuel delivery system was installed. This gave the crew of eight a little more interior room, removed the sickening and dangerous fumes, as well as reducing the fire potential*

RIGHT: *Looking at the inside of the right forward horn. The inside adjuster is the same as found on the outside of the horn.*

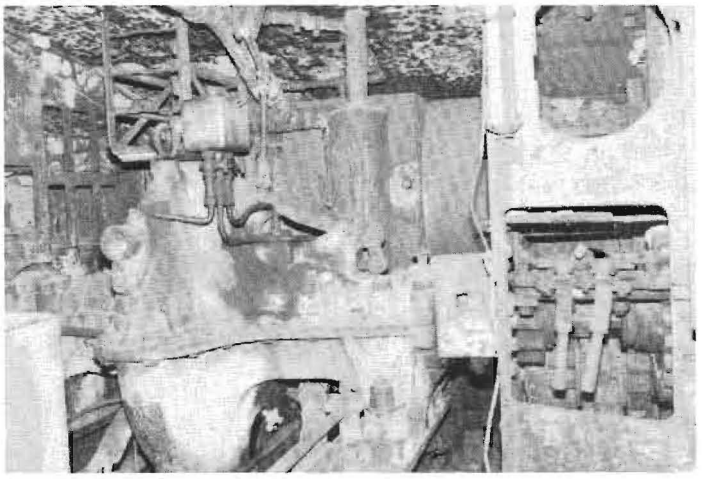


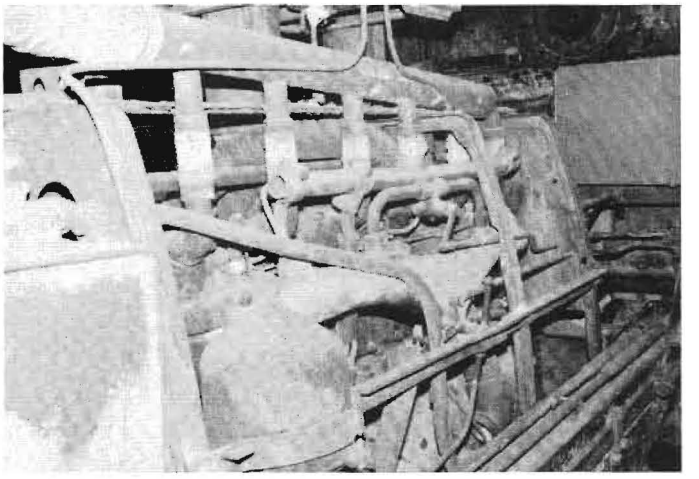


LEFT: *The vertical plate directly in front of the commander and driver. The ball mounting for the forwward machine gun is also visible.*

The inside rivet detail is obvious in this photo. The use of rivets and the gaps left in some of the plates led to molten lead from small arms fire frequently penetrating the tank's interior. Crews were assigned leather helmets and face guards to help reduce injuries.

It took four men to steer the Mk. IV. The driver, commander (operating the brakes) and two gearsmen. The driver could directly control the high speeds of the primary output box but had to signal the gearsmen to engage the high or low on the secondary boxes. Commands were by voice (difficult because of the high interior noise) or by hand signal. Reverse was also controlled by the driver from his position.





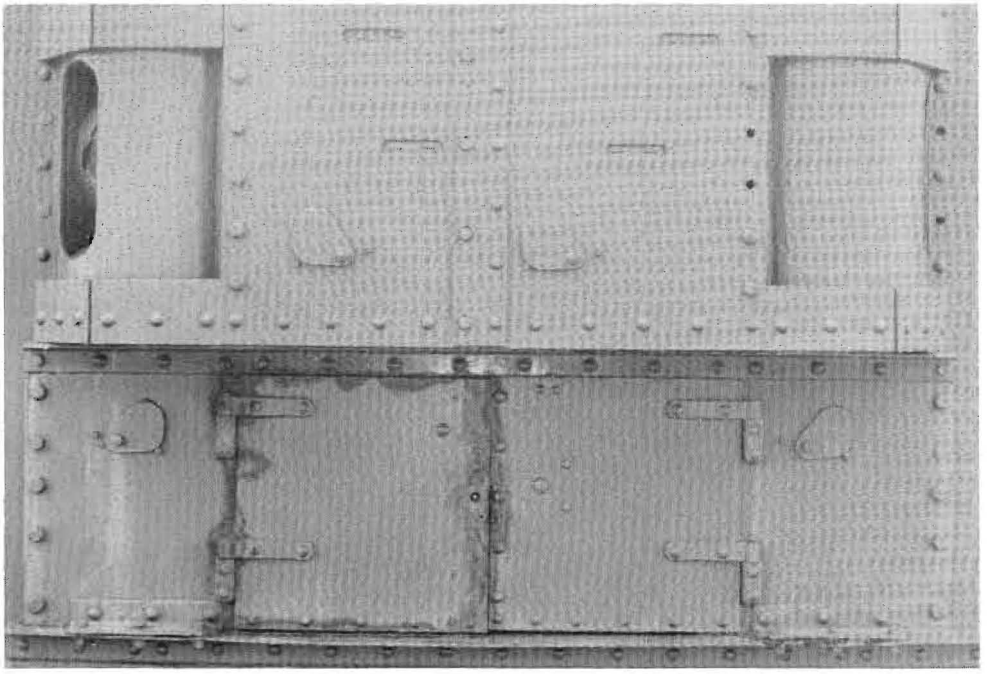
ABOVE: *The transmission was a two-speed worm drive. Power to the tracks was via a chain-drive.*

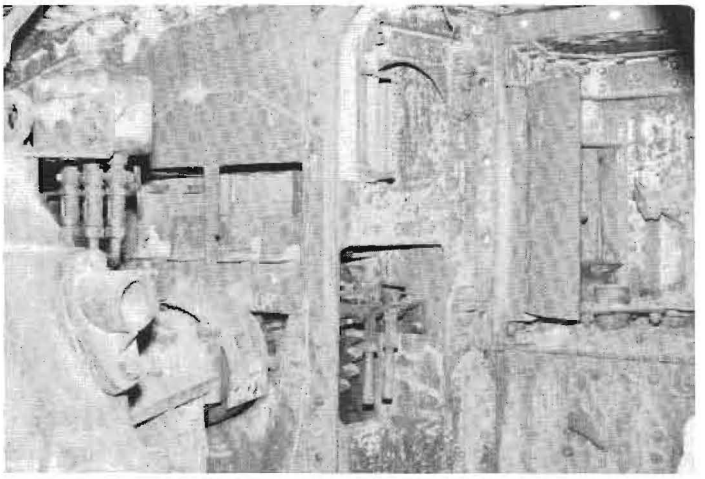
ABOVE, RIGHT: *The engine was a fairly standard Diamler 6 cylinder in-line 125 h.p. gas engine. It was water-cooled with the radiators at the very rear of the interior. Performance was increased by using double carborators.*

The Mk. IV had a combat range of about 15 miles and a fuel capacity of 75 gallons.

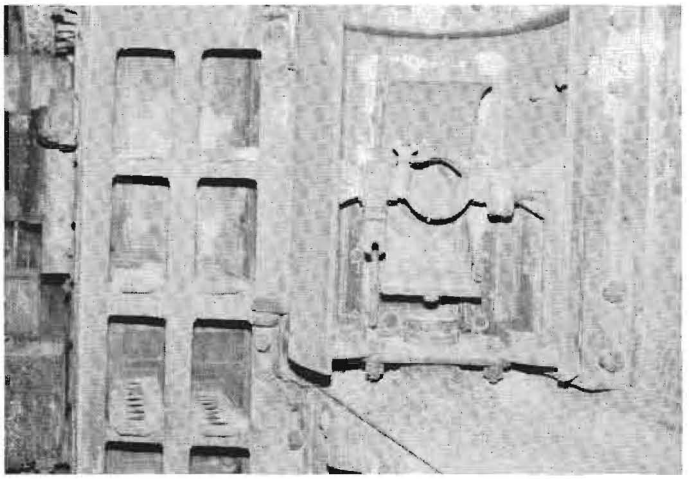
RIGHT: *Closeup of the outside of one of the sponsons. Both forward and rear position were identical. Just visible in the vision slits that are protected on the inside, are sets of four tiny holes in each. The holes are .125 in. in diameter are were to offer more protected vision than with the slit fully open.*

Access doors are located under each sponson and are hinged outward.





The inside of the Mk. IV was cramped and difficult to work in. This angle illustrates how close the gearsman and the gunner at the rear sponson position were to each other. The transmission is on the left of the photo.



The forward machine gun mount with the ammunition racks on the right. The machinegun could be removed from the mount by removing the wingnut on top of the circular fitting which could then be hinged up.

Museum Ordnance's Bookshelf Book Reviews

DIRTY WARS
Elite Forces vs. the Guerrillas

By Leroy Thompson
192 pp., photos (color, b&w), maps, index
Published by Brunel House
Devon, England
Distributed in U.S. by Sterling Publishing
New York
$27.50

Reviewed By Dr. John Turner

As one who has studied armed conflicts in what used to be called the "Third World" for the better part of two decades, I have long felt that war in this region has been overshadowed by military events elsewhere, especially those marking the Cold War superpower confrontation. Accordingly, I welcome any book that discusses the nature of warfare in conflicts throughout the developing world, that seek to tie together in a coherent narrative. Such conflicts involve the civilian population as the support base for the guerrillas, and require the counterinsurgency (COIN) forces to abandon traditional conventional techniques and substitute a new way of fighting—to win a war for the control of the population as the key to defeating an enemy that will not engage on the battlefield.

Leroy Thompson, a professional soldier and military author, provides us in Dirty Wars with a very readable and insightful overview of COIN warfare in the 20th century. Studying in detail the various low-intensity wars that have figured in the headlines since the end of World War II, the author gives us an overview of the conflict followed by a brief analysis of lessons learned. These in turn support an excellent closing chapter on counter-guerrilla strategy.

Although somewhat general in approach, the value of the book lies in its scope. Almost every major guerrilla conflict since World War II that has influenced COIN doctrine is discussed here. The wealth of material on modern insurgencies had doubtless led to some difficult choices of what and what not to include. The two most important omissions were first, the South African COIN war in Southwest Africa/Namibia (which in retrospect was perhaps the most successful anti-guerrilla war fought on the African continent), and second the guerrilla wars that marked the Congo Crisis 1960-1964. A future edition of the book would benefit from the inclusion of these two plus discussions of conflicts in the Horn of Africa, Chad, the Western Sahara, Sri Lanka, Myanmar, Cambodia, and the more recent fighting in former Yugoslavia and Soviet republics.

