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FOR ERRATA

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THE FOLLOWING PAGES ARE CHANGES

TO BASIC DOCUMENT

CORG-M-198
C1

COMBAT OPERATIONS RESEARCH GROUP
HEADQUARTERS
UNITED STATES ARMY COMBAT DEVELOPMENTS COMMAND
FORT BELVOIR, VIRGINIA

Changes No. 1
CORG MEMORANDUM
CORG-M-198

4 May 1965

CORG MEMORANDUM
CORG-M-198, The Evolution of the Armored
Infantry Rifle Squad

CORG-M-198, 19 March 1965 : changed as follows:

Make the following pen and ink changes:

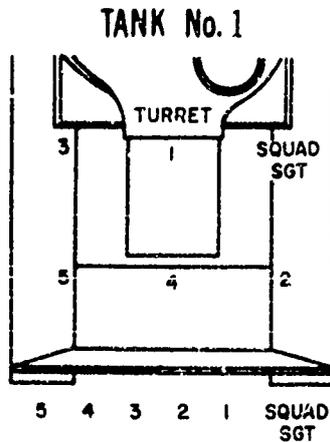
1. Page vii, CONTENTS, following F under Appendices, add the following:
"G. RIFLE SQUAD MOUNTED ON TANKS 87"
2. Insert attached page 87 following page 86.

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APPENDIX G

RIFLE SQUAD MOUNTED ON TANKS

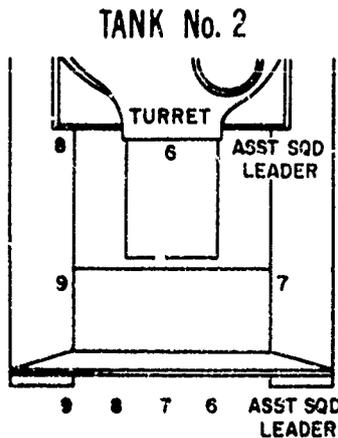


To form for mounting the tanks, the squad is equally divided for the mounting on a section of tanks. Each 1/2 squad takes its dismounted posts at the command, DISMOUNTED POSTS, FALL IN. The men fall in at attention five paces in rear of, and facing, the respective tanks.

At the command, PREPARE TO MOUNT, each 1/2 squad moves to the mounting posts.

a. The squad sergeant, Nos. 1 and 2 riflemen move to rear of the right track of tank No. 1. Nos. 3, 4, and 5 riflemen move to rear of the left track.

b. Assistant squad leader, Nos. 6 and 7 riflemen move to rear of the right track of tank No. 2. Nos. 8 and 9 riflemen move to rear of the left track.



At the command, MOUNT

a. The squad sergeant, Nos. 1 and 2 riflemen mount tank No. 1, from the right side. Nos. 3, 4, and 5 mount from the left side of tank.

b. The assistant squad leader, Nos. 6 and 7 riflemen mount tank No. 2, from the right side. Nos. 8 and 9 mount from the left side of tank.

When the infantry is securely in position on the tanks, the squad leader or assistant squad leader reports to the tank commander, INFANTRY ALL READY

Drill for the mounting of armored infantry on tanks.

Source: FM 17-40, Armored Infantry Company
War Department, November 1944.

CORG - M - 198

CORG MEMORANDUM

CORG-M-198

**THE EVOLUTION OF
THE ARMORED INFANTRY RIFLE SQUAD**

by

Virgil Ney

19 March 1965

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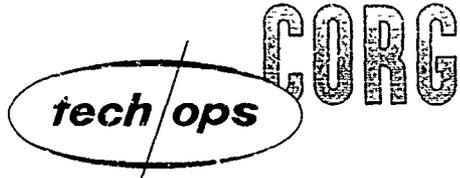
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COMBAT OPERATIONS RESEARCH GROUP

CORG MEMORANDUM
CORG - M-198

**THE EVOLUTION OF
THE ARMORED INFANTRY RIFLE SQUAD**

by

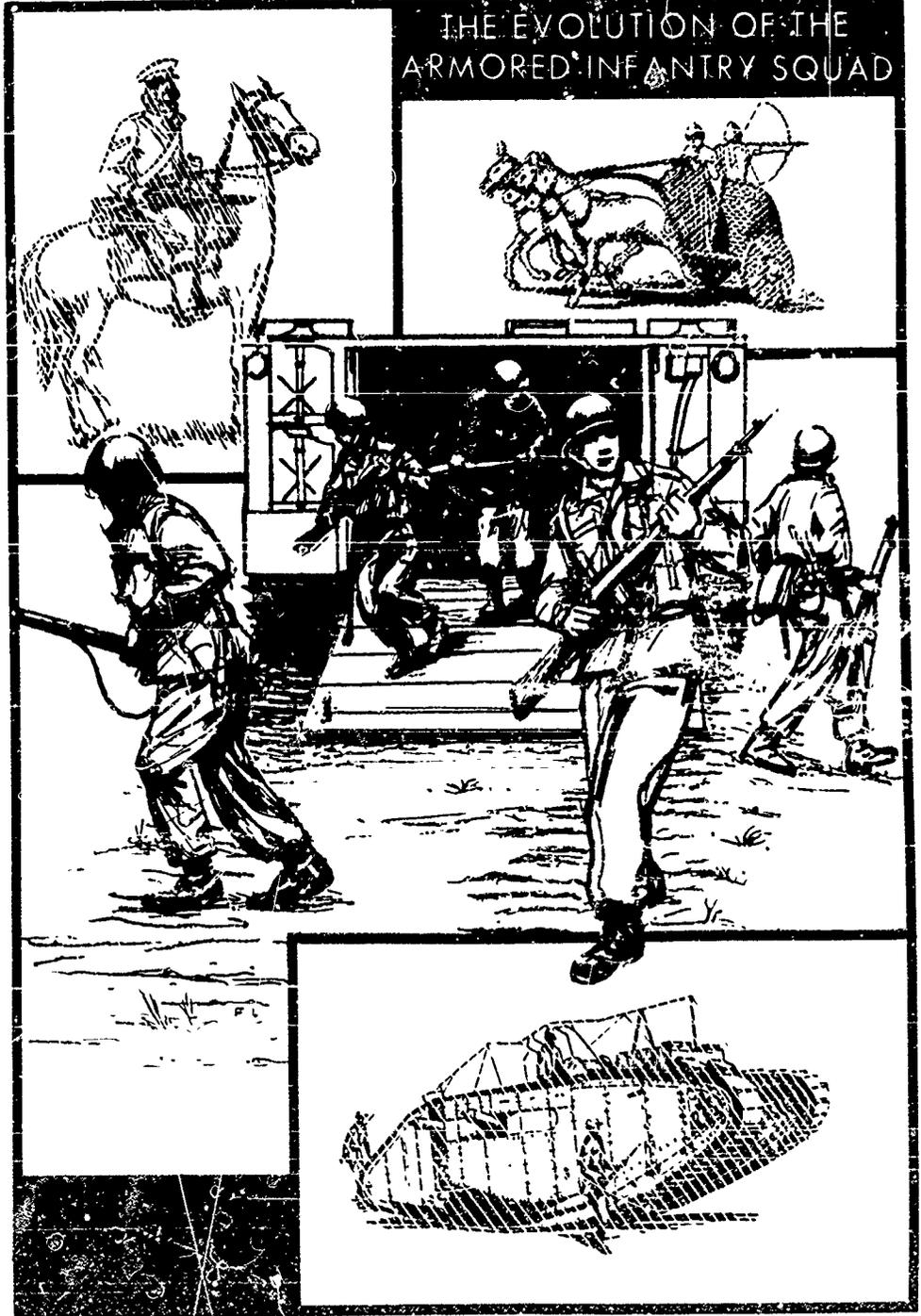
Virgil Ney

19 March 1965

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UNITED STATES ARMY COMBAT DEVELOPMENTS COMMAND
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THE EVOLUTION OF THE ARMORED INFANTRY SQUAD



ABSTRACT

The concept of the mobile, armored soldier is followed from its basis in antiquity to the modern tank-infantry team doctrine as conceived and practiced by the United States Army. The historical background is traced from the campaigns of the ancient Britons, Egyptians, and Romans through the armored cavalry concept to the formation of the Armored Force in 1940. From 1940 to 1965 the evolution of the Armored Infantry Squad is detailed by reference to tables of organization and equipment, to doctrinal literature, and to the writings of field commanders and historians who have chronicled the exploits of armor and armored infantry in more recent times.

SUMMARY

This study covers generally the subject of the evolution of the armored infantry rifle squad from 1940 to 1965. In order that the evolution of the squad will have historical meaning, considerable attention is given to the ancient concepts of armor and mobility. Historically, the infantry squad evolved from a military need for a small unit to carry close combat to the enemy. The armored infantry rifle squad was developed to fill the requirement of a new weapons system, the tank, for infantry protection and support in combat. The organization and equipment of the squad is described in detail, especially from the aspects of personnel and weaponry.

Part I, Historical Background, traces the evolution of armor and mobility from antiquity to the beginning of World War II. There is a general discussion of the use of armor, individually and collectively, and of the mobility of the horseman. Of special consideration is the dragoon, or mounted rifleman who rode to battle and then dismounted to fight on foot.

The development of the tank and the Tank-Infantry Team concept during World War I and after is described in some detail. Between World Wars I and II, the contributions of General Lesley J. McNair and General Adna R. Chaffee are shown as significant in the development of armored infantry as part of the Armored Force in 1940.

Part II covers the evolution of the armored infantry rifle squad from 1940 to 1965 including the numerous reorganizations for combat and the development of armored infantry tactical doctrine. The development of a satisfactory armored personnel carrier and its gradual emergence from an open half-track to a covered full-track vehicle is documented. The reorganization within the squad and its adaptation to new weapons and tactics is shown by detailed reference to the tables of organization and equipment for the war period and later.

The Appendixes contain pertinent extracts of tables of organization and equipment, and additional extracts from Mobilization Training Programs giving duties of various members, tactical doctrine, and descriptive data on armored personnel carriers.

The Bibliography includes books, articles, reports, and official and semiofficial publications and others of interest used in the preparation of this study.

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THE EVOLUTION OF THE ARMORED INFANTRY RIFLE SQUAD

INTRODUCTION

The evolution of the armored infantry rifle squad has its beginnings in antiquity. The concept of armor for the individual soldier antedates the Greeks and the Romans. The maniples of the Roman legion can be considered the ancestors of the infantry squad of modern times. The optimum combination of mobility with armored protection for attacking troops found its modern interpretation in the tank of World War I. But like the armored chariot of the ancients, the early tank possessed the ability to protect only a minimal number of fighting men. In turn, the tank itself required protection and support from those whose advance it supported by fire and shock action.

Early military tactics recognized the fact that team work was necessary to advance units upon the battlefield. It also recognized the fact that there was a limit to the number in combat which could be controlled by one leader. In the confusion and general tumult of battle there arose the need for small units to continue fighting after contact with the leader of the larger unit was lost and he could no longer exercise personal control and leadership. Thus, the development of the modern infantry squad unfolded over the centuries as the answer to this vital military need.

For centuries before the invention of the steam engine and the internal combustion engine, the horse provided the mobility required for warfare. With the advent of automatic weapons the mobility of armies was negated and the horseman was no longer the elite of the battlefield. The shock action and mobility of the horse were downgraded by the machine gun and the static siege warfare of the trenches.

