

INFANTRY IN MID-INTENSITY BATTLE

In the opening battles of the Yom Kippur War of 1973, Israeli tanks dashed themselves against Egyptian infantry defenses along the Suez Canal, taking losses which stunned the Israeli high command, and shocked the world. Only an adroit revision of tactics by Israeli field commanders in the midst of battle salvaged the mobility and striking power of Israeli armored forces, and permitted successful counteroffensives. But the Israelis thus had to learn bloody military lessons for which the British Army had already paid dearly not 600 kilometers to the west, 32 years previous, in the autumn of 1941.

CRUSADER and YOM KIPPUR

Rommel had appeared in North Africa early in 1941, and sweeping all before his Panzer Divisions, had driven the British out of Cyrenaica, except for a garrison besieged in Tobruk. In the fall, the British commander, General Cunningham, after being reinforced, planned a counter-offensive from his bases on the Egyptian border which would not only relieve Tobruk, but destroy the German and Italian tank forces around it.* His counterstroke, called CRUSADER, was launched in mid-November amid high optimism. The British had amassed an unprecedented number of tanks, totaling around 900, of which 20 percent were American Stuart (or "Honey") models, faster than any tank in North Africa, and mounting a 37mm gun of superior armor-penetrating power. Cunningham had formed Eighth Army to control two corps: XIII Corps, an Infantry force; and XIX Corps, an armored force. The latter was to strike independently of the former, swooping around the southern flank to seek out the Axis armor in reserve, and to bring it to decisive battle. Altogether, Cunningham's 900 tanks faced about 500 Axis tanks, of which less than one-third were first-line equipment. The Germans had only 272 tanks, of which 96 were in the pre-War PzKw II, barely combat worthy in late 1941. In contrast, Cunningham's 7th Armoured Division alone had 450 gun-armed tanks, including 166 Stuarts. On the eve of battle, the Commander of the 7th Armoured Division, General Gott, told his troops that CRUSADER would be: "...a tank commander's battle. No tank commander will go far wrong if he places his gun within hitting range of an enemy."

Gott's tankers did just what he wished, but they went wrong indeed, for to place themselves within hitting range of the enemy was to court destruction by German antitank guns. In the tradition of

* Cf. Correlli Barnett, The Desert Generals; Brigadier John Strawson, The Battle for North Africa; and Strategy and Tactics. No 40, Sep/Oct 73, "War in the Desert."

the hunt, of their forbearers at Balaclava, they charged into Axis positions, only to learn that zeal and dash counted for less than German optics and German gunnery: Rommel's antitank gunners picked them off like clay pigeons before they could even get off a shot. In one action, just four 88mm antiaircraft/antitank guns stopped the attack of an entire British armored brigade. But it was not the "88" alone that was their undoing. Rommel quickly seized the initiative from Cunningham, and the British found that they were, once more, up against an enemy who was organized and trained in an utterly superior fashion, against whom they could turn to account none of their material or numerical advantages. As a German observer put it:

A German panzer division was a highly flexible formation of all arms, which always relied on artillery in attack and defense. In contrast, the British regarded the antitank gun as a defensive weapon, and they failed to make adequate use of their powerful field artillery, which should have been taught to eliminate our antitank guns.

Cunningham, though equipped with a 3.7-inch antiaircraft gun comparable to the 88mm, though well supplied with truck-borne infantry, and though endowed with a battle-seasoned artillery, sent his tankers, in the best tradition of Lucan, Cardigan and Haig, to win the battle wholly on their own, to their glory and his ruin. A week after CRUSADER was launched, Cunningham had but a tenth of his tanks remaining. Gott's 7th Armoured Brigade had not 1 out of the 129 with which it had started; 22nd Armoured Brigade had 30 of 158. Gott's 4th Armoured Brigade, which had 100 Stuarts at the outset, was shattered, its headquarters overrun, its remnants scattered. Rommel calculated that he had knocked out 207 British tanks. Actually, British losses at that juncture were more than 300. Cunningham wrote:

The main thing was to destroy Rommel's armour. One entered the battle with that object, and then found one hadn't the means. One night the tank state showed forty-four runners.