However, the omissions I note are more than offset by two factors. One is the overall high quality of analysis in the discussion. Making generalizations about guerrilla war is almost as hazardous in its own way as fighting such a conflict in the field is militarily. Mr. Thompson, is able to provide us with insightful commentary and generalize valuable "lessons learned" discussions from it. The other factor is the wealth of superb photographs found in the book. These pictures constitute an archive of sorts that helps document the history of COIN warfare in our century. With a picture on practically every page, the text is amply supported by this wealth of color and b&w photos that include shots of military operations, equipment and weapons, uniform and insignia, and much more.

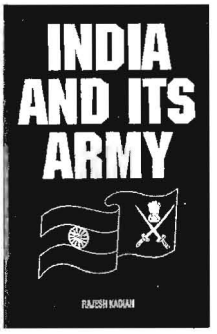
For those interested in the equipment and weapons of low-intensity conflict, I heartily recommend this publication and its high quality coverage of insurgent warfare by a professional observer.

INDIA'S SRI LANKA FIASCO
Peacekeepers at War

By Rajesh Kadian
184pp., photos(?), maps

INDIA AND ITS ARMY

By Rajesh Kadian
188 pp., photos (?), map
Published by Vision Books
U.S. distribution by Advent Books
New York, NY
1990



The subject matter of both of these books is very narrow. Narratives from this part of the world are not easy to come by and for that reason alone, these books are welcome additions to the library.

Sri Lanka, formerly Ceylon, is located off the southeastern tip of India and has long occupied the attention of its continental neighbor. Violence that was becoming a routine on the island was the justification that India used to send a "peacekeeping force" to assist a fight against rebel forces. This book gives perhaps the most detailed account that I have seen on not only the military engagements, ambushes, and firefights, but also of the negotiations and talks aimed at finding a solution. It appears that reasonable efforts were made to verify information and if that could not be done, at least both sides of an dispute were provided which allowed for balance. Overall a good account of India's longest war.

India and It's Army traces the course and history of the Army from the mid-1800s through the mid-1980s. The text details major events and discusses them both in the context of time and of the regional influences of the era. It also references the cultural and ethnic differences of the area and how that impacted the military.

Both books have an index and provide a bibliography. They were not difficult books to read, however, I did have some trouble keeping track of the names of different individuals only because of my unfamiliarity with the names and pronunciations.

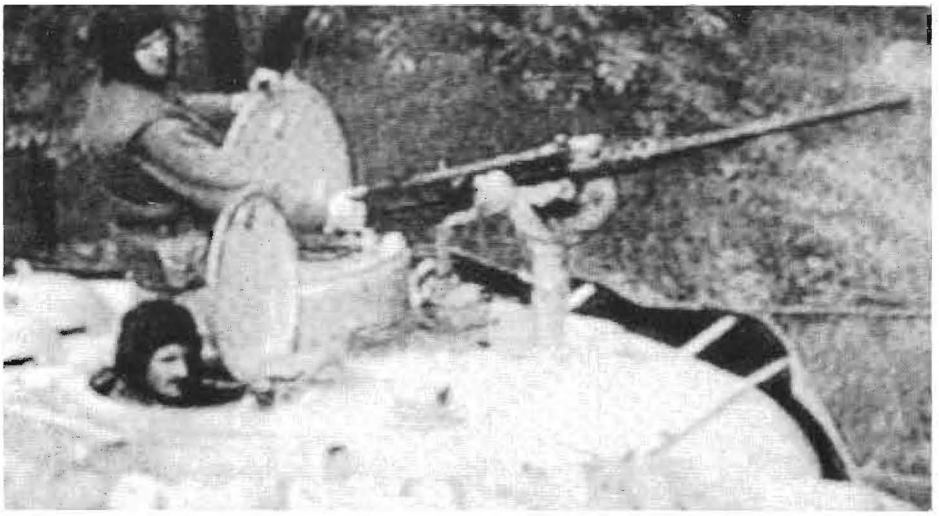
It was also curious that both books listed illustrations in the table of contents, but they were not included in my copies.

Relatively unusual subject matter that is well handled giving insight into both military and political interaction of the Indian Army.

Serbian T-34s Near Mostar

CNN's coverage of the conflict in Bosnia has been superb and has offered the historian and armor enthusiast glimpses of variations on older tanks.

In a report on the fighting near Mostar, two T-34s were seen with differing layouts of applique armor added to the hull and turret. The material appears to be thin and also veyy susceptible to tears. Both vehicles also had a .50 cal machine gun mounted to the turret top on a pintle mount. Looking at all of the video it is unclear if the T-34s have T-54/55 style roadwheels or not.



The Ordnance Museum Foundation

Executive Director's Corner

P.O. Box 688
Aberdeen Proving Ground, MD 21005

Fellow members, it's a pleasure to be able to give you this update about The Ordnance Museum Foundation, Inc., for the last two months. A lot of positive things have been happening.

First, and most important is an update to the meeting that we had with Congresswoman Helen D. Bentley. Her office has been hard at work contacting various offices and individuals within the Departments of Defense and Public Works. Once she realized the magnitude of the problems that the museum faces and the steady decay that these historic treasures are exposed to, she has championed our cause in a number of arenas. Please take a few minutes now and get the names and addresses of your senators and congressmen and women. We may be asking for letters of support in the near future.

Secondly, the model of the new extension to the museum has been completed and is on display in the museum lobby. The model is in 1/72 scale and contains more than fifty scale models of vehicles which we have on site. More information and photos can be found on page 11 of this issue. We would like to thank Mr. Bob Clifton and Mr. Michael Siggins for their hard work in building the model and for the excellent design.

Last time, I requested ideas from the membership about how to raise money for the museum. One of our Charter members has suggested that we offer copies (of only applicable sections to control price) of Technical Manuals to help modelers and collectors get the details right. We will be happy to do this for anyone who requests it. The prices will vary depending upon the number of pages that we need to copy. We estimate the cost to be $15 to $20 per T.M. Please make your request in writing to the Foundation address.

The Foundation is also now selling models by mail order. All of our prices will be 10% off list price, and we will charge extra for postage only. There will again be no paid employees to support this service so that all of the revenue (difference between wholesale and the sale price) will go towards the museum building fund. We understand that some mail order prices may be higher than you could find elsewhere, but you will have the satisfaction of knowing where the profit goes.

The Foundation has announced that December 31, 1993 will be the last day to become a Charter member of the Foundation. If you have not joined as of yet please consider doing so as a Charter Member. If you are a regular member please consider upgrading to a Charter membership before time runs out.

We are grateful for the letters and support and encouragement that we are continually receiving. Please tell your friends and associates about the effort that we are all a part of. If you have any questions or suggestion, please contact us.

Ron Lehman

New Charter Members

Armando Framarini
David Ambrosio
Randall Lofton
Ronald Crisman
David Patterson
david Kimbell
David Sampson
Richard Hudec
Randy Ray
David Hansen
Marc Mehler
Jonathan Puffenbarger

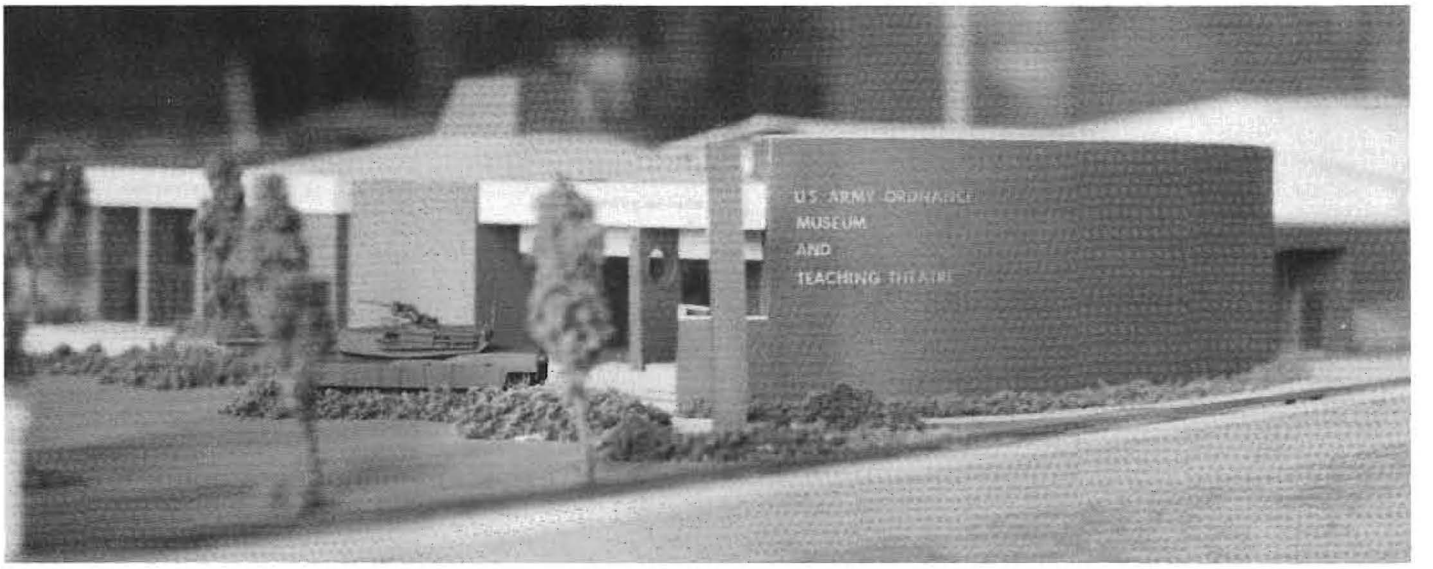
Military Vehicle Collectors Donate $1000

Every year at Armed Forces Day, the private collectors of military vehicles and equipment can be counted on to be there in full regalia. If you miss their displays and flea markets, you have missed a great and important part of Armed Forces Day.

This year the Potomac Military Vehicle Association (PMVA) showed that they not only collect military vehicles for their own personal use, but that they are concerned about preservation of the artifacts here at Aberbeen.

The PMVA is a combined effort of two organizations, the Blue & Gray Military Vehicle Trust and the Washington Area Collectors of Military Vehicles.

A donation of $1000.00 was made to the Foundation by the PMVA and we find it difficult to thank them enough. They recognize, not only as a hobby, the importance of preserving these artifacts and are willing to do their part.