With the advent of the tank, a difficult problem was presented to the military profession. How were the tanks to be employed in connection with infantry and vice versa? What battlefield relationship was to exist between these novel and successful combat machines and the standard infantry unit? The answers to the foregoing questions were soon forthcoming. Tanks, it was found, could not successfully advance in the attack without the close support of infantry. They could take ground but they could not hold it -- without infantry support. Further, they needed protection. The Tank-Infantry Team concept grew out of the experiments conducted by all armies during the years between World Wars I and II. Various solutions to the problem of how to employ the infantry with tanks were advanced over the years. The increased speed of the rapidly developing tank called for infantry which possessed comparable mobility.

To possess this mobility the infantry must be mounted in motor vehicles. Trucks were employed at first, but partially armored, cross-country vehicles were developed to meet this new combat requirement more satisfactorily.

In the United States Army in 1940, The Armored Force was established and the tables of organization provided that armored infantry be assigned to the Armored Divisions. Thus was established the requirement for the armored infantry rifle squad in the United States Army. The solution was simple -- assign an infantry regiment to the Armored Division and mount it in some type of truck or personnel carrier. But it was soon discovered that the armored infantry units down to the squad level were faced with a more complex situation than the standard infantry rifle squad faced in combat. Organization, training, and equipment differed from that of the standard infantry squad. The advent of the half-track personnel carrier with carrier-mounted weapons gave the armored infantry rifle squad a base for mobility and fire support. Reorganized several times during the war period, the armored infantry rifle squad, as part of the armored rifle battalions organic to the armored divisions, rendered outstanding combat service in support of their tanks.

The invention of the tank was responsible for the establishment of the armored infantry. Because of the nature of the partnership between the tank and the armored infantry squad, it is necessary to review the history of armor. After 1940, in the United States, the history of armored infantry is the history of the development of the Armored Force. Prior to that date, European armies developed armored troops to accompany, and support the tanks in combat. Since World War II, all armies have developed the concept of armored infantry. In certain armies, all infantry is transported in tracked, covered, armored personnel carriers. In the United States Army, personnel carriers are now capable of amphibious operation or transportation by aircraft. Modernization has included replacement of gasoline engines by Diesel engines. This latter characteristic gives the armored personnel carrier an additional safety factor in the non-flammable character of the engine fuel. Extra fuel can be carried unprotected from small arms fire in the open on the hull. This increases the cruising radius of the carrier. As a result, logistic requirements for fuel and oil are simplified.

Historically the infantry rifle squad developed because of the necessity for dispersal of men upon the field of battle if they were to survive hostile fire and wage effective combat. The advent of a new weapons system, the tank, called forth the requirement for the armored infantry rifle squad. The continued need of the tank for support from riflemen on the ground, and in the immediate vicinity, created an environment of which the tank and the armored rifle squad are the primary and essential factors. While

both the tank and the armored infantry rifle squad have the capability of operating out of, or away from, the environment for a limited time, neither can survive in combat without the support of the other.

THE EVOLUTION OF THE ARMORED INFANTRY RIFLE SQUAD

PART I

HISTORICAL BACKGROUND

The strength of all Armies ever was and is the infantry, and the strength of it is the heavy armed. He who is in good armor fights with courage, as fearing no wounds, and frightens him with whom he fights that is not so well armed.¹

The idea of protecting the soldier with some type of armor is as old as the history of warfare. The concept of mobility for the soldier has its bases in antiquity. The combination of armor protection and wheeled mobility manifested itself in the campaigns of the ancient Assyrians, Britons, Egyptians, Persians, Greeks, and Romans. The armored chariots and the armored battering ram as employed by these ancients may be considered the ancestors of modern armor.

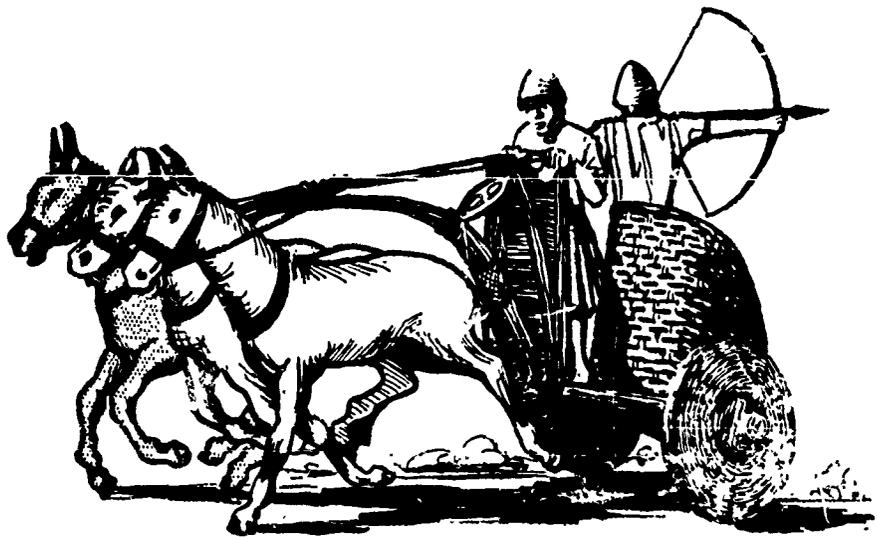
... the development of weapons is essentially a search after a weapon which would dominate the enemy. Were it successful and the dominance complete, there would hardly be any other military problem. In the absence of an absolute superiority in weapons, as is generally the case however, the military problem becomes that of finding the most effective way of using such weapons as are available. One, and probably the most important, approach to this has been through mobility. In all contests the more agile and mobile of the opponents always has the advantage of being able to seize and keep the initiative. Thus, when some 2000 years before our era the light horse-drawn war chariot was introduced, it gave its users a marked degree of superiority over the slower foot troops who had hitherto prevailed.
(Ref. 1, pp. 3-4)

The following comment is significant for the light it sheds on the employment of the chariot as a personnel carrier:

To the Egyptians the chariot was a fighting vehicle in the full sense of the word - a vehicle from which they fought in battle. In Europe, on the other hand, the chariot was usually only a means of bringing the warrior

¹ Turner, Sir James. Pallas Armata London: Printed by M.W. for Richard Chiswell at the Rose and Crown in S. Paul's Churchyard, MDCLXXXIII.

to battle, or, in modern military parlance, a personnel carrier. The operational mobility which the chariot bestowed upon its European users was a great asset and the harrying hit-and-run tactics of the British chariotry gave Caesar's troops considerable trouble during the campaign of 54 B. C. (Ref. 1, p. 452)



ANCIENT WAR CHARIOT

In the Roman campaigns in Britain the combat employment of chariots by the British typified the general European usage. It is of interest to note that very little fighting was done from the chariots, except perhaps, occasional javelin barrages. The chariot-mounted infantryman of the British dismounted and fought on foot while the chariot with its driver stood by ready to carry him forward or to the rear depending upon the issue of the battle. In a sense, these chariots were the early ancestors of our modern-day armored personnel carriers.

Caesar commented upon the British chariot tactics as follows:

The British charioteers . . . begin by driving all over the field, hurling javelins; and the terror inspired by the horses and the noise of the wheels is usually enough

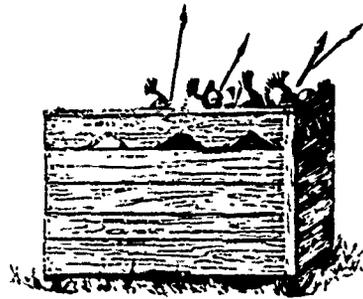
to throw the enemy ranks into disorder. Then they work their way between their own cavalry units, where the warriors jump down and fight on foot. Meanwhile, the drivers retire a short distance from the fighting and station the cars in such a way that their masters, if outnumbered, have an easy means of retreat to their own lines. In action, therefore, they combine the mobility of cavalry with the staying power of foot soldiers.² (Ref. 2, p. 5)

It is interesting to note that Caesar in the campaign of 55-54 B. C. recognized the basic characteristic of the modern armored infantry when he observed that these charioteers combined ". . . the mobility of cavalry with the staying power of foot soldiers." This comment is as valid today as it was over two thousand years ago.

Armored vehicles of various types have moved throughout history. Armored sheds from whence protruded battering rams were edged forward by the muscle power of the troops sheltered within. The Macedonians and the Greeks excelled in the invention and operation of these moveable, armored siege vehicles. Under Alexander the Great such vehicles reached a high state of development but their greatest period of operational success was to come later in the Hellenistic period.

Originally the Roman "testudo" or "tortoise shell" covering was formed by the shields of the soldiers. Later it was not much more than a simple wheeled armored shield or "plutei," which shielded the legionnaires from arrows, spears, stones, and other missiles as they pushed toward the enemy position. In a proper sense, the improved "testudo" was not a personnel carrier but it is mentioned because of its ability to provide a moveable shield for the attacking elements. (Ref. 1, p. 457)

ROMAN PLUTEI
(MOVEABLE DEFENSIVE SHIELD)



² The noise caused by the chariots was produced by hollow noise-makers attached to the chariot wheels for the purpose of frightening the enemy. This is an early example of psychological warfare and the idea was continued by Hitler in the twentieth century when noise makers were attached to the Stuka dive bombers of the World War II Luftwaffe.

The various war vehicles devised and employed by the ancients included battle-wagons drawn by horses. Jan Ziska, the Hussite battle chieftain converted his wagon trains into defensive vehicles by forming the wagons into a temporary fort. This practice continued down through the 19th century when the American settlers and soldiers moving westward formed circles of their Conestoga or army wagons and fought off the Indians.³ While the Hussite wagons were not armored except for heavy boards, they did form a wagon stronghold or "wagen-lager." As the use of the "wagen-lager" was purely defensive, it cannot accurately be considered the ancestor of the modern battle tank.

The advent of the horse-mounted soldier brought specialized mobility to the battlefield. In addition to rapid movement the cavalry possessed considerable shock power against infantry formations. This shock action was especially valuable in breaking the squares of enemy infantry as they were drawn up in battle array. Captain B. H. Liddell Hart comments upon the traditional role of cavalry:

... the mounted arm became the decisive arm -- the principal factor in deciding the issue of battles. It then developed into the preponderant element in the composition of armies, the infantry being relegated to a minor place. That change has been commonly ascribed to the deterioration of the infantry arm in the later period of the Roman Empire, but such a conclusion is called in question by the fact that the legions when at their peak suffered repeated defeats by the Parthian Army, with its skillful combination of light and heavy cavalry.
(Ref. 2, p. 8)

Mobility in warfare became important because it carried the battle to the enemy with a swiftness which often permitted surprise. Compared to the heavily laden foot soldier the man on horseback was supreme in his ability to "get there fustest with the mostest."⁴ Clad in light armor and mounted on their small Mongolian ponies, the Mongols overran Europe in the thirteenth century. The heavily armored European knight of the

³ See the account of the "Wagon Box Fight" in ROTCM 145 20, American Military History 1607-1958 Headquarters, Department of the Army, 1959, p. 282. See also "Jan Ziska" by Lieutenant Ben W. Covington III in Armor, Vol. LXX, No. 6, November-December 1961, pp. 53-54.

⁴ Tactical doctrine enunciated by General N. B. Forrest, famous Confederate cavalry leader in American Civil War.

Middle Ages mounted upon his armor-clad horse fought well until gun powder and the hand cannon served to unseat him. Further Liddell Hart observed that:

The end was due as much to the stupidity of feudal chivalry as to the improvement of infantry weapons and tactics. For when more intelligence was applied, cavalry got a renewed lease of power and remained the decisive arm in general for a further five hundred years - until the growing power of firearms rendered it impotent, its excessively vulnerable horse-mounted form.