Cunningham was relieved of his command. Though Rommel's riposte penetrated to within 15 miles of the key British supply depots, the tenacity of British and Indian infantry, plus the phlegm of their generals, prevented a debacle. Rommel, overextended, his own tank strength depleted, pulled back, and CRUSADER came to a close. All told, in three weeks of confused combat the British lost around 400 tanks, the Axis 300.

After the battle. General Gott wrote a classified analysis in which he attempted to discern the lessons to be learned from CRUSADER. In words which imply deep frustration, he noted that:

The German will not commit himself to tank versus tank battle as such. In every phase of battle he coordinates the action of his antitank guns, field artillery and infantry with his tanks and he will not be drawn from this policy.

In 1969, a tank-turret veteran of CRUSADER, Brigadier John Strawson, published his analysis of desert warfare in World War II, in which he highlighted cases of British "amateurism [that] would not do against the professional touch of the Afrika Korps."

There was another serious misunderstanding by the British: about the way the Germans handled their armoured formations. Rommel's panzer groups were quite clear that whereas tanks dealt primarily with the enemy's infantry and soft vehicles, the destruction of tanks was mainly the job of weapons designed for just this purpose, antitank guns. This theory was put into practice, and the German 88mm and 50mm antitank guns were both powerful in themselves and skillfully manned, but not at the expense of a further fundamental feature of German tactical doctrine: close and permanent integration of tank, gun, and infantry teams. In this first requisite of desert, or any other, fighting, the British simply did not match their opponents....

Strawson quoted a German antitank officer, Heinz Schmidt, to describe how one German offensive tactic worked:

...With our twelve antitank guns we leap-frogged from one vantage point to another, while our Panzers, stationary and hull-down if possible, provided protective fire. Then we would establish ourselves to give them protective fire while they swept on again. The tactics worked well, and despite the liveliness of the fire, the enemy's tanks were not able to hold up our advance. He steadily sustained losses and had to give ground constantly....

Of CRUSADER overall, Strawson wrote:

...In total number of tanks which each side could muster, the British had a superiority. But it was not numbers which necessarily counted. What did count was their quality, tactical handling, and standard of crew training....[the Germans enjoyed some advantage in superior guns and better armor protection on their (relatively few) newer tanks]. But in addition to this,

their tactical skill in coordinating the fire power of tanks and antitank guns was not simply greater than the British. Whereas it was fundamental to [the German] method of fighting, the British virtually relied on their tanks alone....it is necessary to reiterate here that close and permanent integration of all arms together with concentration of armor are fundamental requirements for success in desert fighting. In Cunningham's broad plan the first of these had given way to the stronger claims of the other....

Three decades later. Soviet advisers to the Egyptian Army evidently took into account these "fundamental requirements for success in desert fighting." On defense, Egyptian tanks were held well back in the battle area, almost as bait for the Israeli tankers. Forward, the Arabs disposed infantry teams equipped with the SAGGER antitank missile (a long range, accurate tank-killer). And these were emplaced behind ambushes of entrenched Infantry, well-armed with RPG-7 antitank rockets, and well covered by artillery. Like Cunningham, the Israeli command sent tanks into these defenses confident that they were about to fight and win a tank-to-tank battle. The Israeli division commander. General Adan, discovered, as General Gott had discovered in CRUSADER, that tanks, even very good tanks with very willing crews, are no match for a well-coordinated, combined arms defense.

When, at the outset of Yom Kippur, the Egyptians crushed the "trip-wire" line of outposts the Israelis had strung along the Suez Canal, the Israeli Adan Division, per plan, launched a massive tank counterattack to drive the intruders into the Canal. Striking in daylight, Adan advanced with his tanks well forward, his infantry trailing in carriers by the range of a tank gun (3000-4000 meters). Little artillery was used; fire support was to have been furnished, according to plan, by the Air Force -but a dense antiaircraft missile fire from the Egyptians fended off any intervention from above. Lured by an occasional glimpse of Arab tanks, Adan's tankers plunged forward until they met a curtain of SAGGER missiles fired en masse and RPG-7 rockets fired in salvo. (Israeli tankers reported that after the action, surviving vehicles were festooned with guidance-wires from attacking missiles, glistening like Christmas tinsel in the sun.) Adan left forty of his tanks on the field of his first encounter, retreated to defensive positions, and lost a like number over the next two days to the Egyptian follow-up.