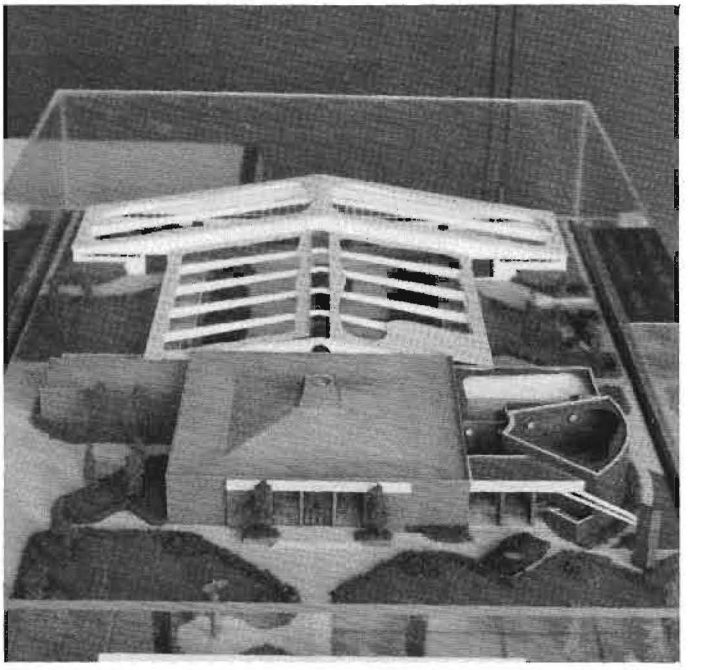


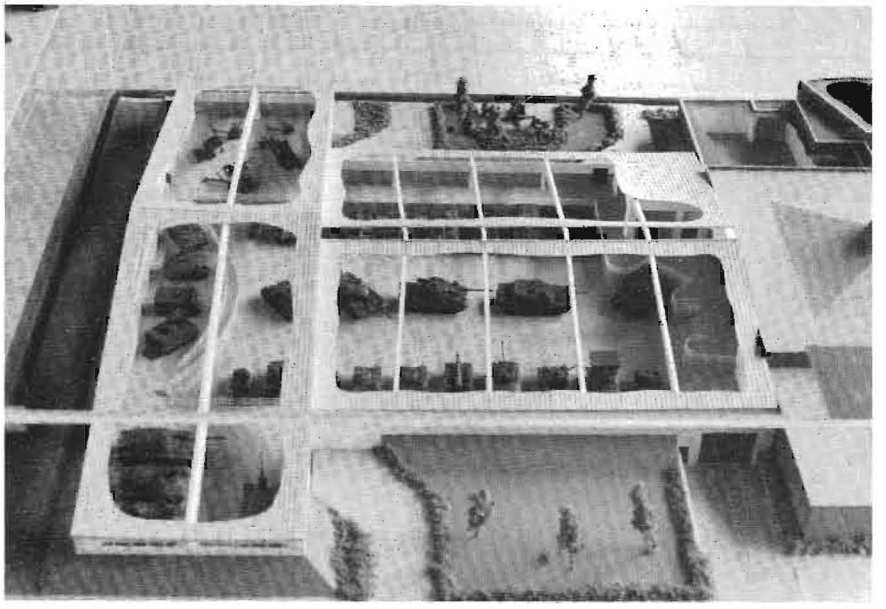
What the Future Could Be...

Regular readers of Museum Ordnance know the The Ordnance Museum Foundation, Inc., is a non-profit corporation that was established to solicit and raise funds for the construction of additional enclosed display space at the U.S. Army Ordnance Museum. To help members of the Foundation, readers of Museum Ordnance, and visitors to the museum visualize the scope of this undertaking, a scale model was constructed in 1/72 scale. A strange scale for an architect but one that allowed us to place models inside the building and show what we can do in the future.

The model is great looking and has excited a number of visitors already. It shows the enclosed display area, with its elevated walkways around the outside that will allow people to look down on many of the vehicles and get a perspective that few museums offer. It also shows the classroom and theater addition on the right as you look at the front of the building. The free-standing maintenance shop that is part of the proposed expansion was not included because of space limitations.

Stop by the museum and learn more about what you can do. You can start now by joining the Foundation!





THANKS FOR YOUR EFFORTS AND DONATIONS

The Ordnance Museum Foundation, Inc., and the U.S. Army Ordnance Museum wishes to thank ...

...Robert A. Clifton Architects, New York, NY
Robert A. Clifton, RA
Michael J. Siggins, RA

designers and builders of the model

...AND...

...Baseline Hobbies, Mineola, NY
...Ace Hobbies, NY, NY
...Evergreen Scale Models, Kirkland, WA

for donating the materials and models

C³I

Iraq recently returned another batch of heavy equipment that was taken from the Kuwaiti arsenal after the initial invasion.

So far the materiel includes an Improved HAWK missile system, 40 UK supplied tanks, 80 Ferret armored cars, 20 U.S. 155mm guns, 18 MkF3 155 self-propelled guns, 18 AMX VCI ammunition carriers, 18 120mm mortars, and 10 VCI command vehicles.

For those interested in Rhodesia, *Museum Ordnance* has found the Rhodesian Army Association good to deal with and they have an interesting publication. More focused on military matters that the Rhodesian Veterans Association, they have as their benefactor Peter Walls, former commander of Rhodesian military forces.

Membership is £5.00 airmail and £2.50 surface. Their publication, the Lion & Tusk is produced quarterly. Contact them at Rhodesian Army Association, Taungup, 25 Clarendon Park, Lymington, Hampshire SO41 8AX, England.

More southern Africa news, this time from Angola. The Angolan government claims that UNITA, the western-backed liberation army fighting against the government, is hiring white mercensaries from South Africa.

The claim follows the air evacuation of three South Africans wounded south of Huambo in Angola. Flown out to South Africa via Nambia and Zaire, the three deny they are mercenaries, just hired security guards.

The picture is clouded by the fact that the Angolan government-controlled oil company Sonangola itself has employed 100 white South Africans as a security force to protect key oil installations from UNITA attack. Reportedly these forces played a critical role in the recapture of Soyo from UNITA in March.

Although not related to the museum or military affairs, Darlington Productions (publisher of *Museum Ordnance*) has recently issued the first copy of a quarterly publication entitled Airline Model Builder.

As the name suggests the magazine covers building, detailing, finishing, and other news and tips about airliner and other civilian aircraft modeling.

Cost in the U.S. is $20.00 for four-issues. Foreign $24.00 surface, $28.00 airmail. U.S. funds only. A sample copy is $6.00 U.S., $7.00 foreign.

In the May, 1993 issue of *Armed Forces Journal* Maj. Gen. Edison Scholes, Deputy Commanding General, XVIII Airborne Corps wanted to clear up some "incorrect references" that had been made in a recent article by Marine Commandant General Carl Mundy, Jr.

In Mundy's article, which Scholes generally praised, he referred to the 82nd Airborne as a "light" division. The article dealt to a great degree with the initial deployment of U.S. troops to Saudi Arabia after the invasion of Kuwait by Iraq. Scholes objected to the associaion and wanted to offer his assessment of the situation and the strength of the 82nd.

Scholes offered an abbreviated chart of the 82nd's tank-killing ability compared to that of a "light" division.

System	82nd Div.	Light Div.
Ground TOW-2	180	44
AH-64 w/ Hellfire	18	0
AH-1 w/TOW-2	12	26
M-551 Sheridan	54	0

Britannia Roads, in conjunction with Mister Burton's Historical Tours, is offfering a 15 day tour entitled "D-DAY + 50 YEARS, Return of the Veterans 1944-1994." Starting in England, crossing the Channel, across France and into the Battle of the Bulge region, passing further into the Hurtgen Forest. The tour ends back in Paris. Scheduled for May 31 to June 14, 1994 the cost for the land package is $2300.

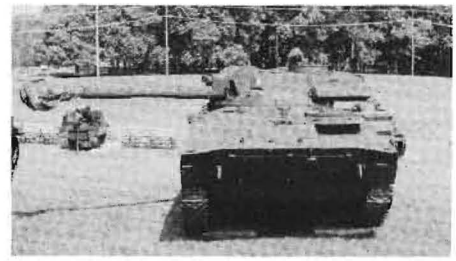
Other battlefield tours that are not exclusively focused on World War II sites are also offered.

For more information contact Britannia Roads at P.O. Box 14635, San Luis Obispo, CA 93406. (800) 457-0464 or (805) 549-0876.

The museum has recently added two additional pieces to the outdoor collection. Both are captured Iraqi weapons.

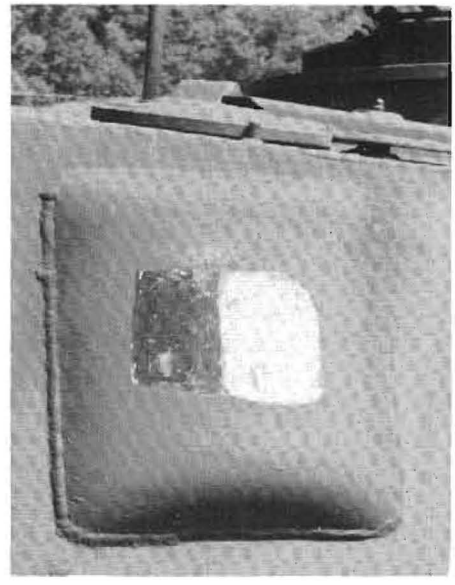
The first is the Soviet-made SO-122 (M-1974 NATO designation), also known as the 2S1. When this vehicle was first put on display it was still in Iraqi colors. Experience with the ChineseType 653 ARV, also captured in Iraq, was that the paint used by the Iraqis allowed rust and deterioration to set in quickly. A free paint job was offered and gratiously accepted. The only downside is that it is a basic OD green. But a good paint job to preserve the artifact now is better than no paint job that would allow the vehicle to rust away.

The original markings on the



vehicle were preserved and can be seen on the hull rear and the left side of the turret.

Museum Ordnance plans a



close look at the 2S1 in the near future.

The second addition is a Chinese-built Type 63 twin 37 mm anti-aircraft gun. The 53 is a twin version of the Type 55 which in turn is a copy of the Soviet M1939 gun.

Victor Suvorov Wasn't Fooling Around...

To subscribers of Museum Ordnance Magazine, Viktor Suvorov's "Inside the Soviet Army" is almost required reading, though since the book's first printing some of the author's statements were doubted and much disputed by western experts.

One of Suvorov's claims was that the IT(Istrebitel Tankov)-122 & 130 assault guns existed, hidden in combat reserve stocks. He offered some circumstantial evidence that these assault guns where deployed at the beginning of the Czechoslovakian suppression of 1968.