(Ref. 2, p. 8; Ref. 3, pp. 182-184)



MOUNTED KNIGHT

The concept of body armor for the individual soldier has survived to the present day. In connection with this survival, it is interesting to note that the idea of group or collective armor continued to thrive, however weakly. From the Roman "testudo" to the British tank at Cambrai the span of time is more than one thousand years, yet group rather than individual protection persisted. Basically, the best protection against enemy fire for groups of infantry were hasty field fortifications, or "foxholes" as they were termed in World War II. Upon being connected by lateral trenches, these hurriedly dug holes afforded group protection against hostile fire. The problem involved in this type of protection was simple - it was static and defensive - could not be moved. Once the group left its cover and came under enemy fire, it had no protection but its own fire to prevent the enemy from aiming and firing his weapon. The understandable desire of the infantry soldier to survive was instrumental in the continuing reappearance of individual body armor throughout the various periods of military history. In the American Civil War, body armor was purchased privately and used in some cases, not too successfully, by individuals. The armor mentioned was not government issue but manufactured by civilian firms and sold to the soldier through official sutlers and other civilian followers of the army. (Ref. 4, pp. 148-149)

The following extract from a report of the Assistant Secretary of War for Munitions during the period of World War I is significant for the historical review of armor:

General Rochambeau is said to have worn body armor at the siege of Yorktown. Great numbers of corselets and headpieces were worn in the Napoleonic wars. The corselet which John Paul Jones wore in his fight with the Serapis is preserved at the Metropolitan Museum of Art in New York.* The Japanese army was mailed with good armor as late as 1870. Breastplates were worn to some extent in the Civil War in the United States, and an armor factory was actually established at New Haven, Conn., about 1862. In the museum at Richmond, Virginia, is an equipment of armor taken from a dead soldier in one of the trenches at the siege of that city. There was limited use of armor in the Franco-Prussian War. Some of the Japanese troops carried shields at Port Arthur. Helmets were worn in the Boer War ... Thus it can be said that armor, in coming into use again in the great war (World War I), was resurrected; it was merely revived.

(Ref. 5, pp. 221-222 parentheses supplied)

(* Author's note: A breastplate worn by John Paul Jones may be seen in the collection at his tomb beneath the chapel of the United States Naval Academy.)

The concept of body armor persisted throughout World War I and World War II and later in Korea. In World War I the British developed a small, portable sniper shield which the sniper could emplace at his discretion in the most likely sniper post positions along his front line trench. The United States Army Air Corps provided armored seats for pilots in many of its combat planes in both World Wars and later. Today, flak vests and other forms of body armor are worn by personnel in areas where United States aircraft come under fire.

The concept of the armored horseman has survived to this day in the ceremonial troops of the French and British armies. However, it should be noted that numerous units of Napoleon's cavalry were termed "cuirassiers" or troops wearing the half armor, or breast-plate (cuirasse). The armor in these cases was individual and personal and worn upon the body of the soldier. In contrast to the ancients, there was little attempt made to construct a collective type armor for small groups of men, such as the Roman "testudo" or "plutei." The decline of body armor can be dated from the time of Gustavus Adolphus (1611-32). Lynn Montross in his definitive work, War Through the Ages, points to basic reasons for the decline:

The King found armor irksome to an old wound, and his example was followed by musketeers who relied only on a pot helmet. The growing efficiency of firearms, combined with the gruesome surgery of the day, led foot soldiers of all countries to question whether the weight of the breastplate could be justified by the protection it afforded. Thus the Thirty Years War (1618-48) dates the modern decline of armor, though pikemen and heavy cavalrymen continued for many more years to wear the cuirass.

(Ref 3, p 266 parentheses supplied)

Gustavus initiated important military reforms in the Swedish Army borrowing from the French Huguenot and Maurice of Nassau. Among these innovations was the mounting of infantry upon horse: long-range raiding, thus forming the first dragoon-type organization. Later, he trained the dragoons to fight mounted in the attack as light cavalrymen. In the defense, they were trained to fight as dismounted infantrymen. The advent of gunpowder was not wholly responsible for the decline of armor. There were other valid reasons, as noted below:

The fact is that not gunpowder but tactics caused the decline of armor. Not that armor was unable to stop many types of projectiles shot from guns, but that its weight hampered swift maneuvering, caused it to be laid aside by the soldier. The decline of armor may be said to date from the Thirty Years War. The armies in that period, and particularly that of the Swedes, began making long marches for surprise attacks, and the body armor of the troops was found to be a hindrance in such tactics. Thereafter armor went out of fashion. (Ref 5, p. 221)

With the increase of firearms in the sixteenth and seventeenth centuries attempts were made to give them the mobility of the mounted trooper. But this system did not work too well. Primarily the failure was caused by the difficulty of loading a muzzle-loading weapon while mounted and moving. Further, the weapons were primitive and inaccurate because of their crude ignition systems. The wheel-lock and the snap-haunce often misfired. Thus, while weapon mobility was assured by the use of the horse, the poor performance of the weaponry negated the advantage. Because of the unreliability of firearms:

... under Gustavus Adolphus, Cromwell, Conde and others, cavalry reverted to the methods of an earlier era and charged home, sword or lance in hand, relying on speed to offset the effect of the slowly developing firearms. The return to these methods was temporarily

highly successful but it demonstrated that the more effective new weapons and the highest order of battlefield mobility then available were incompatible. And from this moment mobility and weapon power inevitably began to diverge.
(Ref. 1, p. 6)

As firearms improved, the importance of the cavalry's traditional role declined. Physical shock and struggle were no longer possible because of the lethality of weaponry, both small arms and artillery. The cavalryman was forced to fight in much the same manner as infantry - on foot. The horse then became only a means of delivering the trooper to and from the battlefield.

In Cromwell's New Model army the dragoon occupied an important position in the order of battle. Here, as elsewhere throughout military history, the contemporary weaponry dictated to a great extent the tactics and formations assumed by the troops. Charles Firth in his Cromwell's Army points this out in a most succinct manner:

The offensive arms of the dragoon were a sword and musket or firelock. Unlike the regular cavalry they had no pistols except perhaps in the case of officers. As a rule the dragoon dismounted and fought on foot, one out of every ten men remaining behind the firing line to hold the horses. When he was armed with the matchlock musket, it was absolutely necessary to dismount, because it was difficult, if not impossible, to fire it on horseback. When he had a firelock he could make use of it either on foot or horseback as he chose.
(Ref. 6, p. 125)

The dragoon or mounted infantryman who rode into action and, dismounting, fought on foot became commonplace in early eighteenth and nineteenth century armies. In the United States Army in 1833 the First Regiment of Mounted Rifles was organized as an answer to Indian mobility. This unit was comprised of riflemen who could fight either mounted or dismounted. In 1836, the Second Regiment was formed to guard the trails which traversed the Indian country to the west.

In a practical sense, the dragoon's horse was a personnel carrier. It is interesting to note that the U.S. Cavalry in growing out of the old dragoon regiments operated tactically as dragoons. When the cavalryman dismounted he was for all military purposes, an infantryman. The only advantage he possessed over the infantryman was mobility. It should be noted that the cavalryman, in contrast to the dragoon, did possess another weapon, the shock action of horse and rider colliding with infantry in position. The charge was a rare maneuver, as the infantry's .58 caliber



rifled muskets were highly effective against horses. The "charge" was the final blow delivered by the cavalymen as they rode down the opposing infantry and attacked them individually with saber or pistol. However, the dragoon was also capable of delivering an occasional charge against an enemy in position. One of the best examples of this ability was the charge of the 2nd U.S. Dragoons against the Mexican batteries at the Battle of Resaca de la Palma, 9 May 1846, during the Mexican War. (Ref. 7, p. 165; Ref. 8 and Ref. 9)

The effect of new weaponry upon early tactical patterns can be noted in the following comment of a German Army company commander in 1849:

We would, however, endeavor to render the adoption of the new musket more complete, by arming a considerable portion of the cavalry with this weapon, and converting them into mounted infantry, the horse being simply the means of rapid locomotion. Such a force would be of inestimable value; for instance, in the case of the advanced guard reaching a certain post before the enemy, which might be occupied with marksmen, and thus be enabled to oppose an approaching battery at a greater distance, and for a longer time, in consequence of having the power of retreating quickly. For the same reason, the artillery ought to have the protection of mounted infantry, which would give it a high degree of confidence, even when opposed by infantry armed with the new musket, more especially as infantry coverers cannot follow up the movements of the artillery when the gunners are mounted for the sake of rapidity.

(Ref. 10, p. 136, emphasis added)

The general concept of dragoon operations continued in the United States Cavalry throughout the Civil War. In the conflict the cavalry arm came into its own as an elite screening force or as a reconnaissance element for the huge field armies of both sides. Literally, the cavalrymen were the eyes of the army. Probing or raiding at long range into the enemy lines they combined their fighting mobility with intelligence sensings as to the location of the enemy main body and flanks. But the basic ability to fight mounted or dismounted and to use horse and rider in the charge still remained with the mounted service throughout the war. History records many examples of the cavalry's great contributions, on both sides of the line. Armed with breech-loading carbines, heavy sabers, and Colt and other revolving pistols, the troopers combined increased firepower with high mobility. (Ref. 7, p. 235)

In the post-Civil War period in the United States Army, the horse-mounted trooper was considered by military authorities to be the answer to the problem of the mounted warfare waged by the Plains Indians. The Indian of the Plains was considered by many of those who fought against him to be the finest light cavalryman in the world. Astride his small, tough Indian pony and burdened with little equipment, his mobility was greater than that of the heavily mounted, heavily armed, and heavily equipped cavalry trooper. When the Indian was able to secure Henry or Winchester repeating rifles, he was more than a match for the soldier armed with a single-shot Springfield carbine. (Ref. 7, pp. 278-289)

Infantry was employed in the Indian campaigns and the foot troops trailed the Indian and fought well but possessed little mobility other than their feet. In a sense, there was little that foot troops could do but support the cavalry in long and arduous pursuits of the scattering war bands. The following extract will indicate the military situation with reference to the combined use of infantry, cavalry, and artillery in the Indian campaign:

At dawn on 30 September 1877 Col. Nelson A. Miles with 6 companies of infantry, 5 cavalry companies, and 2 field guns attacked Chief Joseph's camp in the Bear Paw Mountains. Though surprised, the Indians soon recovered and dug in. On 4 October, after a four-day battle, Chief Joseph and the remnants of his band surrendered. In 11 weeks, he had moved his tribe 1,600 miles; engaged 10 separate U.S. commands in 13 battles and skirmishes, and in nearly every instance had either defeated them or fought them to a standstill. (Ref. 7, p. 287)

Beginning with the earliest armored vehicles in contrast to the horse-mounted trooper, the basic problem was one of propulsion. Pulled by animals or pushed by human muscle power, these war vehicles were limited in their mobility. Further, they were highly vulnerable to the losses sustained in the death or incapacitation by enemy action of the draft animals or men required to move them.

... as firearms improved, the importance of the physical struggle declined and the muscle-based tactics of the cavalry had to give way. In spite of many gallant, but foredoomed, attempts to uphold traditional methods the cavalry had to fight more and more like infantry -- rifle in hand -- and use its horses only as a means of transportation off the battlefield. (Ref. 1, p. 7, emphasis added)

The technology of transportation did not keep pace with the new discoveries and inventions in the weapons of war. The machine gun and rapid-fire cannon, the automobile and the airplane had made their appearance by the beginning of World War I. Yet, while experimentation endeavored to find a use for the automobile and the internal combustion engine as ground combat auxiliaries, the horse and the mule survived as cavalry mounts or as draft and pack animals. Orgorkiewicz explains it well.