This triumph of Arab arms, quite unexpected by the Israelis, was the outgrowth of years of patient Soviet-Egyptian preparation. While the Israelis invested heavily in tanks and air weapons, in the belief that the tank/jet combination was invincible, the Arabs invested in Infantry, antitank and antiaircraft weapons, and artillery. (The

Israelis have reported among their Egyptian POW numbers of university students and graduates, bearing low infantry rank -- a marked departure from 1967, and a measure of the importance Cairo attached to the infantry mission.) It appears that the Egyptians planned to precipitate the pre-planned, much rehearsed Israeli tank attack, to decimate the attacking armor, and then to push forward an impregnable air defense behind a formidable array of ground weaponry. The scheme was working well until the Israelis recast their tactics to integrate infantry into their tank formations, and to employ artillery fires to suppress the SAGGER and RPG-7 teams. Thereafter, the tide of battle turned.

General Cunningham in CRUSADER reaped the bitter harvest of 20 years of doctrinal vacillation in the British Army, two decades of infighting between cavalry die-hards and tank enthusiasts, in which neither protagonist advocated a battle-worthy tactic. Adan's plight at Yom Kippur was the product of six years of rule by tank-supremacists in the Israeli Defense Forces, during which tankers had parlayed their lop-sided victory in 1967 into a monopoly over doctrine, promotions and army budgets, and infantry and infantry weapons had been disregarded.

Tank Losses in Yom Kippur

At this juncture, it is virtually impossible to determine the percentage of tank losses attributable to tank guns vs infantry weapons. For the most part, vehicles left on the battlefield had suffered multiple hits, and many battlefields are unexamined. What does seem clear, however, is that in isolated battles Arab Infantry forces dominated Israeli armor. So impressive was this lesson that early press reports from the Suez battle area highlighted stories that well equipped and trained infantry units were more than a match for modern armor. It is also clear that losses on both sides consumed tanks at a high rate. In terms of tank attrition, the Arabs inflicted losses upon Israeli Defense Forces (IDF) which were, in certain areas, comparable to their own. For example, the chart shows cumulative losses on both sides, with attrition approaching 45 percent in the first 20 days of battle.

The Arab impact on the IDF seems to have been a function largely of infantry weapons, whereas IDF kills were almost wholly attributed to tank gunnery. The remarkable improvement of Egyptian infantry in 5-1/2 years after the Six Day War has dramatically boosted Arab morale, and impressed military planners the world over. Against this backdrop, the U.S. should ask certain questions about our own Infantry's readiness for like combat:

How are we organized for mounted combat? How do we distribute infantry antitank weapons? What are our concepts for employing same? What should we do about training infantry for mounted combat?

Organizing Infantry for Mounted Combat

As the Israelis rediscovered, tanks without supporting infantry cannot survive against cohesive antitank defense. The IDF tank loss rate remained high until field commanders took steps to integrate infantry carriers with tank formations, and to utilize infantry fire to neutralize SAGGER, and infantry fire-and-movement to ferret out the RPG-7 teams. The Israelis learned to fight their infantry with the carrier as a base-of-fire. Several machineguns were mounted on each vehicle, manned throughout periods of dismounted action. The dismounted element from the carrier was what we would term a fire team: two or three men, who closed on the enemy position under the fire of the carrier and accompanying tanks.