For years military intelligence experts doubted him, until the first unclassified photo of a bogged-down IT-122 from 1967's Exercise DNEIPER appeared. This was followed by educated theories on the weapon's birth, lifespan and apparent demise from the Soviet active inventory. Only spartan concrete technical specifications and no other photographs or drawings were offered.

In the course of researching a book on the T-54/55, I received what looked like the Soviet equivalent of a baseball trading card from an Eastern European hobbyist. Even though I'm unable to read Russian, it obviously wasn't part of the ususal Soviet stable of AFVs and the information was fresh (circa 1990). The card's comments are rather spartan but at least it's finally a semi-official Soviet admission that this weapon existed.

The jist of the text describes an Assault Gun (refered to as a SU-122) developed from the T-54 chassis and fielded in 1954. Of the crew of five, two are loaders working with some sort of implied mechanical assistance.

The SU-122's main gun (refered to as a D-49) is fitted with a bore evacuator and carries a basic load of 35 rounds. Secondary armament consists of two 14.5mm KPVT machine guns, one coaxial and to the right of the main gun, the other an antiaircraft version is capable of being traversed, aimed and fired from within the vehicle.

While the TC's rotating cupola is fitted with a rangefinder (either coincidence or stereoscopic), the assault gun lacks any night vision gear.

Like the T-54, the SU-122 has 100mm frontal and 80 mm side armor, mounts a 520 hp Diesel engine (refered to as a V-54) and has the same 400 km range. 1

The card's conclusion states that the SU-122 was comfortable, reliable, well armed and armored - though few where made.

If the artist didn't take liberties with the placement of the roadwheels, the chassis looks more like a T-62 than a '54.2 If the center of gravity was changed by the heavier gun's mounting (lower and further forward) then a slight change in the suspension would be necessary, accomplished by shifting the '54s characteristic roadwheel gap to the rear. Perhaps this was a precursor to the T-62's suspension arrangement?

In the later 50's Red Army planners envisioned a tank-killer bearing a main gun superior in accuracy and penetration to enemy tank weapons at any range. The vehicle would have armor protection equal to or better than it's parent tank, while maintaining the same weight limit. 3

Turretless vehicles are simpler to operate and maintain, cheaper to build than standard tanks and been proven combat effective in the earlier SU series, both in the anti-tank and fire support roles.

The results are obvious; a system packing more firepower and moving as fast as the tanks it supports but requiring only the same levels of maintenance.

The main gun remains mysterious; Soviet weapons development is as convoluted and interrelated as the Old Testament's passages of paternal lineage.

At first glance the IT-122 looks like it was fitted with the T-10 heavy tank's main gun (which was fielded in 1953), which would make logistical sense (The T-10's main gun and the D-74 field gun are kissing cousins).

However, one of the predecessors to the D-30 Howitzer/2S1 main gun was known as the M-1949 (D-24)! The D-30 was later adopted for 2S1, which has a posted direct-fire range of 1,000 m.

In either case, both of these guns have sliding wedge breechblocks, use seperate loading variable charge cases and can fire potent HEAT rounds. They shouldn't be taken lightly.

According to Suvorov, the Chief Directorate of Strategic Deception (GUSM) took measures to cover up the existence of these vehicles and for years afterward their presence was undiscovered. There is precedence in the Red Army for this secrecy: the T-34 was kept concealed until the Germans invaded.

So what became of the IT-122 fleet?

By Adam Geibel

Additional Sources: Viktor Suvorov, International Defense Review: 6/83. T-64, IT-122, and IT-130: The Soviet Advantage. Capt. James Warford, p. 40-43, Sept.-Oct. 1985. The "trading card" of the IT-122 is from a company called Art Publishers, Moscow, 4-831. 75000 1854 3 K. The artist is V.M. Ivanov and the card was dated Moscow, 1990.

Some of the IT-130's reappeared as the T-62T recovery vehicle, but the IT-122's disappeared. Were they scrapped? Unlikely, since the Russians don't habitually throw away weapons systems.

At least one survives. Recently tourists have reported that Kubinka Armor Museum, the Russian equivalent to the Aberdeen Ordnance Museum, has one in their collection.

Could we ever see the IT-122 on CNN's evening news? Considering how many brushfire wars and revolutions are going on within areas of the old Soviet Union that once would have fielded Category 3 Divisions, it's possible that a few survivors will be dragged out at the same time as the T-10 heavies reappear.

1. David Isby's figures, from WEAPONS & TACTICS OF THE SOVIET ARMY, are somewhat different.

2. According to Eastern European "grapevine" sources and in direct contradiction to some previous articles on the subject, the IT-130 was actually based on a modified 54/55 hull. During the first major overhaul, the IT-122's had their guns replaced with the 130mm D-46.

The IT-130's fighting compartment was also rebuilt (with new hatches and a more sophisticated, artillery-style rangefinder), the old "web" stylewheels replaced with the "star" pattern, new headlight guards and stowage boxes fitted, and one gunport was cut into each side of the casement.

After the stock of 130mm guns were exhausted, the remaining IT-122s were converted into T-62T M-1977 recovery vehicles. The external stowage was moved into the casement and the gunports plated over.

3. Tactical employment originally envisioned these weapons in independent tank destroyer regiments and brigades, as a part of an army or front-level antitank reserve. Isby also states that they may have been assigned to the MRD and TD heavy tank regiments.

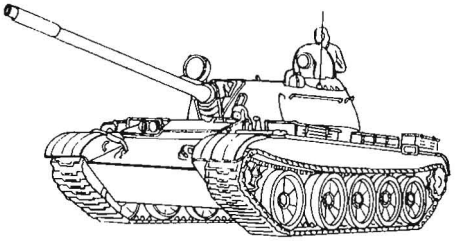
By the late 60's and 70's, a battery of tank-killers were to be part of the direct fire support for MRR's, particularly for units lacking a battery of 122mm SP howitzers.

Tank Production Still Booming

Despite the fact that many observers perceive a worldwide decline in the manufacture of new tanks, in some areas of the world the manufacture of tanks is still healthy. In fact, in some nations, the manufacturing is actually increasing and new programs are gearing up. And despite the loudly hyped tank conversion programs, the conversion of tanks to civil vehicles is proving to be more difficult than previously thought.

The Russians

While the production of tanks in the Russian Federation is nowhere near what it used to be, the Russians are still at or near the top of the world's manufacturers in terms of units produced. The Russians have a long heritage of having a large military establishment, no matter what form of government is in power. The fact that Russia has been invaded three times in this century is not lost by the country's leaders. Also contributing to the continued high level of production is the fact that the Russian Army still has around 25,000 tanks of the T.54/T.55 vintage that need to be



replaced. Most other leading nations, including the United States, have long ago retired or greatly reduced their holdings of similar era tanks. Presently, the Russian Federation is manufacturing the T.80 in the diesel engined version and the T.72 in at least two modern versions. A new version of the T.72, designated the T.90, was revealed late last year. The Russians are heavily promoting both new and used tanks on the open market at bargain basement prices. This cut-throat marketing is the main reason that the former Czech and Slovak Republic stated in 1992 that it was getting out of the international tank business.

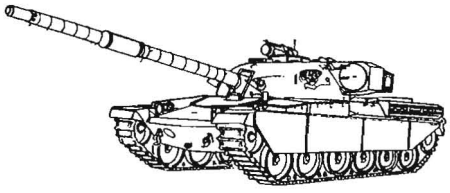
By Gregory Fetter

The Chinese

Although the Russians have historically been the world's largest manufacturer of tanks, the Chinese are coming on strong. The Chinese also have an inordinately high percentage of their tank inventory composed of 1950s vintage tanks. While many of these tanks have been modernized and manufactured in improved versions, they still represent fifties technology. The Chinese are presently involved in a major reequipment program for their tanks and other armored vehicles; the 1993 budget represents the fourth year of double-digit increases in the defense budget. The latest Type 85-II and Type 90 tanks from this nation compare favorably with many Western designs. As the nineties progress, the People's Republic of China will become one of the world's major tank designing and manufacturing nations.

Pakistan

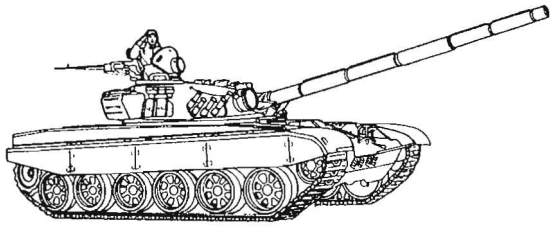
Pakistan is another nation that is in the process of a major reequipment program, relying heavily on the People's Republic of China in the development of its indigenous capability. The latest Khalid design incorporates the best of several Chinese tanks (including the Type 90) along with indigenous technology. In concert with the manufacture of at least two new tanks, Pakistan has extensively modernized its Type 59 inventory. Despite the ongoing local production effort, Pakistan's appetite for tanks is large; the nation is presently negotiating with the United Kingdom for the purchase of a large quantity of FV4201 Chieftain MBTs that are



surplus to British Army needs. Their inventory of tanks will become one of the largest and most powerful in the region during this decade.

India

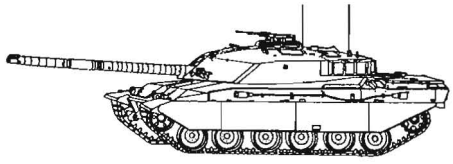
India is another nation that is well on its way to becoming a major tank developing and manufacturing nation. In addition to the large scale license manufacture of the Russian T.72, In-



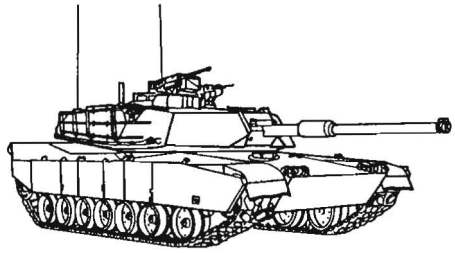
dia has developed its own indigenous program, the Arjun. While the Arjun program has had a long and troubled development period, most of the technical problems have been put right and the remaining ones are being corrected. The Arjun is soon to enter full scale serial production and is forecast to have a long production run. The tank is already being promoted on the export market.

The Mideast

This area of the world has been the hottest for the sales of new tanks. All the major Western firms have scored in the Mideast with General Dynamics (M1 Abrams) coming out on top, Giat Industries (Leclerc) coming in second, and the Vickers Defence Systems (Challenger 2) bringing up the rear.