While the evolution of firearms slowly displaced all earlier muscle-powered weapons by mechanical ones, there was for a long time no corresponding development in the field of locomotion. As before, movement continued to depend upon the muscles of men and horses. Under such circumstances, a slow estrangement between striking power and mobility became inevitable. The advantage consequently shifted to static defense which, once established in strength, was not concerned with movement while an attacker could only with great difficulty combine the two essentials of offensive action: striking power and movement. (Ref. 1, p. 7)

The effort to devise a self-propelled, armored, infantry combat vehicle has been a continuing one. Its progress has, of necessity, been limited to the contemporary technology. Motive power, until the invention of the steam engine and the internal combustion engine, was furnished by the means at hand. How the Scots attempted to solve the problem is shown in the following extract:

The Scots, in 1456, invented a wooden cart which encased its crew and protected them from the weapons of



SCOTTISH ARMORED
WAR CART,
CIRCA 1456

the day. Motive power was again provided by the horse. But this cart had its shortcomings, since the enemy soon learned that the cart was rendered useless when the horse was destroyed. Scots, therefore, went a step further and encased the horse in wood to make it more difficult for the enemy to destroy him.

(Ref. 11, p. 2)

In connection with the evolution of armored combat vehicles, it must be indicated that in addition to the technical requirements of propulsion there were other factors inhibiting their development. New and more powerful explosives and more accurate and dependable artillery and small arms had their negative effects on the creation of a vehicle capable of survival under their fires. Also of some consequence in the delay in the adoption of armored combat vehicles by all armies was the traditional and "lingering appeal of cavalry" as the mobile arm of a fighting force. (Ref. 11, pp. 3-4 and Ref. 8)

Prior to World War I, in the early first years of the automobile, some experimentation was carried on by armies in an effort to convert the self-propelled vehicles to military use. Basically, the concept was centered upon the automobile as a lightly armored weapon carrier. One of the earliest experimenters in this field was an American, Major R. P. Davidson of the Illinois National Guard. In 1900, Major Davidson mounted a Colt machinegun on a quadracycle, a type of light automobile. The details were as follows:

... The crew of four rode on box seats. Inside these seats 125 rounds of ammunition were carried - less than a minute of fire. Fuel for 200 miles was carried in a heavy, steel drum. In the summer of 1900 Major Davidson, with a crew of cadets from the Peoria Military Academy, traveled from Fort Sheridan, Illinois to Washington, D.C., carrying a message from Major General Joseph Wheeler to Lieutenant General Nelson A. Miles.

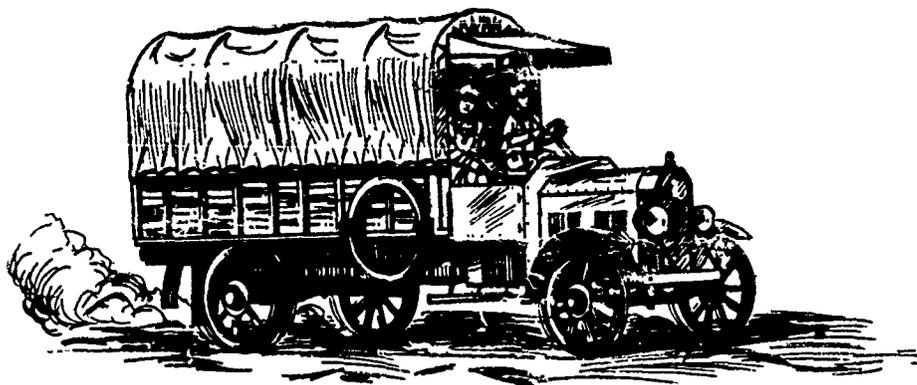
(Ref. 11, p. 34)

While Major Davidson was continuing to experiment with self-propelled weapon carriers, there was similar activity noted in the armies of Europe. In France, Britain, and Germany the new mode of transportation, the automobile, was given serious consideration by the military authorities. At this point in the development of the automobile as a military vehicle, the essential objective was its employment as a highly mobile weapon carrier with minimal armor for the protection of the gunner and driver. There was little consideration given to its use as a personnel carrying vehicle, armored or unarmored. Scout cars, which were lightly armored, were built upon commercial automobile chassis by the British. These armored cars were employed with success in World War I by Allenby in Palestine and by Lawrence in Arabia. These areas were the fronts where there

was highly mobile warfare in distinction to the stalemate on the Western Front where the machine gun ruled the battlefield. (Ref. 12, pp. 19-46; 47-98; 116-127)

The concept of the automobile as an infantry carrier asserted itself at an early date in the United States. As early as 1910, Major Hugh J. Gallagher, Quartermaster Corps, United States Army, designed such a carrier. The following extract gives the details:

... a special troop-carrying body (was) mounted on a two-ton White, commercial chassis. Seats for sixteen riflemen were arranged down the center of the body facing outward. Under the seats were lockers for the men's field equipment. The rifles were carried either in their hands or fastened in special racks at the back of the seats. The space between the two rows was utilized for a long, narrow, water tank. At the rear of the vehicle was additional locker space to carry reserve rations. This machine, carrying two squads, a section leader and a driver, all with field equipment, made a test run from Atlanta to Fort Oglethorpe and return. The running time for the 264-mile round-trip was about eleven hours. (Ref. 12, pp. 40-41 parentheses supplied)



EARLY U. S. ARMY INFANTRY CARRIER, CIRCA 1910

Because of lack of funds, Major Gallagher's project was not adopted by the United States War Department. In consequence, U.S. World War I infantrymen footslogged through the mud of France and occasionally, when mobility was the requirement of the hour, rode the cargo trucks or railroad freight cars, the famous 8 horses: 40 men.

In 1914, at the beginning of World War I, neither of the principal armies possessed effective, operational armored vehicles. There were several reasons for this lack, namely, apathy on the part of military professionals who believed that the cavalry was the answer to the problem of mobility and that motors, when used in war, were for the hauling of supplies to the front. The situation at the front was essentially a stalemate caused by the firepower of the machine gun and artillery. The armies dug in and began a siege war that was marked by tremendous slaughter and no decision. The infantry and the artillery, these two stalwarts of the ancient trinity of infantry, cavalry, and artillery, were lacking in the power of maneuver to be decisive in combat. The cavalry had begun the war but it had withered away in the blasts of the machine guns. Thus the doctrine of mobility was lost in the muddy, fire-swept terrain of Flanders and France. (Ref. 11, p. 4)

Certain farseeing British military minds were searching for a solution to the problem confronting the infantry and artillery. How this solution was found is one of the great stories of military history. Captain B. H. Liddell Hart, the distinguished British military historian, in his distinguished work, The Tanks, credits the solution to Major General E. D. Swinton.

In his book Eyewitness (1932) he (Swinton) tells the story of how a solution of the problem came to him. The vague idea of an armored vehicle crystallized into the more definite idea that it should be capable of destroying machine guns, of crossing country and trenches, of breaking through entanglements, and of climbing earthworks. Then while revolving possible means of fulfilling these conditions, he suddenly remembered a report he had received just before the war about an American agricultural machine, the Holt Caterpillar Tractor. A friend of his who was a mining engineer, Mr. Hugh Marriott, had suggested that it might be of military value for transport purposes because of its remarkable performance in crossing broken ground. (Ref. 2, p. 22 parentheses supplied)

With his idea rejected by the War Office, the then Colonel Swinton returned to the battle front in France. But there was one individual member of the Committee of Imperial Defense who would not reject Colonel Swinton's plan for employment of the Holt Tractor as the chassis for an armored, weapon-bearing, trench-crossing machine. This person was Winston Churchill, the First Lord of the Admiralty. The following quotation is significant:

On 24 February 1915, Colonel Swinton's idea was adopted, not by the War Office, for whose benefit the plan was intended, but by the Royal Navy. Win-

ston Churchill, the only member of the Committee of Imperial Defense in favor of the idea, continued Colonel Swinton's fight ... Because of this naval origin, even today (a naval designer was chairman of Churchill's committee, The Landship Committee) tankers all over the world use a jargon peculiar to the Navy in referring to parts of the tank. We have such nautical terms as the hatch, the ports, the hull, the deck, the bow, and the superstructure.

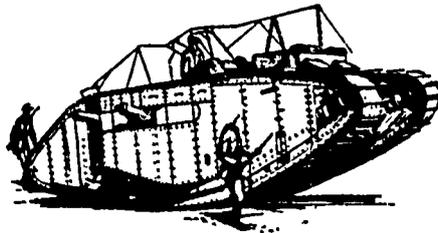
(Ref. 11, p. 4 parentheses supplied)

The subsequent history of the tank is too well known to be recounted here in detail. On 15 September 1916 modern tanks were employed by the British Army in battle for the first time along the Somme front in France. While the numbers engaged in this action were small, there being only 49 in all, they did surprise the Germans. Moving ahead of the infantry, the tanks, as they were so designated for security reasons, fulfilled their mission of breaking through the wire and advancing with impunity against machine gun and small arms fire. But there was little or no precedent for their tactical employment. Where did tanks fit into the ancient and sacrosanct trio of infantry, cavalry, artillery?⁵ With their restoration of a degree of mobility to the struggle, the tanks, in a sense, exhibited some of the characteristics of the almost defunct cavalry. What was the relationship of infantry to this new and effective weapon of warfare? The following extract will serve to answer this question partially and to indicate the requirement for armored infantry at that early date.

Tanks were first employed on a large scale on 20 November 1917, when the British used 378 tanks in their attack on Cambrai. The tanks went forward on a seven-mile front, followed by six infantry divisions. At the end of 12 hours a penetration nearly six miles deep had been made, and 7,500 prisoners and 120 guns captured. The attack with tanks in the Third Battle of Ypres, although it penetrated deeper than other trench warfare attacks, fell short of complete success because no plans had been made for exploitation, and no reserves, either tank, or infantry, were available to keep up the momentum which had been gained.

(Ref. 11, p. 5)

⁵ In 1917, the French soon realized that tanks alone could not function successfully without the support of infantry riflemen. The immediate solution was to organize and attach a special company of infantry designated as "infanterie d'accompagnement" to each 16 tank "groupe." The mission of the infantry companies so assigned was to provide the necessary close-in protection, to mop up nests of enemy resistance with small arms and grenade fires, and in general, to function as infantry, to complement the action of the tank.



BRITISH MARK I TANK,
CIRCA 1917

The tank restored partial mobility to the battlefield of World War I but the full potential of the tank as an offensive weapon was not realized. The tactical role of the tank, even after the stunning effect of Cambrai, did not seem clear. Actually, in the absence of a doctrine, and based upon a conservative professional military point of view, the tank was consigned a secondary role to the infantry, the "Queen of Battle." Tanks would be used to support infantry by reduction of enemy strong points of resistance and to put automatic weapons out of action and by sheer vehicular weight and crushing power, to reduce obstacles. But the tank, restricted to the slow advance of the foot soldier, had no opportunity to demonstrate its capabilities. But in the post-World War I era, there were a few forward-looking men:

... General Fuller, De Gaulle, Hart, and General Chaffee realized that the advent of the tank had restored mobility to the battlefield, had introduced a new weapon of offense to counteract the machine gun, that infantry now possessed a worthy teammate, and that shock action which had disappeared with the exit of massed horsemen, was again an active battlefield agent.
(Ref. 11, p. 8)

In the post-war United States, the National Defense Act of 1920 assigned the Tank Corps to the Chief of Infantry. A Tank School was organized at Fort Meade, Maryland, but in 1932 it was transferred to Fort Benning, Georgia, the home of the United States Infantry School. Within one year, the Tank School was further downgraded to become a Section of the Infantry School.