Such a mounted infantry squad is a different fighting entity from the dismounted squad. The American Army has been operating for years upon the contrary notion that the armored personnel carrier is simply a means of transport, and that therefore, the squad contained therein should resemble, in size and armament, that in the Table of Organization and Equipment (TO&E) of all other infantry squads. Moreover, our doctrine holds that mechanized infantry squad tactics, once dismounted, should be identical to other squads. The US Army is about to buy the MICV [Mechanized Infantry Combat Vehicle], a very expensive new carrier, equipped with the elaborate Bushmaster weapon system [automatic cannon]. The weight, complexity, and cost of this equipment argues strongly for our re-thinking what number of men MICV should contain, and how they should fight.

The Israeli experience indicates that a fire-team sized group of men, utilizing a carrier-borne gun or mortar as a base of fire, can perform the dismounted functions of an infantry squad nearly as effectively as the 11-man group envisaged in current doctrine and TO&E. In the M-113, carrying four men for dismounted work, as opposed to a larger group, made room for a larger ammunition basic load, and other equipment that otherwise could not be carried inside the vehicle's small compartment. We need to make more room in the interior of our fighting vehicles to provide for an ample supply of DRAGON, LAW, mines, and other antiarmor equalizers.

Further, it seems eminent good sense to decrease substantially the number of men deployed forward in armor formations, whether in the attack or on defense, provided, of course, that we can get the

job done with the fewer number. (This simply because of force vulnerability: armor's signature attracts high volume fire and other casualty-producing countermeasures.) By adopting a tactic that envisages the carrier and its weapons as organic to all tactical evolutions of the squad, such a reduction in manpower is feasible. Moreover, such a reduction in manpower may be an effective way of defending the increased cost of the carrier/weapon system over its predecessors.

Nor are such advantages necessarily confined to offense: we have given inadequate thought to the potential of the squad carrier as a sensor base. Surely, with what we now know about means of extending the human perception, we ought to be able to put aboard the carrier devices which would permit a smaller squad to "cover" defensively substantially more ground than the current squad. The MICV should be envisaged as manned by about half the number we have been talking about, and should be configured for a base of fire/sensor base role –some sort of brackets and electrical outlets which would permit us to install a light mortar, a sensor package, or other supportive apparatus designed to enhance the carrier's usefulness to the squad as its second maneuver element, and its base of fire.

None of the successive recent reconfigurations of the US Army infantry squad has contemplated such techniques. Our mechanized infantry squad, under the H series TO&E, consists of 11 men, which number is that recommended by the IRUS-75 study, compiled by the Infantry Agency of the Combat Developments Command a few years ago. Like its predecessor organizations, the current squad is designed for wholly dismounted action. The table below presents the principal changes in organization that have occurred over the past 40 years:

Major Squad TO&E Changes 1973-1972

Year	Size	Leaders	Teams	Auto-Wpns	Grenadier	Ammo bearer	Scout	Wpns Pool
1933	8	1	None	1	0	1	0	0
1939	12	2	None	1	0	1	0	0
1940	12	2	None	0	0	0	0	0
1942	12	2	Three	1	0	1	2	0
1943	12	2	Three	1	2	1	2	0
1947	9	2	none	2	1	2	0	0
1953	9	2	None	2	1	2	0	0
1956	11	3	Two	2	2	0	0	0
1963	10	3	Two	2	2	0	0	0
IRUS-75	11	3	Two	2	2	0	0	2*

* DRAGON and light machine gun

The last experimentation at the Combat Development Experimentation Center [Fort Hunter Liggett, CA] with rifle squad size evaluated only squads operating dismounted with two elements. Squads were examined ranging in size from 7 to 15 men. The results established very little difference among the candidates in capability to accomplish assigned mission. But, the findings show, as squad size decreased, fire efficiency increased. The maneuver team, when the squad was split for fire and movement, had greater efficiency as its size was decreased. Research by Booz, Allen Applied Research, Inc. supplemented the IRUS-75 Study with an examination of small-unit combat experience in Vietnam, 1966-1967, and a history of US Army squads and platoons, 1935-1967. This historic information indicated that the span of control of one leader in a squad is between three and seven, that automatic weapons are critical to success in any action, and that small squads were just as effective as large squads. Studies also indicated that individuals tend to pair off within squads in combat, and that de facto organization into small teams, rather than the Table of Organization, governed.