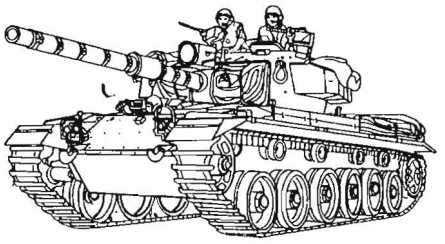
Despite the sales already made, there are still one or two more orders in the region to be fought for. Bahrain and Jordan have both expressed a desire to procure a new tank with the Jordanian potential being the largest. Israel continues turning out the Merkava in the latest Mark III model. Israel is also stated by many observers as developing the follow-on to the Merkava; a 140



millimeter main armament is rumored. Egypt's license assembly/manufacture program for 555 M1A1 tanks is now well in hand. Not often heard of in the past year or so is Iran and its rearmament program. With its major regional threat gratefully taken care of courtesy of the United States-led coalition and the United Nations, Iran has been free to go on a massive rearmament program, constrained only by the devastation of the decade-long First Gulf War. While some aspects of the program, such as the purchase of submarines, have made the headlines of recent, Iraq's rearmament program has been largely ignored by even the specialized media. However disturbing stories surface from time to time regarding the nation's buildup. Among these are ones on the building of tank production facilities and purchases of tanks from the Russian Federation and the People's Republic of China.

Republic of South Africa

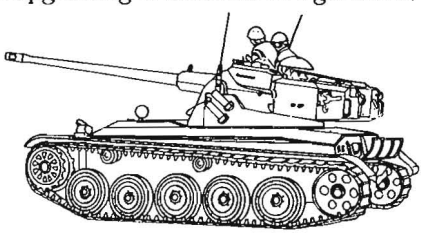
Even though the Republic of South Africa has upgraded its Centurion tanks



several times, the Oilphant (as the modernized Centurions are called) is getting long in tooth. While not yet confirmed, there has long been circulating in military and industry circles stories that South Africa is developing a new indigenous tank. Because tensions in the region have moderated, this program has most likely been stretched. As with other military hardware developed by this country, if it comes to pass, this new tank will integrate the unique design features mandated by the South African military.

Republic of Singapore

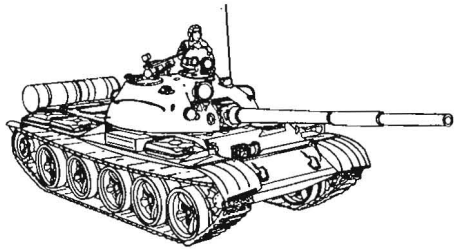
One nation already a major player in the tank modernization and retrofit market that is on the verge of entering that market as a manufacturer of new tanks is Singapore. Heavily involved in the upgrading of the AMX 13 light tank,



rumors have been circulating in the industry that Charter Industries of Singapore is engaged in the development of a new light tank optimized for the southeast Asian region.

The Koreas

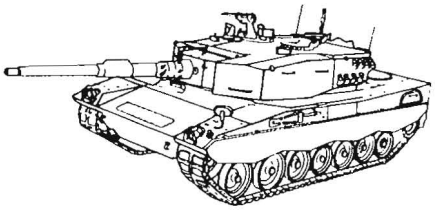
The two nations of the Korean peninsula are rapidly becoming major players in the tank market. The Republic of (South) Korea is far ahead of its northern neighbor in this effort. Hyundai has been manufacturing the Type 88 for some time now. Although broadly based on the M1, the Type 88 uses a diesel engine and different fire control components. Even though the manufacture of this tank is still ongoing, a follow-on armed with the Rh 120 tank cannon is already in development. The Democratic People's Republic of (North) Korea has manufactured the T.62 under



license; the license manufacture of the T.72 or perhaps the Chinese designs has been rumored as beginning in the near future.

Europe

Sweden's procurement of at least 205 tanks is certain; the winner of the shortlist is expected in the near future. The evidence supports that the improved version of the Leopard 2 will get



the nod for this program. If this comes to pass, it will do much for the Leopard 2 program as it went dormant in 1991 in Germany. In the United Kingdom, the manufacture of the new Challenger 2 is ongoing. France is building the Leclerc and Italy the C1 Ariete; regarding the latter, an Ariete 2, armed with a (almost certain Rh 120) 120 millimeter cannon is already being developed. And finally Switzerland is still manufacturing the Leopard 2 as the Panzer 87. The Swiss seem to be taking the lead in the next generation tank cannon program and have already developed and installed a 140 millimeter cannon in a Panzer 87 tank. Lastly, while Yugoslavia's M-84 and V 2001 programs have been truncated by the ongoing conflict, they are expected to get back on track by the latter nineties.

Brazil

Bernardini (MB-3 Tamoyo) and Engenheiros Especializados (EE-T1 Osorio) continue to push their respective products both on the domestic and international markets. Even though the Brazilian Army has states it will procure the Osorio, funding is a problem. Funding is also a problem for Ecuador and Paraguay, both of which have expressed an interest in the Tamoyo.

And So...

The production of tanks has been and will continue to be on the decline in the nations of the West. However, many other nations, mainly in Asia, are still manufacturing tanks at a good pace. Still others are developing an indigenous production capability or procuring new tanks. And the market for used tanks, although unbelievably glutted, remains active. All this activity is causing many analysts to wonder what is going to be done with all this armored power?

Gregory Fetter is the Senior Defense Analyst and Weapons Group Leader at Forecast International, a Connecticut-based aerospace/defense market research firm.

Bamboo to Bazooka

It was 1913 and a 13 year-old boy named Leslie A. Skinner was about to embark into the world of rockets. His first efforts consisted of bamboo tubes packed with a concoction of black powder, water, and molasses. By 1915 Skinner was projecting his "rockets" up to 400 yards. His experiments ended abruptly (at least for the time being) after one of his projectiles landed on the local hospital roof catching it on fire. These formative years with rockets and projectiles for Skinner were to forever hold his attention.

Spending his college years at West Point, Skinner was commissioned into the Army in 1924 and reported straight for duty with the Army Air Corps. Even though he continually marvelled at the uses of the airplane, he couldn't help but wonder why these huge and fast war machines carried such meager offensive capabilities.

In 1931 he transferred to the Ordnance Corps at Aberdeen Proving Ground (APG). It was here that his interest and tinkering with rockets was again rekindled. His desire was to create a rocket that could add the necessary punch to the airplane. The Army, not realizing or foreseeing a need for such a weapon refused to grant any money or time to the development of such a rocket. But Skinner was not be deterred. Using his on time after work and on weekends he set about his research. Although not officially sanctioned, there were a few officers on Post that encouraged Skinner to continue and assisted his with requests for materials and other items whenever they could.

Just 18 months later, Skinner was sending a rocket over 3,000 yards in stable flight. Using empty carbon dioxide cylinders and other metal scraps from the APG dumps, he was making these homemade rockets in his basement. In the short time that he was at APG he conducted almost 900 launchings.

While his hardware was simple and crudely made, he found that it was critical to use the right blend of powder for the most effective flights. His trial-and-effort method concluded that a German double-base stick powder used in howitzer ammunition yielded the most effective results. Since Aberdeen was a "proving ground," it had an ample supply of almost every type of powder made. But even Skinner was able to deplete the stock of the captured German stock from World War I. When that stock was just about gone, he convinced the Hercules Powder Company to reproduce the mixture; which they gladly did free of charge, most likely (and ultimately correct) sensing that if he was successful, sales could result.

In 1933 Skinner left APG to spend a year at the Massachusetts Institute of Technology (MIT), however he returned in 1934 and picked up where he left off. Over the next four years, his experiments continued much as before. It was during this time that a correspondence was established with Dr. Clarence Hickman, who along with Dr. Robert Goddard had fired rockets at a "rocket gun" demonstration at APG in 1918. (The war ended several days later and interest in the program waned) This contact would ultimately be the springboard for Skinner and his rockets.

When the war in Europe broke out, Hickman, as a member of the National Defense Research Committee, pushed for a rocket development group and was able to have Skinner assigned to it.

Skinner, who had since been transferred to Hawaii, was delighted and eager to have official backing for his research. The facility was located at the Naval Powder factory at Indian Head, Maryland. His enthusiasm was somewhat dampened when he saw his laboratory which was spartan at best.

Nevertheless, Skinner took to the task immediately. He divided his program into three separate but related applications; the first was an aircraft launched rocket, an rocket-assisted artillery shell, and finally a shoulder launched anti-tank rocket. However, it was the Navy that looked to him for help first to improve the penetration capability of free-falling bombs.

Never at a loss to project a rocket into stable flight, the common problem that he had with all three application was that the rockets lacked the size and speed to destroy tanks.

Along a parallel, but separate line of research, the Army had been presented a design by a Swiss engineer, Henry Mohaupt, based on a 40-year old concept. His adaptation centered around a projectile using a rigid inner liner in the hollow cavity of the explosive charge—and the modern shaped charge began to take shape for the U.S.

By Jerry Reins

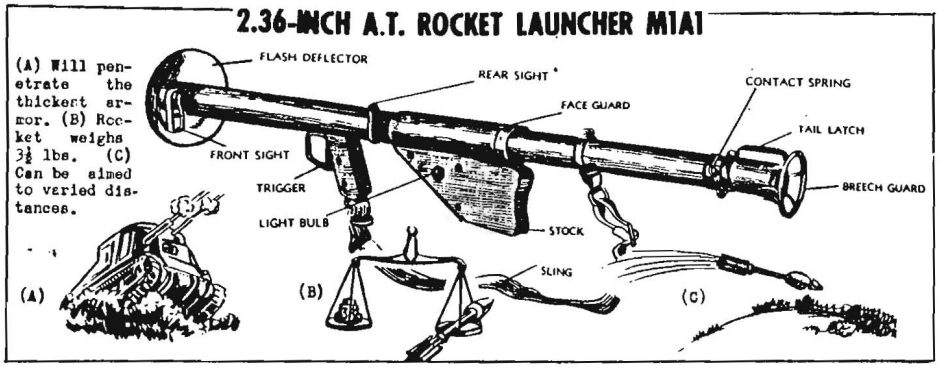
Army. Mohaupt had already shared his idea with the British and French who immediately adopted its use.

However, a number of Ordnance officers that were more than just a little skeptical of a small charge being capable of the doing as much damage to a tank as claimed. Mohaupt gained more than just their respect when, just as claimed, the small shaped-charge consistently penetrated armor plate that standard projectiles simply bounced off of. The projectile, designated the "Grenade, High-Explosive, Antitank M10" was ordered into immediate production. The problem was that while the projectile could do the damage, no accurate means of delivering the M10 to the target had been developed at the same time. The projectiles flight was usually wild and erratic.