In the meantime, in Europe and in Great Britain and in Russia, there were various experimental attempts to establish a doctrine for the tanks.⁶ In the United States in 1930 an experimental tank, or armor unit

⁶ For the account of the German experimentation with tanks and armored infantry prior to World War II, see Ogorkiewicz, *op. cit.*, Chapter 7, "German Armoured Formations," and Chapter 6, "French Armoured Formations," and Chapter 13, "Britain." See also General Heinz Guderian, Panzer Leader, London: Michael Joseph, 1955, for a first-hand account of the founding of the "Panzertruppen" units of the German Army.

patterned after the British force was established at Fort Eustis, Virginia, but it was soon disbanded and the arms of the service instructed to carry on their own experimentation in mechanization.

Regardless of the fact that the tanks were assigned to the infantry arm, the mobility and shock power engendered by these weapons necessitated that the cavalry arm become involved in the development of the tank and in the establishment of a doctrine for its employment in combat. By an officially condoned subterfuge, the tanks assigned to the cavalry were designated "combat cars" in order to avoid competing with the Infantry Tank development. How this was done is shown in the following extract:

In order to allow the Cavalry to develop armor along lines independent of the Infantry, the mechanized cavalry was formed under the Chief of Cavalry. This unit was not equipped with tanks; it was equipped with combat cars, so-called, even though these cars were similar to the Infantry tanks.

(Ref 11, p. 9)

By 1936, with the gradual but inevitable phasing out of the horse cavalry, the mechanized cavalry was engaged in pioneer experimentation at Fort Knox, Kentucky, where the newly organized 7th Cavalry Brigade (Mechanized) was stationed. The speed of the combat cars influenced to a great extent the indicated requirement for an infantry that could accompany such armor. This fact called for the complete separation of the armor from its ties to the foot-bound infantry. It should be noted, at this time, that the horse cavalry had entered into an experimental period wherein the horses were hauled in portee van trailers by motor truck tractors with the squad of troopers mounted in the accompanying trucks. This expedient was a partial solution to the problem of the horse versus the motor. How the problem of tank-infantry mutual support was partially resolved in the early developmental phase is shown by the extract below:

The Infantry continued to develop the tank units which were organized for close support of the Infantry. These tank units did not need reconnaissance, security or other organic supporting weapons; they were merely another Infantry support weapon. But the Cavalry, finally beginning to substitute the tank for the horse, looked to this new mechanization for missions of a more independent type. The Cavalry actually began to expand on its old traditional missions; it visualized a type of organization which would have organically all the supporting arms needed in modern warfare -- infantry, artillery, air,

signal, engineer, and the other auxiliary services. The Cavalry visualized a team of combined arms, with great mobility, long radius of action, extreme shock action, and the independence necessary to carry out missions deep in the enemy's territory.
(Ref. 11, p. 14)

Concurrently with the experimentation of the cavalry with combat cars, the infantry carried on with units and vehicles that were devised for the close support of infantry in combat. As such, these infantry tanks were merely another support weapon. But the cavalry, forced to seek a substitute for the horse, saw the tank and its organization as organically combining all the supporting arms - infantry, artillery, air, signal corps, and engineer and other auxiliary services. Contrary to the basic infantry concept of the combat role of the tank, the cavalry concept was based upon the combined arms team idea, with great mobility, long radius of action, away from a base. The cavalry concept gave armor the independence required to enable it to conduct missions deep in hostile territory. The combat value of shock action as in the old horse cavalry was stressed by the cavalry proponents of armor. (Ref. 11, p. 14)

In view of his great contributions to the forming of the Armored Force, and his insistence upon the proper evaluation of the employment of the basic three arms within that force, it seems highly proper to give Major General Adna R. Chaffee considerable credit for the United States Army concept of armored infantry. Although there is much to be said on behalf of the post-World War I German Army leaders, such as General Heinz Guderian and his concept of "Panzergranadiere" (Armored Grenadiers, or Infantrymen), General Chaffee was the progenitor of the idea in the United States Army.

The invasion of Poland by the Germans in September 1939 demonstrated conclusively that armor had restored mobility to modern warfare. However, the use of the armored divisions by the Germans also indicated the shock power and breakthrough potential of massed armor. In France, the Blitzkrieg was carried out by the armor-aviation team with the Stuka dive bombers flying direct fire support for the swiftly moving panzers and armored infantry on the ground. With such examples of German combat successes, it behooved the United States to delay no longer the organization and training of an Armored Force. (Ref. 7, p. 14)

With the advent of the Armored Force, the age-old problem of the relationship of infantry to tanks again asserted itself. As Orgorkiewicz notes, the problem may be well summed up as follows:

Infantry and its relationship to tanks has been one of the thorniest aspects of the evolution of mechanized

forces. For years it has been argued that the principal function of tanks is to support the infantry and that they should, therefore, be subordinate to it. For almost as long a few have argued from the other side that tanks can critically dispense with the infantry and, in general, assume a subsidiary role to the latter. The former view still finds support in tradition-bound military doctrines but arguments and counter-arguments about the superiority of infantry over tanks, or vice versa, are essentially futile for the two arms are complementary and the real problem is not to decide between them but to effectively combine them together.

(Ref. 1, p. 385)

Prior to the attack upon Pearl Harbor and sixteen days before the activation of General Headquarters, United States Army, the Armored Force was organized as of 10 July 1940.⁷ With a history of over twenty years of tank experimentation and development, the United States Army was about to create a partial answer to the German victories of May-June 1940. From the beginning, the Armored Force was a strong and unified organization. Of the greatest importance to its future was its gaining of control of all tanks formerly assigned to the Infantry, Cavalry, and Field Artillery. The problems facing the new arm were many and complex but the most pressing one is described below:

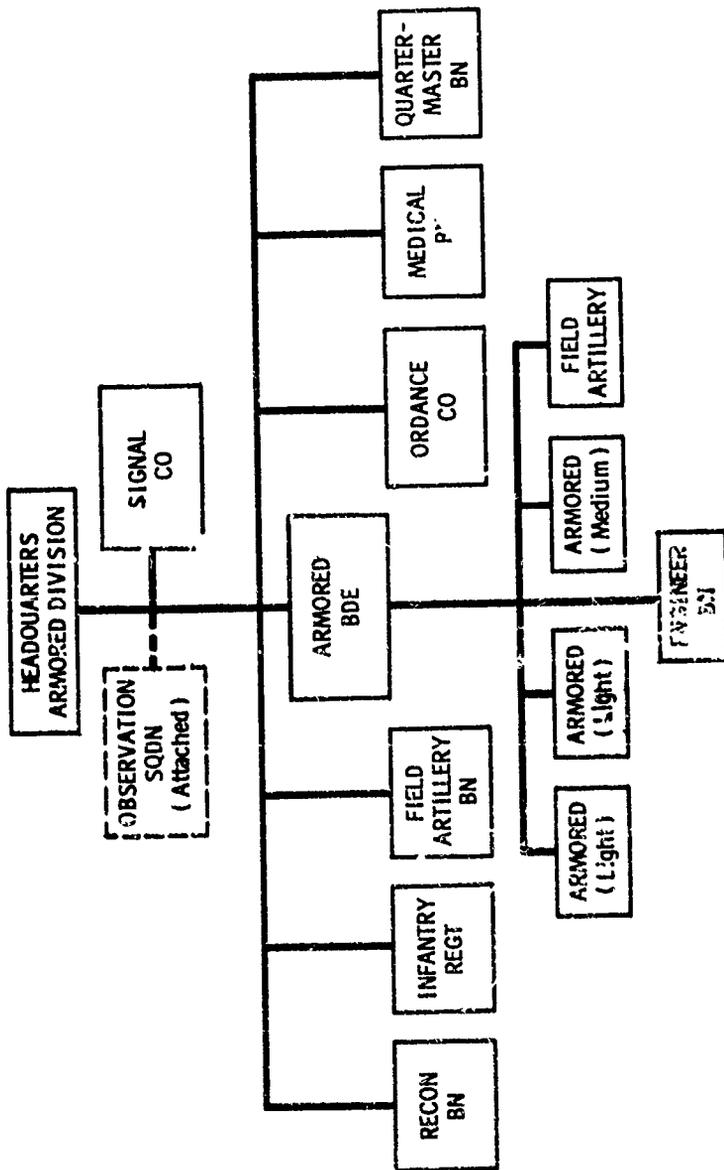
The development of the tank since 1916 had in effect produced a new technique of warfare. An answer had to be found to the question whether emphasis should be placed on specialization in its use, resulting in a relatively independent organization to meet the new need, or whether the new organization should be kept within the established framework, acting interdependently with the older parts.

(Ref. 1, p. 57)

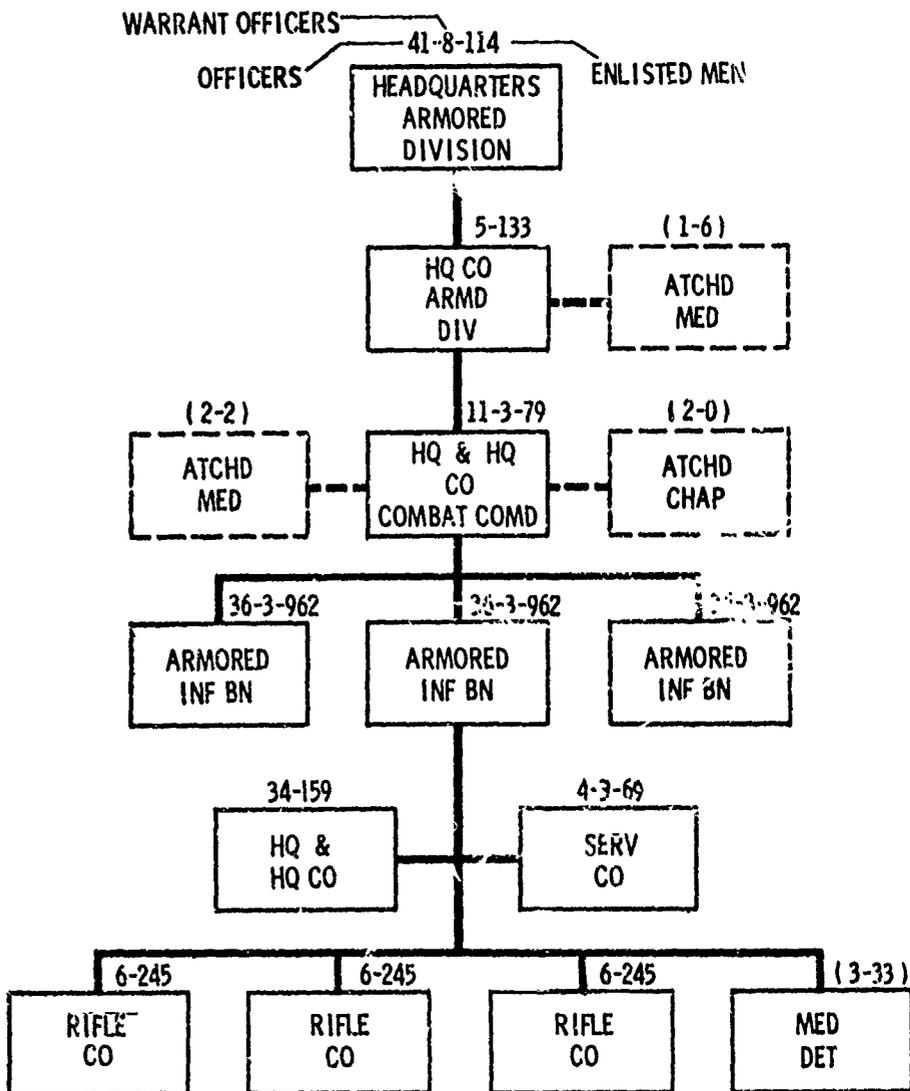
After several reorganizations of the Army in which the Army Ground Forces replaced the General Headquarters, the Army Ground Forces under Lieutenant General Lesley J. McNair prepared the United States Army for combat. Organization and training were the principal missions of the Army Ground Forces.