Particularly as the U.S. looks forward to the introduction of the MICV, we ought to consider adopting a doctrine of fighting the vehicle as one element of squad fire and movement, dismounting only when necessary, and then only with one small team. This concept might permit us to reduce the infantry squad to seven or eight men, and utilize vehicle capacity for additional weapons, particularly antitank weapons.

The Yom Kippur War underscored the soundness of the American doctrine of combined arms, the close integration of tanks with supporting infantry and artillery. But perhaps we can usefully reexamine our organizational provisions for that integration as we move toward the XMI tank and MICV. At present, of course, our battalions are organized by branch, with infantry and artillery in different units from tankers. Each branch/ battalion has its own Training Program, its separate training test (ATT), and looks to a different service school for doctrine. The new tank and the MICV will be interdependent weapon systems, and both will rely on close and continuous artillery support. This suggests that the time has come to draw up a TO&E which is manned by all three branches: tankers, infantrymen, and artillery forward observers, all equipped to fight mounted. Fort Knox ought to take the lead in developing this concept, and should become the proponent for the new tri-arm battalion. Knox also should concert with Fort Benning in drawing up a single training test (ATT) for a mounted battalion, a measure which need not await any of the new vehicles.

Availability of Infantry Antitank Weapons

The US Army must be prepared for combat against an enemy possessing armored fighting vehicles in quantities which seriously outnumber our own. Obviously, we will need plentiful antitank weapons to cope with such a situation. Moreover, virtually everyone in the combat area should be capable of employing antitank weapons. An examination of our present policy discloses some cause for concern that we will be unprepared.

Our most plentiful antitank weapon as far as stocks are concerned, is the mine. Yet the mine, as a weapon system, poses severe transportation problems in delivery to point of use. Heavy and bulky (25 meters of a standard pattern 1-2-2 weighs over 1000 pounds), mines can nonetheless make a significant contribution to any tactic if commanders repackage, palletize, and use Army aviation for pinpoint delivery.

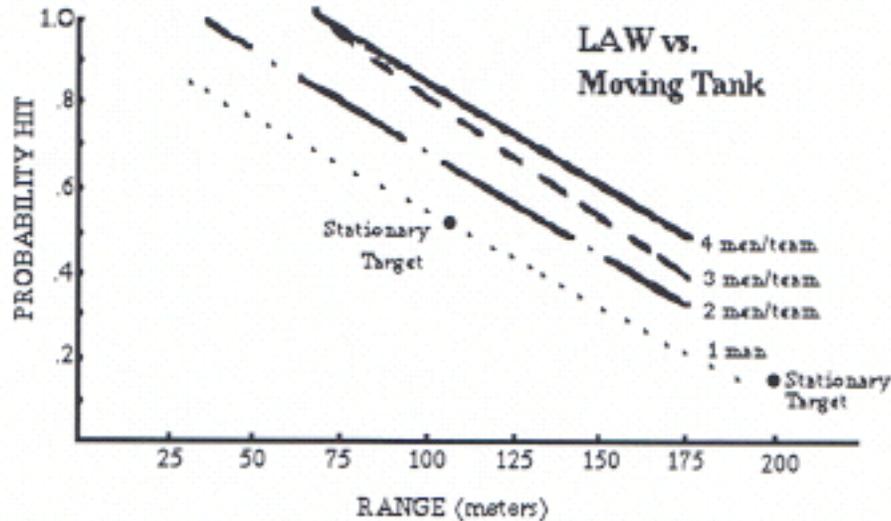
The US Army's light antitank weapon, LAW, is a relatively cheap munition built on the "throw away" concept, a development unique among antitank weapons in the hands of major powers. Our present doctrine (division basic load) calls for its allocation on the basis of 30 rounds per company, battery or troop; 36 rounds at the battalion headquarters; and 18 rounds at the brigade headquarters. Eighteen rounds are allocated per divisional combat support unit. (Allocations are set forth in FORSCOM Regulation 700-3.) DRAGON and TOW are weapons assigned only to maneuver units. Present plans are to allocate 27 DRAGON weapons per maneuver battalion (except armor). TOW is assigned 18 per battalion in all maneuver battalions, except the airborne infantry that has only 12, and the armor battalion, which again has none.