Skinner, who had since heard rumors of the Projectile and the delivery to target problems, had a nose for rockets and he sensed the solution to his concerns about his rockets destructive charge. His rockets could eliminate the heavy recoil and accuracy problems.

Using dummy M10 casings collected from APG, Skinner and his team constructed a simple 54-inch open-ended tube with an inner diameter of 2.35 inches. The tube length was the estimated minimum length to ensure that the rocket motor was fully spent before leaving the tube.

Their launcher was ready in May, 1942, just in time for another series of demonstrations to high-ranking officers being held at APG. Although not invited, Skinner and Lt. Edward Uhl showed up and took up a position at the very end of the firing line. When the target tank lumbered near, Uhl fired the first round and scored a direct hit. Quickly Skinner took the launcher and fired another round before the tank could turn



around, scoring another hit. About this time a crowd had gathered around these two unannounced guests. Skinner offered the ranking officer the opportunity to fire the rocket. General G.M. Barnes of Ground Forces Development eagerly fired and easily scored a hit, as did every other officer to try. The accuracy of the M10 and its launching system paled by comparison. Before leaving the firing pits, Barnes ordered the rockets and tubes into production.

While still gathered, one of the officers made a comment that the long skinny tube resembled the "Bazooka," a home-made gas-pipe trombone played by radio comedian Bob Burns. So much for a name-the-weapon contest!

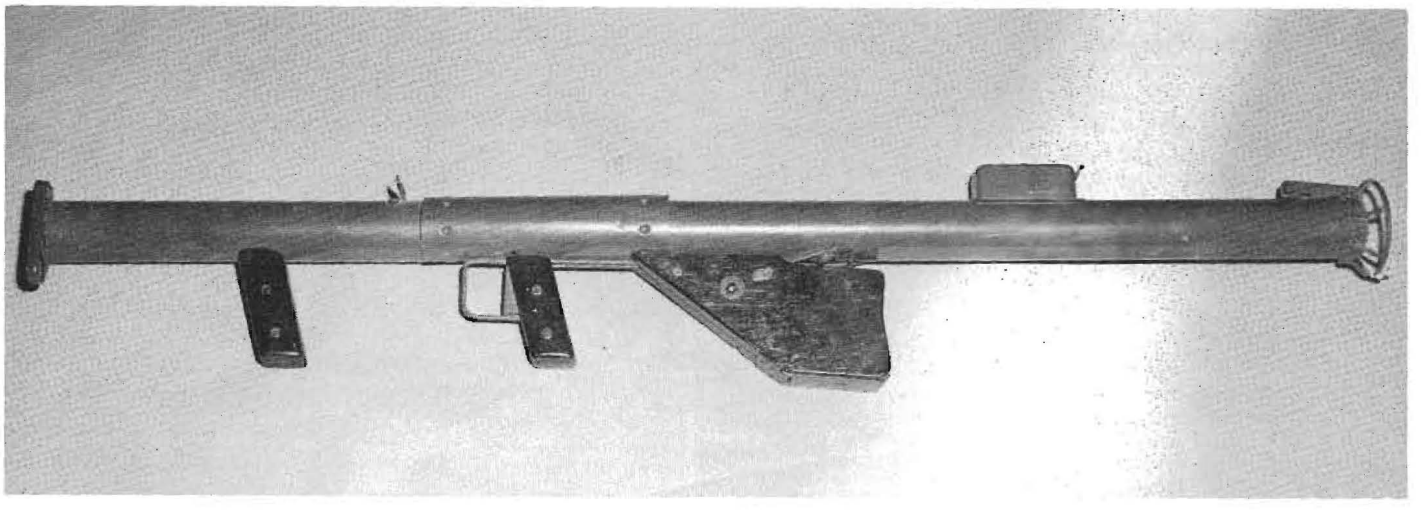
On May 19, 1942, the General Electric Co. was authorized to make 5000 Bazookas and were told to do so in 30 days. The GE plant in Bridgeport, CT was proud that it accomplished the task "with 89 minutes to spare." On June 30, 1942, the Army finally standardized the rocket as the M6 and the Bazooka as the M1.

If the developmental road for the Bazooka was bumpy, it was nothing compared to the early deployment of the weapon. As a gesture of good will, the Army shipped a several hundred Bazookas off to the Russians, where the weapon was most likely fired in combat for the first time. It is also where the Germans captured their first one. A German 88mm copy soon followed.

The British too had an opportunity to utilize the weapon before the American. Although successful in firing trial against captured Panzer IIIs, the British deemed the weapon exposed the operators to too much danger in the open terrain of the desert.

The American were finally issued the Bazooka during the embarkation for Operation Torch, the landings in North Africa. General George S. Patton had witnessed a demonstration and requested that the Bazooka be issued to his troops before they left port.

A truly revolutionary weapon in the hands of troops with no training in the operation of the weapon or the tactics for its use is a recipe for disaster. Once in the field, some units simply discarded the tubes. While the Army talked a winning game, the Bazooka was getting only luke-warm response from the troops. During this fitting out period, design improvements and instruction on the proper tactics to be employed were continually being made. However, premature detonation, failures to fire, and some accuracy problems led the Army to suspend the use of the Bazooka until all of the



changes could be made.

The improvements (M1A1 and the M6A1) were being hastily made, but the invasion of Sicily loomed ever closer. Ordnance officers in the theater felt that the Bazooka had gotten a bump rap and felt that with proper use, could be effective in the older M1 and M6 variants. Finally, and just prior to the invasion of Sicily, the M6 and M1 were reissued to the troops with a restriction against operating the Bazooka at high temperatures.

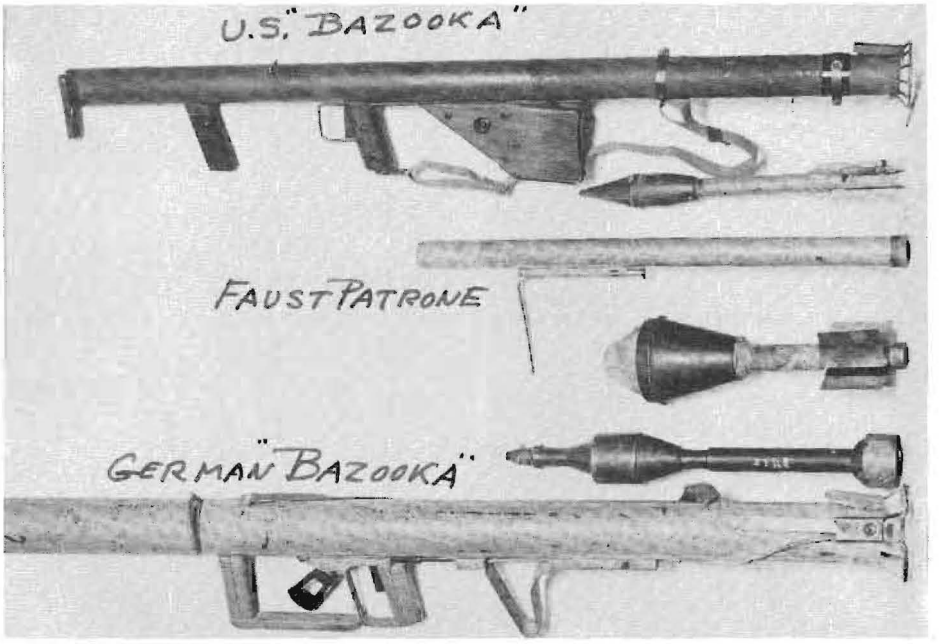
With this restriction in mind, and better crew training, the Bazooka faired much better. In fact one crew claimed a frontal kill on a Tiger I (O.K., so it was a lucky shot through the driver's vision block). It was also discovered that the Bazooka made a great assault weapon against buildings and fortified structures. Throughout the campaign there were only three barrel bursts caused by high temperature malfunctions, and those did not cause any casualties.

The Bazooka seemed redeemed.

Although continually modified throughout the war, the Bazooka was never the tank-killing weapon that it was hoped to be. It did prove more useful, in both Europe and the Pacific, as an assault support weapon. The development of armor always seemed one step ahead of the Bazooka. However, it must be remembered that the Bazooka is the grandfather of all of the shoulder fired antitank weapons and for that its role was tremendously important.

.....And what of Leslie Skinner designer and creator of the Bazooka as we know it? Surely medals, honors, decorations, and promotions were showered down upon him. Not in this Army! Skinner was quickly "dressed-down" for embarrassing the Ordnance Department and his superiors by not following procedures and protocols. By by-passing officers that lacked the foresight and understanding of the weapon, Skinner ran afoul of the very people who should have been supporting him. Relieved of his duty, he was shipped from one obscure position to another (first sent to England with just 48 hours notice). He retired from the Army in 1948.

The Bazooka was not the weapon it was hoped to be, in fact it was one of the few systems that General Eisenhower complained about and noted its inferiority to the German example. Nevertheless, it played an important role then and served as a foundation for future development.



Curator's Column

(Continued from Page 3)

have singled out the museum for special praise.

Which leads into the next question. When is the general public going to see something new? Well, I am glad you asked that question. By 15 June we will have installed a new exhibit entitled "The Hand Gun of the United States Army." As most of you know, our exhibits dealing with small arms are very "19th Century" in concept—i.e., a lot of like weapons are placed in a case, labeled, and that is it. Our new exhibit will try to teach several points along with showing off the weapons. For instance, we will trace the development of the handgun from the 1807 Harpers Ferry to the 1985 adoption of the Baretta. We will show the various experimental weapons that lost to Baretta. We also intend to show how a revolver is loaded, how an automatic is loaded and how it works, and various other aspects of handguns.

The handgun exhibit is but the first in our renovation scheme. We intend to follow it with exhibits on the "Base of Fire Weapon," "Families of Weapons," and "The Rifle of the United States Army."

As is usual we have a lot of work ahead of us this summer. Hopefully we will get the rest of our Desert Storm vehicles on display.