⁷ During the 1940 spring maneuvers in Louisiana the expanded 7th Cavalry Brigade had attached to it an infantry regiment carried in trucks. Various shortcomings were found in this first joint employment of armored units and motorized infantry, including the need for half-track personnel carriers and howitzers to support the infantry units. (Ogorkiewicz, *op. cit.*, p. 88)

ARMORED DIVISION, USA, 1940



ARMORED DIVISION, USA, 1943



The lessons learned from the early combat of World War II were translated into the training and doctrine taught the Armored Force. Of great significance was the early American understanding of the importance of specialized infantry:

During the early stages of World War II the United States had the opportunity to profit from the lessons of the Polish and French campaigns; but the logic and imagination of such leaders as General Adna R. Chaffee, (the father of the Armored Force), were not always promptly utilized. In a statement to the Congressional Subcommittee of Appropriations, 14 May 1941, General Chaffee included such comments as: Even after the experiences of the Polish campaign " . . . the French had no concept of the unified tactical action of the combined arms grouped in the armored division" nor of " . . . the supreme importance of the role of combat aviation combined with the armored force." He also noted that prior to the present war the British failed to evaluate properly the importance of the combined arms in armored units. Epecially did they fail to appreciate the importance of specialist infantry and combat aviation support . . .⁸
(Ref. 11, pp. 14-15, emphasis and parentheses added)

In Germany, in the mid-thirties, the planners of the new German Army remembered the need for infantry to accompany the tanks and developed a workable solution in the "Panzergranadiere" or armored infantry rifleman. In 1935, General Fuller, the great British exponent of machine warfare, visited the German Grand Maneuvers. What he saw there prompted him to write, as follows:

What is required is not an infantry tank -- that is, a machine to protect infantry -- but what I will call 'tank-infantry'; men trained to work with tanks in such a way that, directly an enemy anti-tank weapon is spotted by aircraft or opens fire, it is at once smothered by rifle and machine-gun bullets. When we get such a combination, each protecting the other and linked by low-flying aircraft, an ideal co-operation is established and will, in my opinion, always prove superior to mere weight of numbers.
(Ref. 13)

⁸ General J. F. C. Fuller and Captain B. H. Liddell Hart of Great Britain were staunch and early advocates of the union of aviation with armor. Both prolific authors in the military and historical fields, these writers were almost prophetic in their views of the conduct of future warfare.

With reference to the part played by General Lesley J. McNair, Chief of The Army Ground Forces, in the organization and development of armored infantry, it can be said that he acted as a balancing element. Conservative by nature, he brought to the planning and discussion stages the sound knowledge and broad experience of a professional artilleryman. The Army Lineage Book had this to say about General McNair and his thinking on the subject of armored infantry:

Armored infantry differed very little from standard, and General Lesley J. McNair, Commanding General, General Headquarters, objected to its differing at all. The chief variance was that armored troops had enough organic vehicles to move all their men at once. They shared this characteristic with motorized infantry (an element of motorized division), which came into existence in August 1940 and lasted only until July 1943. Unlike motorized, armored infantry had vehicles that could operate across country and that were lightly armored to repel small arms fire.
(Ref. 14, p. 50)

In view of General McNair's very definite stand on the armored infantry and his overall influence in the reorganizations of the Armored Force, he must be credited with having exerted a strong influence toward realism in the formation and subsequent reorganizations of the armored infantry. His refusal to be impressed or influenced by the often unrealistic but sincere requirements of the various arms resulted in an Army Ground Force that was realistic and functional. His attitude toward armor is clearly shown below:

. . . General McNair . . . had always doubted the invulnerability of the tank. It became clear that tanks would frequently have to be escorted by foot troops sent ahead to locate and destroy antitank defenses. It was recognized that the armored division, internally, required more infantry in proportion to tanks and, externally would usually operate in closer proximity to infantry divisions than had been supposed. The increasing rapprochement between tanks and infantry raised not only the question of the internal structure of the armored division but also that of the number of armored divisions which ought to be mobilized.
(Ref. 15, pp. 322-323)

PART I

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PART II

1940-1965

Cavalry will die a lingering though natural death, but the cavalry idea will certainly not die. It will live on in the form of the motorized trooper, and the mechanized one as well.

Major General J. F. C. Fuller

In connection with the basic organization of the armored infantry in 1940, it should be noted that the Armored Infantry Rifle Squad was established in conformity with TOE 2-27 P (tentative), 16 July 1940. This unit functioned in the maneuvers of 1940 and it consisted of the peace-strength infantry rifle squad of eight members, including the squad leader—a corporal. The squad was, in effect, a standard infantry rifle squad under TOE 7-17, 6 December 1938, mounted in a truck, or later in a half-track armored combat vehicle. The squad's armament was in a transitional state with the M1 rifle, replacing the M1903 (Ref. 1)

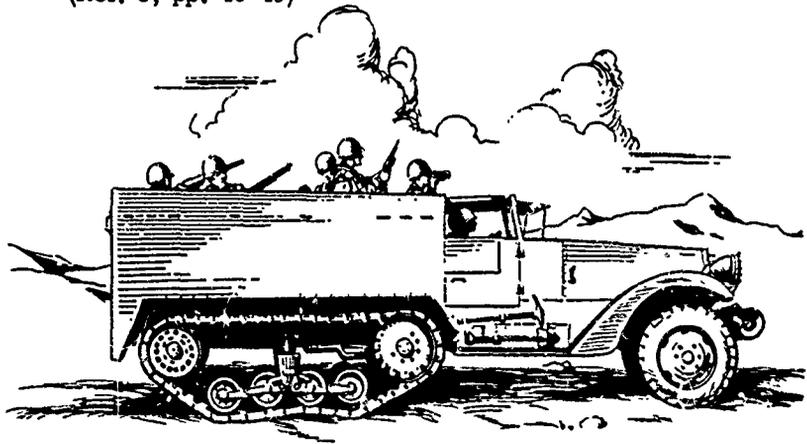
The initial formation of the armored infantry is explained in the following extract from The Army Lineage Book, Volume II, Infantry:

The next type of specialized infantry . . . was that intended to provide the foot elements of the new armored divisions. It was called "armored infantry." The first of this type in the United States Army came into being when the old 6th Infantry was converted to armored on 15 July 1940. After that, certain numbers which had been inactive on the infantry list since just after the first World War were activated in 1941 and 1942 to become armored infantry. These were the 36th, 41st, 46th, 48th-52d, 54th-56th, 58th, 59th, and 62d Regiments. Within a few months the new armored infantry regiments were broken up to form separate armored infantry battalions. First and last there were sixty-six of the latter. (Ref. 26, p. 49)

In the standard infantry rifle squad the BAR (Browning Automatic Rifle) had been eliminated in favor of the M1 rifle. When the M1 rifle was not available, the M1903 rifle was issued and in units equipped with the M1903 rifle, one BAR and one pistol were authorized in place of one rifle. On 15 November 1940, TOE 7-27 P (tentative), 16 July 1940, was superseded by TOE 7-27, Infantry Company, Rifle Regiment, Armored Division or Armored Company, Rifle Reconnaissance Battalion, Armored Division, 15 November 1940, which provided the armored infantry squad with the following wartime organization: the squad leader was a sergeant and the assistant squad leader was a corporal. Both leaders and the squad members were armed with the M1 rifle. (Ref. 2)

The mounting of the standard infantry rifle squad in a combat vehicle posed new problems for those charged with the development of doctrine and tactics for the now highly mobile infantry units which formerly had measured their combat mobility in foot-miles or regulated motor marches. The basic concept that each armored infantry rifle squad should have its own organic vehicle if it was to function in combat asserted itself at this time. Orgorkiewicz covers this early period in the following comment:

Ideally each basic infantry unit or squad (section) should have its own vehicle with cross-country characteristics similar to those of tanks to make it possible for the two (infantry and tanks) to work together. Unfortunately, although the development of armored infantry carriers began during the First World War, even during the Second World War only American armored divisions had the whole of their infantry mounted in armored carriers, of the half-track type. Others for the most part, had to make do with trucks. To make matters worse, the trucks were adaptations of medium-size commercial vehicles, ill-suited to off-the-road operation. Consequently, infantry units of the armored formations have had to dismount well away from the firing line and move into action on foot, instead of remaining as long as possible in their vehicles. By the same token, they could not accompany tanks closely and usually the mobility of the truck-transported or motorized infantry has been so different from that of tanks that the two were apt to operate separately. (Ref. 3, pp. 48-49)



U. S. ARMY HALF - TRACK, M 3

In the United States Armored Force, the infantry combat transportation in 1941 was the lightly armored, half-track M-3, a compromise between the wheeled cavalry scout car and the tracked tank.⁹ With no cover provided for the squad and driver, the M-3 was armed with a heavy machine gun, M1917A1 with tripod M1917A1 for mounting for fire support on the ground away from the vehicle. (Ref. 3, p. 390, Ref. 4, pp. 81-85). General Charles de Gaulle, one of the world's greatest exponents of armored warfare, has this comment:

In proportion as the tanks produce their effect, so the infantry advances. Sometimes this is done on caterpillar-vehicles. Sometimes they make their way on foot. In any case, their task is to take possession of captured ground. .
(Ref. 4, pp. 141-142)