The Egyptian infantry pelted the IDF tanks with literally thousands of weapons. SAGGER was fired in volleys, and every Egyptian infantryman was said to be equipped with the RPG-7, which also was fired en masse. Plainly, our present meager allocation of weapons deserves reconsideration in the light of Arab success with mass employment.

Concepts of Employment

In addition to the evidence in American reports on the Yom Kippur War, recent experience at a CONUS post indicates that there is a major tactical benefit in training infantry to employ LAW—and presumably other antitank weapons—in pairs, at least. The following graph presents data collected from over 4000 firings of the LAW sub-caliber rocket at actual moving tanks. The LAW sub-caliber rocket has a trajectory similar to that of the service round, and the data

are believed to be accurate for the latter. The three upper curves record probability of a hit against a moving tank, taking into account various speeds and target attitudes, at ranges from 25 to 200 meters. The lowest curve, with two "bullets", shows the probability of one man's hitting a stationary target with one rocket at 100 and 200 meters respectively.



This experiment would urge U.S. commanders to train their infantrymen to fire LAW as buddy teams, in pairs; or preferably, as a fire team (three or four men). Similar data needs to be developed for DRAGON and TOW to explore advantages of massed fires, although the higher single round hit probability, and relative insensitivity to range, may obviate that tactic.

Another area of concern is the assignment of gunners for these systems. Soviet doctrine provides for dedicated gunners/crews for all antitank weapons. This insures a higher level of expertise because the same gunner handles the weapon as his primary mission. U.S. Army policy now calls for LAW and DRAGON to be assigned on a "designated" basis —meaning that a weapon, could be assigned to any of several gunners within the unit. While the "designated" system is appropriate for the LAW, DRAGON may be better used if issued to dedicated (specified gunners, like TOW). This issue, too, should be examined.

But more important than the concept of mass are the steps we take to exploit the full range and accuracy of TOW and DRAGON. TOW represents a genuine revolution in infantry weaponry: for the first time, American foot soldiers have a gun which will outreach that of any threat tank, with greater accuracy. While TOW gunners do not enjoy the offset advantages of the SAGGER "pilot," our system is inherently more accurate and easier to master, and if employed in

concert with tanks and mounted infantry, can, therefore, be turned to better tactical advantage. It is disturbing, however, to observe that our TOW designers consider TOW an infantry weapon, withholding it from tank battalions. But tank battalions and mechanized infantry battalions ought to be equally capable of fighting combined task forces, and TOW ought to be as readily available in the one as the other. Moreover, TOW is usually depicted by USAIS in a solo, defensive role, whereas—as the Germans illustrated with their 88mm during CRUSADER—the greatest potential of a long-range antitank weapon is in an overwatch role with tanks in the attack. So we should plan to use TOW, and DRAGON; and so we should train.

Training Infantry for Antitank Warfare

The LAW experiment cited above also proved that firing at a moving tank poses a significantly different problem for the gunner than firing at a stationary hulk: the "pucker factor" is real, and quantifiable. However, it can be overcome: gunners trained with the sub-caliber device, simulating engagement of a moving tank, demonstrated much higher competence with the weapon than those trained according to the field manual, on a conventional range with static targets. Using this training technique, soldiers who had never fired a LAW before were trained to ambush a tank successfully after only four hours of instruction and four practice firings; a sample of 50 soldiers so trained achieved a hit rate of better than 75 percent overall, and better than 90 percent probability of hit operating in pairs against a tank moving at 15 miles per hour, passing their ambush position at a range of 75 meters.