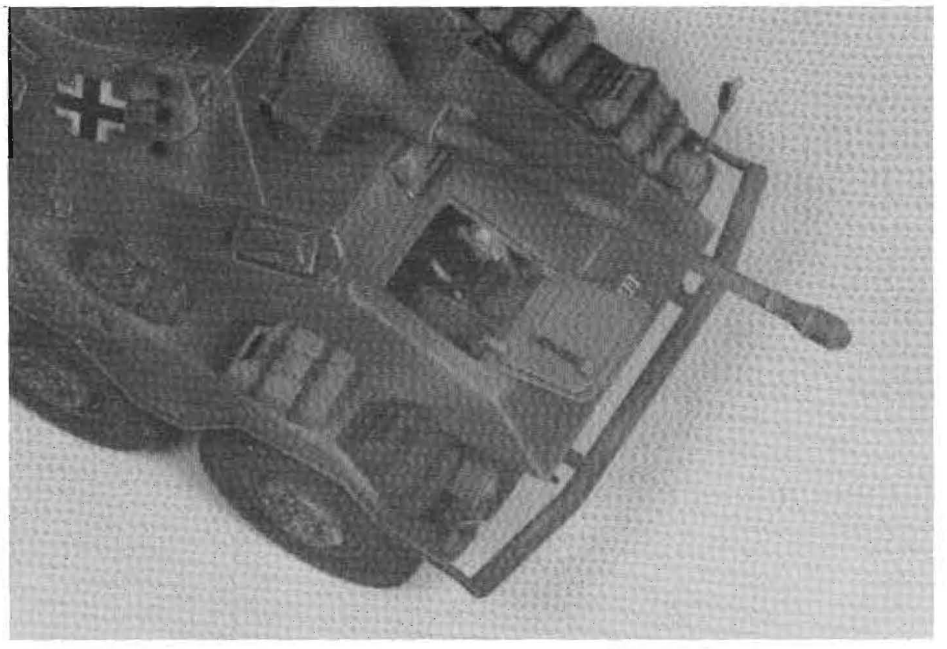
A quick note on one of our vehicles—the 2S1. When we acquired this vehicle it was rusting away. First of all the Iraqis were none too particular in their preventive maintenance, and second of all, after its capture, it was washed down twice with sea water. I got the opportunity to have it painted NOW in green or to wait and "perhaps" have it painted is desert sand. I opted for the green now. The original markings, however, were left intact. Hopefully, one of these days we can get it painted the correct color. I know I have been criticized for this move by the "purists," who insist that the vehicle remain as close to original as possible at all times. I am sympathetic to this point of view, but given the realities of the fiscal picture, the time involved, the equipment that needs to be borrowed, and the manpower, I opted to do what I did for good and sufficient reasons.

One other very very important thing happened since I last wrote this column. Mr. Armando Framarini, the Museum's operations technician has retired. Mr. Framarini enlisted in the Navy during World War II, and entered the Army shortly after the war. He rose to the rank of Sergeant Major and retired in 1974. In 1981, Mr. Framarini joined the museum staff. Mr. Framarini again retired this year with 42 years of Federal Service. In addition to his many military awards, Mr. Framarini held three civilian medals; the Army Civilian Achievement Medal, the Commander's Award, and the Civilian Meritorious Service medal. Although he is still volunteering, his full time presence will be sorely missed! The entire museum staff wants to wish him ALL THE BEST ARMANDO!

Come visit us and let us know how we are doing! Criticism we accept if it constructive.

PUMA

Italeri's 1/35 SdKfz. 234/2



Ranking high, if not the highest, of all the armored cars fielded during the Second World War - by any nation - was the German Schwerer Panzerspähwagen SdKfz 234/2 *Puma*. This vehicle maximized the ability to "move, shoot and communicate." Assigned to reconnaissance units, the *Puma* could maneuver into position, engage the enemy if necessary and, with a rear-facing driver pulling out in reverse, leave the area and report back to headquarters in a very short period of time.

The *Puma* concept has stood the test of time as the German Bundeswehr's Luchs (lynx) 8-wheeled armored car bears striking similarities to its predecessor.

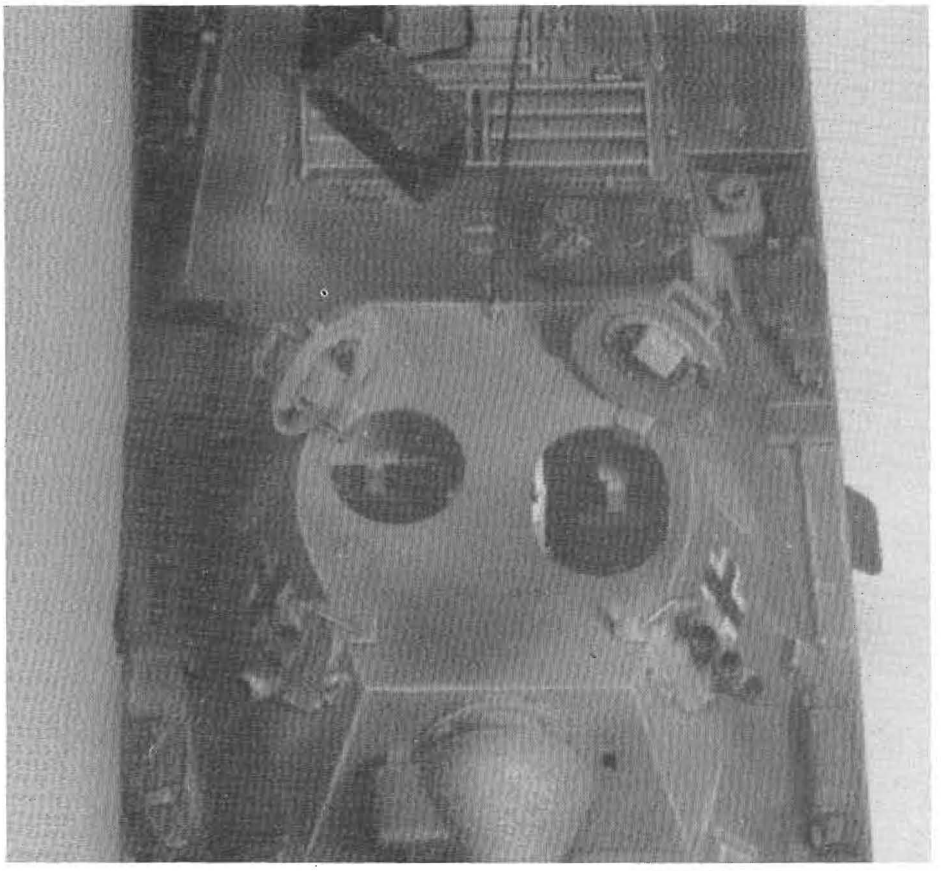
ITALERI's PUMA

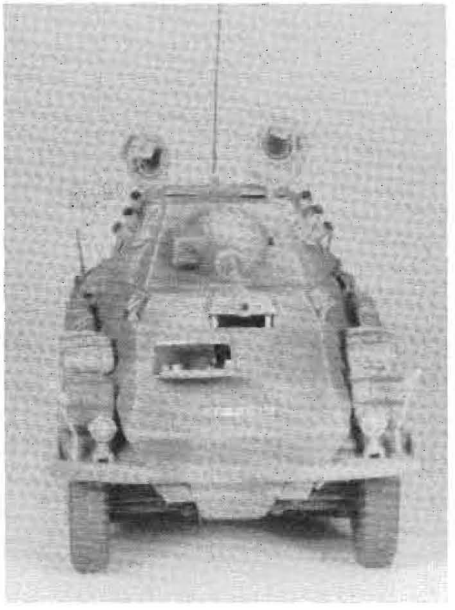
On the market for some time, the Italeri *Puma* goes together with very little problem and is fairly accurate. From the beginning I decided to add a little more to the model without going overboard.

The first change in the make-up of the *Puma* was the cutting away of the left lower hull escape hatch, which

By Stu Minton

Not all models have to be rebuilt from scratch to create both an award-winning model and one that is still fun to build. Stu shows what can be done with an already good kit to make it truly unique





would later be reset in the open position. Steps 1 through 3 in the instructions (the suspension and basic interior) were assembled as indicated. With Step 4 I took the interior stowage boxes from Step 7 (parts 73 & 74) added doors, hinges, and latches, with one door open revealing the inside compartment. On the upper hull piece (part 36) I cut out the forward escape/access hatch and the right rear engine access plate making new ones from sheet styrene. After making hinges and latches from styrene and stretched sprue, they were glued in the open position. Also at this time I left the vision block shutters open, with vision blocks made from clear plastic and plastic strip glued to the inner hull.

The right half of the Revell 1/32 Hawker Typhoon engine bears a remarkable resemblance to that part of the Puma's Tatra 12 cylinder powerpack that would be visible through the panel that I just opened. The oil cooler, oil filler tube, fuel lines, and other engine compartment pieces came from the parts box. The upper and lower sections were then glued together.

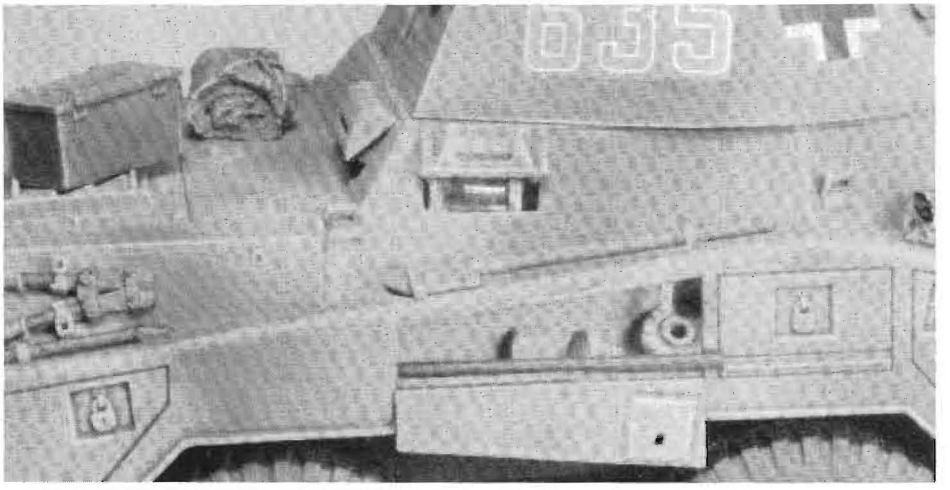
In Step 5, the fenders were assembled. On the right fender a stowage box lid was cut out, a new lid made and glued into position. Styrene was used to build the interior sides of the box. After completion a few scale tools were added. The fenders were then secured to the hull per the instructions.

Steps 6 and 7 were followed pretty much according to the instructions except that the left rear jerry cans were replaced by a sponson/tool box that I made from styrene. The idea for this came from several photos in my reference material.

Steps 8 through 10 deal with the turret. The molded-on turret roof ventilator screen was cut out and replaced with photo-etched mesh. The 50mm main gun was assembled, with only a breech operating lever being added, a mount for the MG-42 machine gun glued on, and the muzzle brake being drilled through. Intercommunication control boxes and cables were added to the interior of the turret walls.

The mantlet of the real Puma was made of cast steel. To achieve this effect, I brushed liquid glue over the mantlet and then jabbed at it with a stiff-bristle brush to duplicate the cast texture.