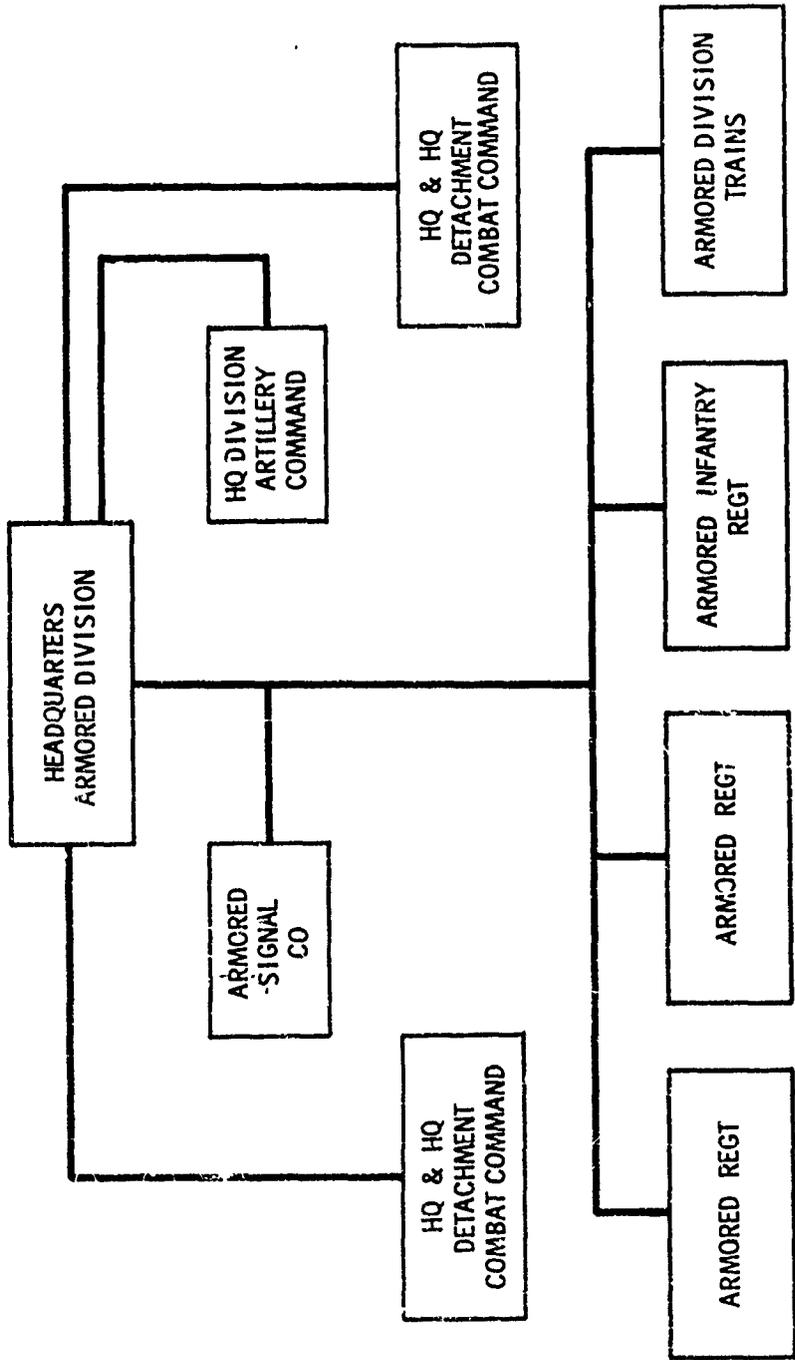
In the organization of the Armored Division under the provisions of the tables dated 1 March 1942, the total strength of the Armored Division was 14,620 of which 4,848 was in tank units, 2389 in armored infantry, and 2,127 in armored artillery. Armored Infantry was organized within the division as a regiment of three battalions. Armored infantry differed from standard and motorized infantry which moved in trucks in that its personnel could move simultaneously in lightly armored half-tracks. (Ref. 5, p. 323)

The relationship of the armored rifle infantry squad to the standard infantry rifle squad is explained in the following extract from a monograph prepared at the Armored School shortly after World War II. These and subsequent comments are included in this study for the value they possess from the point of view of armored infantry combat experience and observation:

Armored infantry regiments were originally copied after regular straight infantry regiments. They were smaller with less men in the rifle companies and had no antitank or cannon company. The number of actual fighting men was further reduced by drivers and vehicular maintenance personnel. The first vehicles used by the armored infantry were the four-wheel scout cars which gave some armor protection but had little cross-country ability. They were soon replaced by the M-2 and M-3 half-tracks. The firepower of the armored infantry was greater due mainly to the vehicular machine guns which each vehicle carried. Training was basically dismounted infantry tactics with special emphasis on offensive combat with

⁹See "Wanted: An Infantry Fighting Vehicle," by Captain Clinton E. Granger, Jr., in Military Review, Vol. XLIII, No. 2, February 1963, pp. 26-35.

US ARMORED DIVISION - 1942



tanks. Training was given in mounted marches, formations and fighting the vehicle. The latter was very seldom used as most of the time armored infantry fought dismounted.
(Ref. 6)

TOE 7-27, 1 March 1942, continued the Armored Infantry Rifle Squad under the leadership of a sergeant with a corporal as his assistant squad leader. The automatic rifleman and his assistant were dropped primarily because the .30 caliber heavy machine gun mounted on the squad carrier furnished the fire support formerly received from the BAR team. The inclusion of a tripod for mounting the machine gun on the ground away from the vehicle gave the squad a mobile fire base of considerable power. A driver was added to the squad. His principal duty was to drive and maintain the car, half-track, M3 and to furnish additional close-in fire support for the squad and provide for vehicle defense with the .45 caliber sub-machine gun with which he was armed. The overall strength of the squad was now 11 men, 8 of whom were riflemen armed with the M1 rifle. (Ref. 7)

Reorganization of the Armored Force was one of the considerable accomplishments of Army Ground Forces in 1942. While the Armored Infantry Regiment was retained, combat experience in Africa and Sicily was to dictate its elimination and the substitution of an armored infantry rifle battalion organization in its place. The new tables were published on 15 September 1943. (Ref. 5, pp. 326-327)

The comment contained in Army Ground Forces Study Number 27, 1946, is significant:

As a result of combat experience the infantry element in the armored division grew in importance. The organizers of the Armored Force recognized that there were some missions which could be performed only by infantry troops including security measures at night, mopping up, organization for defense, relief of tank units that were in need of fuel and maintenance, and reconnaissance in force. In the initial reorganization of the armored division on 1 March 1942 a third battalion was added to the infantry regiment (armored) while at the same time the number of tank battalions was reduced from 8 to 6 by the inactivation of the armored regiment (medium) and the inclusion of medium tanks in the remaining armored regiments (light) which were redesignated as armored regiments. In the reorganization of 15 September 1943 the regimental organization was dropped and the separate battalion systems substituted. Under this reorganization, by reducing the number of tank battalions from six to three, the ratio of infantry battalions was changed from one infantry battalion per two tank battalions, to

one infantry battalion per each tank battalion. The increase in the ratio of infantry to tanks was the result of combat experience plus the development of anti-tank weapons such as the rocket launcher, the anti-tank rifle grenade, the panzer-faust, and the extensive use of mines. The British Eighth Army which breached the German line at El Alamein in October 1942, spotlighted the value of infantry. General Montgomery used his infantry to probe the German defenses and to open the gap through which armored units could then pour.

(Ref. 8, p. 36)

That the members of armored infantry rifle squads required additional and specialized technical training above and beyond that received by conventional infantry squads was recognized by the Army Ground Forces. Mobilization Training Program No. 7-1, War Department, Washington 25, D. C., 12 September 1943, Infantry Training Program, Individual Training for Infantry Regiment and Armored Infantry Regiment, provided for 116 hours of technical training for the armored infantry rifle squad. The training schedule was divided into subjects and allotted hours as follows:¹⁰

<u>Armored Infantry Squad</u>		<u>Standard Infantry Platoon (Squad)</u>	
<u>Subject</u>	<u>hours</u>	<u>Subject</u>	<u>hours</u>
Bayonet	8	Automatic Rifle, cal. .30	36
Machine gun, cal. .30	32	Bayonet	8
Tactical training of the Infantry Soldier	16	Rifle, cal. .30	68
Tactics of the crew and squad, night & day	56	Operations of patrols, day and night	8
Vehicular crew drill and maintenance	4	Scouting and observing, day and night	8
Total	116	Total	130

(Ref. 9)

Initial combat experience indicated the requirement of the armored infantry rifle squad for a weapon which could give the squad a primary assault weapon and at the same time enable the squad to have antitank

¹⁰See Appendix E for list of armored infantry training literature as contained in Ref. 9, above.

protection for its own vehicle and for the tanks it accompanies or supports. The addition of the rocket launcher, AT 2.36-inch M1, by TOE, 4 April 1943, satisfied this need for additional protection without causing any decrease in the squad's mobility or overall combat capability. (Ref. 10)

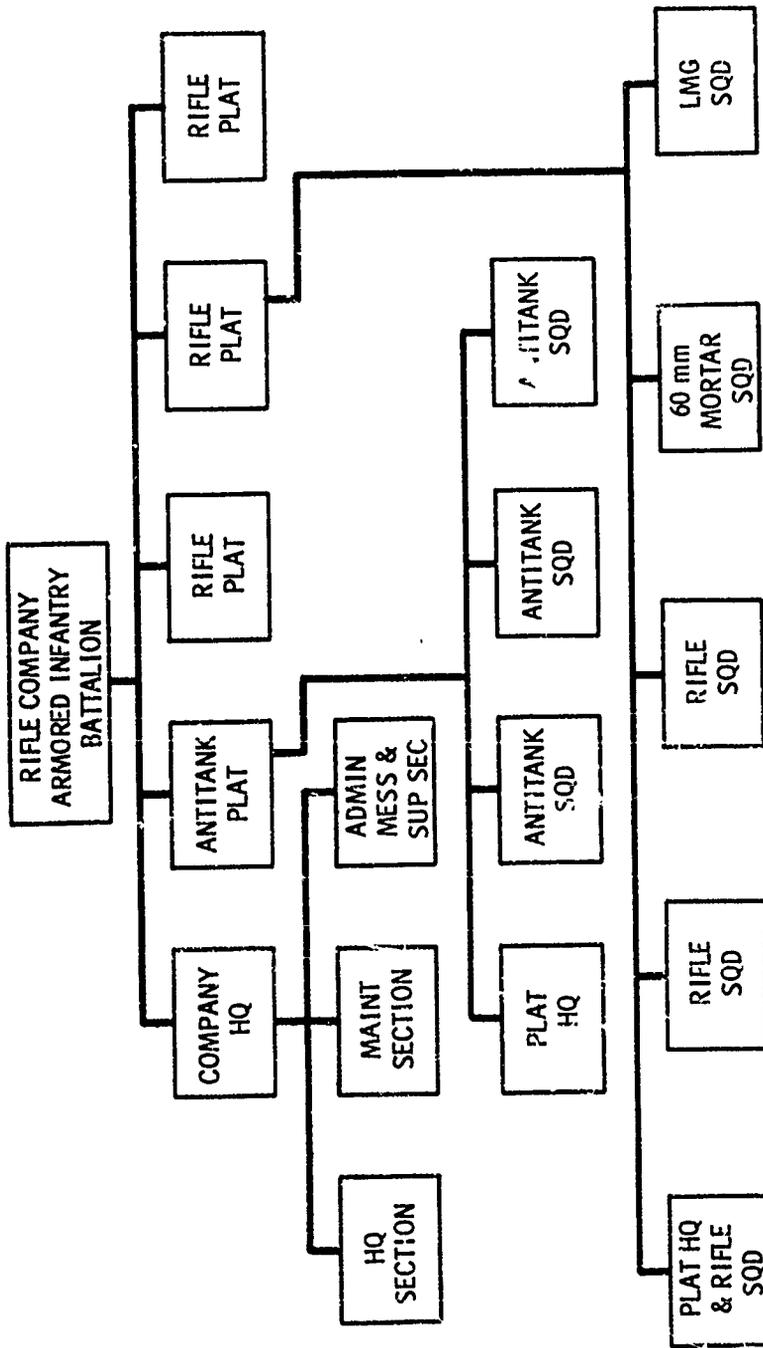
TOE 7-17, 26 February 1944, promoted the standard infantry rifle squad leader from sergeant to staff sergeant and made the assistant squad leader a sergeant. There was a similar elevation in rank for the leaders of the armored infantry rifle squad. TOE 7-27, C2, 7 January 1944, shows the squad leader as a staff sergeant and the assistant leader as a sergeant. The basic reason for the promotion was General McNair's desire to raise the morale and the prestige of the infantry arm. At this time, it will be recalled that the infantry, both standard and armored was vigorously carrying the war to the enemy on the land. The promotion of the squad leaders brought new prestige to the armored infantry rifle squad and higher morale for the leaders themselves. (Ref. 11)

In the armored rifle squad, the higher grades were timely and appropriate for the additional reason that increased mobility and dispersion demanded noncommissioned officer leaders with greater experience and knowledge of tactics, techniques, and weapons. The higher pay and the consequent public recognition of the importance of squad leadership could not guarantee that the leadership, knowledge, and experience required would be obtained. But, in essence, the new ranks and higher pay created a more realistic basis for selection or elimination of squad leaders in the armored infantry.