Engagement simulation as a training technique should be adopted as standard throughout the US Army. It is noted, however, that current safety regulations prohibit firing any munitions, even the small, inert LAW training rounds, at a tank with a crew aboard; these regulations will have to be changed. Moreover, ammunition allocations for training are insufficient to support extensive engagement simulation training with the LAW. CTA 23-100-1 and 23-100-6 authorizes only three rounds for the M190 subcaliber LAW training rocket per individual during basic combat training, and five rounds per individual per year for 50 percent of the TO&E strength of any unit authorized the LAW in its basic load. In addition, the CTA authorizes units with LAW in basic load to fire 20 service rockets per year in training.

Both the TOW and the DRAGON systems have been issued with a training simulator which records a hypothetical firing at a beacon mounted on a vehicle down range, in the form of an electrocardiograph-like presentation of deviations from the desired flight path as a function of range. Most soldiers have a great deal

of difficulty in comprehending this presentation. Our current doctrine calls for 80 simulated firings per TOW crew member per annum, and presumably some similar number will be contemplated for designated DRAGON gunners. While both TOW and DRAGON are relatively easier to train with than the Soviet SAGGER missile, Soviet doctrine calls for 2300 simulated firing (using a truck-mobile simulator) before qualification, and maintenance-of-proficiency training of 50 to 60 simulated firings per week.

During the DRAGON tests in 1972, the US Army Infantry School demonstrated to AMC (Army Materiel Command) a training technique using portable television recording equipment that seemed to offer some prospect of cheap and soldier-relevant training. Work thereon was arrested lest it slow deployment of the DRAGON system in its present configuration. The Infantry School should now be directed to revive these experiments, and to attempt to conduct engagement simulation with TOW and DRAGON. Possibly the Multiple Integrated Laser Engagement System (MILES) can offer a practical solution to this problem (prototype MILES equipment will be available for testing in mid-CY 1974).

Training in antitank mine warfare cannot be relegated by Infantryman to Combat Engineers: antitank mining should be a tactic open to any infantry commander, as a supplement to his other antiarmor weapons. Recent experiments with training technique in a CONUS division have substantiated that practical exercises with practice mines can train ordinary infantry to emplace standard pattern minefields with precision, and with speeds that are predictable and proportionate to manpower invested. But practice mines are in short supply, there having been none procured between 1965 and 1972. TAMA (Training Aids Management Agency) has recently resumed production of limited quantities, but is experiencing shortages of plastic. Accordingly, CG, TRADOC, will have to assert a priority for practice mines, so that performance objectives can be set for the training of all units likely to have to employ antitank mines in battle.

Nor can camouflage be regarded as the province of specialists. Concealment is the best protection available for TOW, DRAGON, or any infantryman stalking tanks.

A word of caution is needed here to remind that most US Army units are now equipped with the 90mm and 106mm recoilless rifles, not DRAGON and TOW. But the observations above concerning LAW apply, and whether the Medium Antitank Weapon (MAW) is DRAGON or not, or whether the Heavy Antitank Weapon (HAW) is TOW or not, we must develop and train intensively in antitank tactics.

In fact, given recent history (Easter Offensive, 1972; Yom Kippur, 1973), we should anticipate that most units would receive an upgraded MAW and HAW on the eve of combat. This suggests a training plan for "precursor training" by which we would teach concepts of employment, and prepare qualified instructor personnel, well in advance of issue of the weapon, as an adjunct of readiness.

Finally, we need to consider the US Army's overall training strategy for antitank weapons. TOW and DRAGON are expensive, on a cost per round basis. For this reason, there has been much attention paid to the "training base," on the grounds that there we establish the quality of TOW gunners. The fallacy of this approach is evident in TOW equipped units, where, in the usual case, less than 50 percent of assigned personnel have received formal training in a TRADOC institution: training center or school. More importantly, we thus expend training resources on entry level soldiers, who, in the unlikely event they are properly assigned, then serve under sergeants who have never been trained formally on the weapon --creating a leadership/ job satisfaction problem from the outset. Recently DA eliminated the MOS 11H, which included TOW personnel, and combined it with 11B (infantryman). TRADOC must now move to put the "training base" with the operational weapons, and throw the US Army's total resources --ammunition, instructor expertise, training aids-- behind training lethal antitank gunners in units --or LAW, MAW, and HAW-- as teams.