To complete the construction of the *Puma*, an antenna, a few boxes and rolls were added to the outside of the vehicle.



Using a hobby knife and opening up a few hatches, access panels and stowage boxes is not difficult and is very eye-catching. Using pieces from the parts box and some sheet styrene, interior details and accessories were added.

Thanks to Cookie Sewell for taking the photos.

The underside and suspension of the *Puma* was painted a dark earth brown. The rest of the vehicle was given a base coat of Humbrol #83, with patches of #113 and #116 (red-brown and dark green). I used Revell #78 (Dark Gray) which I obtained in Germany while in the Army, for the tires on all my wheeled vehicles. The exhausts were painted Humbrol #173 (Track Color), dry-brushed with Testors Military Brown. The vehicle itself was dry-brushed with Testors Armor Sand.

The *Puma*'s interior was painted Humbrol #71, a semi-gloss cream color, and dry-brushed with Pactra Steel. The engine compartment is Humbrol #72 (Khaki Drill) and the engine dark gray, dry-brushed with steel.

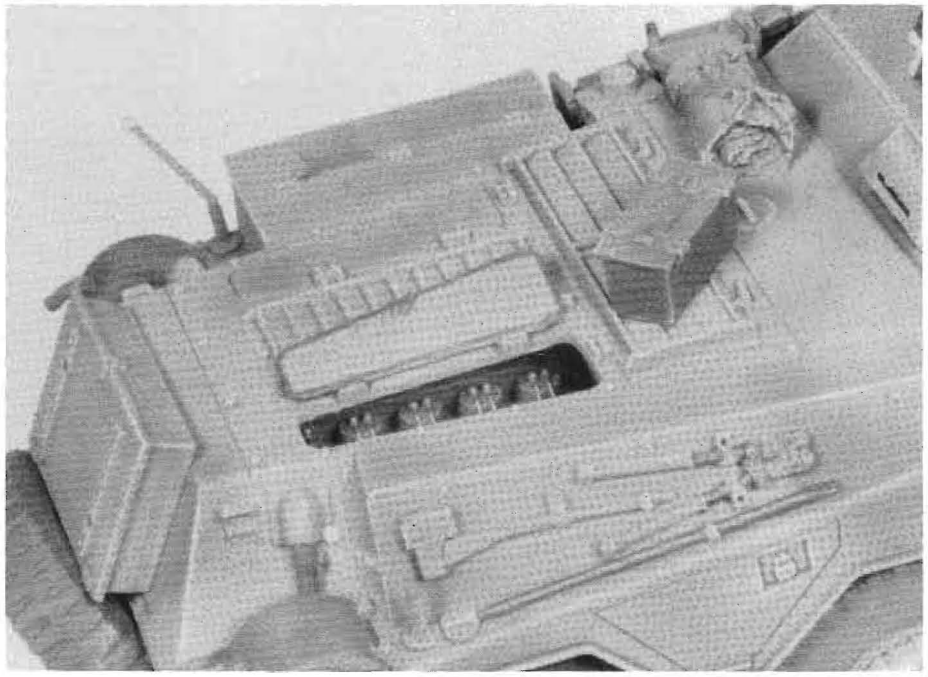
With the painting done the model was sprayed with clear gloss, decals added, and sprayed with clear flat. A wash mixture of raw umber and burnt sienna artist oils was added, followed with a little selective dry-brushing before I considered my *Puma* finished.

All in all, Italeri's *Puma* turns out to be a good kit. It's price doesn't do any catastrophic damage to a modeler's bank account and there are no expensive after-market products needed to turn out a nice model. The modifications and additions I made only require sheet styrene, plastic rod (or stretched sprue), a small piece of mesh, and a good parts box. A good X-Acto knife blade and a little patience can't hurt either.

References: Puma Und Andere Schwere Panzerspähwagen der ARK-Reihe Waffen Arsenal #96.

Armored Fighting Vehicles of Germany by Duncan Crow.

ED. NOTE: Stu's Puma took a First Place in the Wheeled Vehicle and Artillery division at ModelFest '93.



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SALE: HO 1/87th scale models. WWII resin cast. Now: M3A1 White scout car; Soon: M5A1 Stuart. Send requests to Paul heiser Models, P.O. Box 6187, Lakewood, CA 90714-6187.

WANTED

Researcher seeks combat-oriented photographs of T-54/55 MBTs for use in reference book. Alan Geibel, P.O. Box 2179, Philadelphia, PA 19103.

Back issues of AFV News wanted. Colin Knapp, 35 Meadow Field, Stokesley North Yorkshire, 759 5EL, England.

Wanted: Monogram 1/35 (not Revell 1/40) M56 90mm SP gun. Built or unbuilt acceptable. Leon Wong, 15A, Block 3, 111 Shaukiwan Rd., Hong Kong. Fax (852) 8863001. 4/93

Wanted: Photographs/data on pre-WWII Japanese AFVs for cross-reference project. Willing to trade copies of material/photos. Terry Stibal, P.O. Box 890385, Houston, TX 77289 (713) 286-0984 (evenings) 6/93

Wanted: Pershing: A History of the Medium Tank, R.P. Hunnicut; Rail Gun, John Batchelor and Ian Hogg. Don Geelan, P.O. Box 80005, San Diego, CA 92138 (619) 295-8263 6/93

Researcher looking for photos and information on the armor used by the Cambodian Army 1970-75. AF, P.O. Box 37, Forest Hill, MD 21034. 5/93

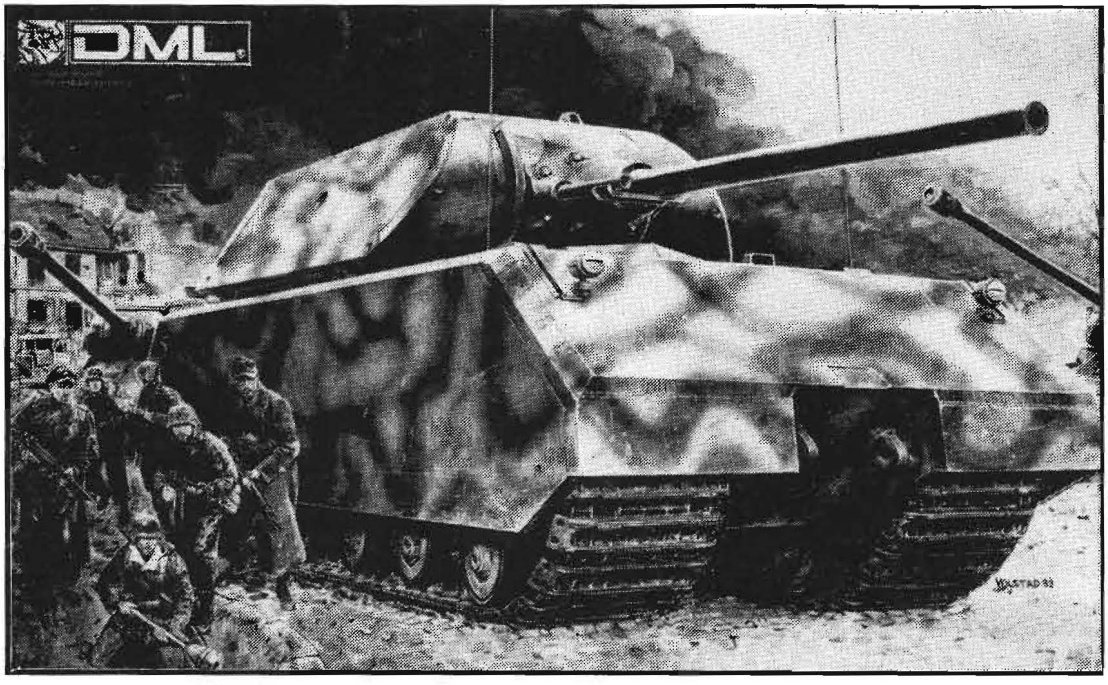
Wanted: Sherman: A History of the American Medium Tank, by Richard P. Hunnicutt. Contact Ric Walters, P.O. Box 277, Plover, WI 54467 5/93

Researcher seeks out-of-print issues of AFV-G2 magazine, also early Squadron Signal "In Action" series. Tom Laemlein, 61 Harvard St., Rochester, NY 14607 1/94.

Wanted Data and information on railway armor. Will exchange or buy. John Loop 12445 Pomerado Pl., San Diego, CA 92128. (619) 487-8698. 4/93

Wanted: Renwal 75mm Gun "Skysweeper." Will pay reasonable price (to include shipping). Contact Bill Cornish, RR 3 Box 2516, Sanford, ME 04073. 4/93

Maus-sive!



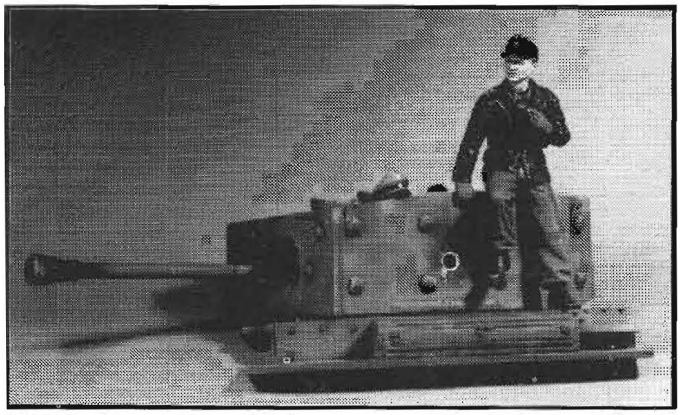
DML

Late in World War 2, the Germans came up with some very unorthodox weapons to try to turn the tide. One such vehicle was the massive super heavy tank known as the Maus. This 188 ton vehicle was only capable of 20kph, but had a potent 12.8cm cannon with a coaxial 7.5cm gun mounted side-by-side. DML's 1/35 scale model of this huge tank is made up of 286 parts, has individual/sectional track links and detailed road wheel system. Only from DML!

KIRIN

Two very exciting new figures are now available from Kirin. A very special figure of a Highland clansman at the Battle of Culloden in 1746 pays homage to the military illustrations of the late Richard Scollins, whose drawing was inspiration for this figure. The second release clearly demonstrates Kirin's innovative approach, using a knocked out Cromwell turret as the base for this portrait figure of panzer ace Michael Wittmann. Only from Kirin!

21519 Highland Clansman, 1746 1/16(120mm) Scale



21515 Michael Wittmann with Cromwell Turret 1/16(120mm)

MARCO POLO IMPORT