In connection with the changes above, it should be noted that the squad vehicle M3 was replaced with the M3A2 and that the rocket launcher was now the M9.

The need for organic infantry within the armored division is illustrated in the following comment extracted from Army Ground Force Study Number 27:

Both the 1942 type of division and the 1943 type were employed in combat. The 1st, 2nd, and 3rd Divisions were employed under the 1942 table of organization, the 1st later being reorganized in Italy to conform with the 1943 table of organization. The 2nd and 3rd ended the war as old type "heavy" divisions. All other divisions were employed as organized under the 1943 table of organization or as "light" divisions. The "heavy" type was capable of longer sustained action than the "light" type. Both types of divisions were successful. Certain weaknesses were found in both. Both were weak in infantry, particularly the "heavy" division with its two armored regiments of six tank battalions and armored infantry regiment of three armored infantry battalions. The "light" division with three tank battalions and three



THE ARMORED INFANTRY RIFLE COMPANY

SOURCE: FIA 17-40, ARMORED INFANTRY COMPANY
WAR DEPARTMENT, November 1944.

armored infantry battalions fared better, but needed at least one additional rifle company in each armored infantry battalion in order that tank and infantry battalions could be married up - squad for squad, platoon for platoon, and company for company.

(Ref. 8)

By November 1944, the tactical doctrine of the armored infantry had been forged in the campaigns in Africa and tested on European battlefields from Normandy to the German border. Field Manual 17-40, Armored Infantry Company, November 1944, stated it in these words:

The armored infantry rifle company normally fights dismounted. Under favorable conditions vehicular armament either mounted or dismounted is used to support. If vehicles are used they must be placed in defilade and dispersed. The company moves forward in vehicles until forced by enemy fire, or unfavorable terrain, to dismount. In mounted movement, it is sensitive to mine fields, other obstacles, unfavorable terrain and weather. The armored infantry rifle company is designed for employment with tanks.

(Ref. 12, p. 3)

The similarity between the horse cavalry tactics and those of the armored infantry are readily apparent in the above-quoted extract. A technique of movement used often during World War II and in Korea was the mounting of the riflemen upon the supported tanks and moving forward in the attack.¹¹ This method could be employed when it was not possible to move forward on the armored infantry's organic vehicles. (Ref. 13, pp. 347-357 and Appendix) (See Appendix G for Chart: Rifle Squad Mounted on Tanks.)

The armored infantry rifle company was capable of performing many and varied types of missions. These capabilities and possible missions for armored infantry troops are shown in Field Manual 17-40 in the following categorization. A careful perusal will reveal little difference between the employment of standard infantry and armored infantry once it dismounts. The doctrine was expressed as follows:

In employment with tanks, the rifle company may be called upon to -

¹¹(1) Prior to an attack on designated objectives the tanks and infantry were joined together in a rear assembly area. Infantry vehicles were sometimes left in this area and the infantry rode on the tanks up to the attack position where they dismounted and attacked with the tanks. At other times the infantry rode mounted in their own vehicles to the attack position and dismounted there. (2) Hastings, op. cit.

- (1) Follow a tank attack to wipe out remaining enemy resistance.
- (2) Seize and hold terrain gained by tanks.
- (3) Attack to seize terrain favorable for a tank attack.
- (4) Form, in conjunction with artillery and tank destroyers, a base of fire for a tank attack.
- (5) Attack in conjunction with tanks.
- (6) Clear lanes through minefields alone or in conjunction with engineers.
- (7) Protect tank units in bivouac, on the march, in assembly area, and at rallying points.
- (8) Assist in forcing a river crossing.
- (9) Assist in seizing a bridgehead.
- (10) Establish and reduce obstacles.
- (11) Attack or defend towns.
- (12) Organize and defend a position.
- (13) Perform reconnaissance and counterreconnaissance.

Other Missions. These include -

- (1) Offensive or defensive operations as part of the battalion.
 - (2) Limited objective missions when the enemy is strong in antitank weapons, making it impractical to use tanks.
 - (3) Raiding parties.
 - (4) Security missions.
- (Ref. 12)

The functioning of the tank and its supporting armored infantry unit exemplified team work of high degree. That this was done under the stress of combat was a tribute to the creative ability of the American soldier. The technique on the tank and rifle squad level is explained in the following passage from the cited monograph:

Whenever possible it was found best to join up the same tank and infantry units together in training and combat. Not only would staff sections function better but lower unit commanders and individual tank crews and infantry squads became acquainted and gained confidence in each other. Units gained objectives as a team and not as individual arms. To round out this team artillery forward observers were attached down to include tank and infantry companies from the field artillery battalion in direct support of the unit. This gave a well-rounded team of tanks, infantry and artillery. The artillery forward observer operated dismounted with the infantry and the observer with the tanks rode in a

tank. Wherever possible the same artillery battalions were kept in support of the same units.
(Ref. 6)

TOE 7-27, C3, 2 August 1944, continued the squad leadership with the staff sergeant and sergeant in command. Both were armed with the M1 rifle. The driver was authorized a pistol in addition to the submachine gun, caliber .45. The rocket launcher was now an M9A1 and there were two grenade launchers, M7, authorized for the squad. The TOE did not designate those members in the squad to be armed with the grenade launchers. The addition of the grenade launchers was probably for the antipersonnel effect as a direct defense against antitank weapon crews and for firing pyrotechnic signals. Eventually, in 1945, the General Board, United States Forces, European Theater, recommended that rifle grenade launchers be issued on the basis of one for each rifle. This organization and armament for the armored infantry rifle squad was the one under which the squad finished the war in Europe, as the German armies began surrendering on 4 May 1945, VE Day (Ref. 13)

The next Table of Organization and Equipment 7-27, was dated 16 June 1945, and it provided for the return of the BAR to the armored infantry squad. One private was the automatic rifleman. The squad personnel consisted of nine men (eight riflemen armed with the M1 rifle; one driver for the personnel carrier, M3A2, armed with a .45 caliber submachine gun). The pistol was withdrawn from the driver. The rocket launcher was the M18. The addition of the automatic rifle increased the effective striking force of the squad. It should be noted that the automatic rifle had been included in the armament of the standard infantry rifle squad throughout the period of the war.

The General Board, United States Forces, European Theater, although its recommendations were published after the end of the fighting, justified the addition of the BAR to the armored infantry rifle squad. The Board stated the battle-proven premise that the basic maneuver and combat unit of the rifle company was the rifle squad. Further, that the rifle squad must have the firepower to make it an effective striking force. It should be noted that the Armored Infantry Rifle Squad did possess its organic base of fire in the vehicle-mounted machine gun and a maneuver element, its riflemen. The vehicle-mounted machine gun was provided with a tripod for ground mounting. Thus it was available to accompany the squad away from the vehicle. (Ref. 14 and Ref. 15)

That the organic infantry of the armored divisions was frequently insufficient is shown in the following extract from the Report, General Board, European Theater:

Analysis indicates that in many of the operations in which the main effort was entrusted to armor, infantry was attached on the usual scale of one regiment

per armored division. These attachments were much more frequent in the case of the heavy armored divisions for the obvious reason that while there is parity at battalion level between infantry and tanks in the light division, a one to two ratio exists in the heavy unit. Even the light divisions, although successful in exploitation and pursuit without attached infantry, required additional dismounted strength when employed on secondary missions.

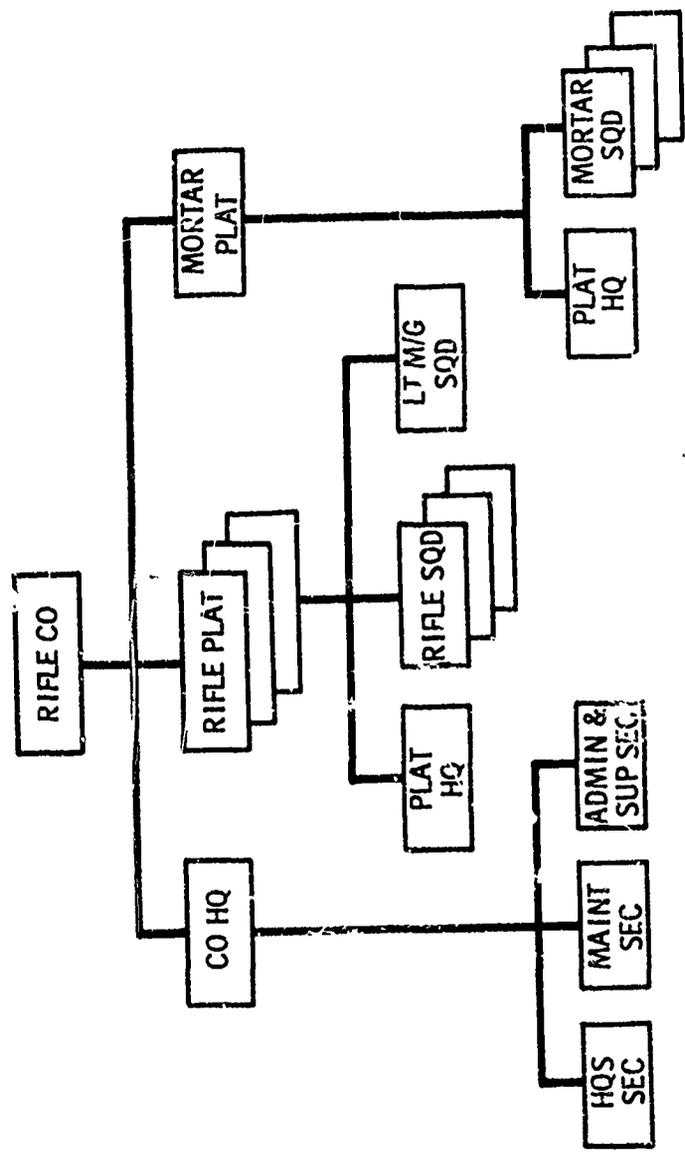
It can be stated that combat experience has definitely shown the need for at least parity between infantry and tanks units in an armored division. Consensus of field commanders is that the ratio of infantry to tank units at company level should be three to two. (Ref. 15, p. 12)

World War II combat experience indicated that the need for firepower in the armored infantry rifle squad was a pressing one. It was needed if the tank-infantry team was to function as planned. The following extract illustrates when effective firepower was crucial to success:

In some instances after committing the tanks, it was found the objective displayed more antitank defenses than was first thought. In such cases it was necessary to have the infantry pass through the tanks and seize the objective before the tanks could move forward. At times the infantry would be holding in a defensive position and the tanks passed through and made an attack with the infantry following. It was found much better for the tanks and infantry to join in a rear area. (Ref. 6)

In the post-World War II period, the organization of the armored infantry rifle squad remained generally the same as it had been at the end of hostilities. By 6 February 1948, TOE 7-27 N brought the armored infantry rifle squad in line with the standard infantry rifle squad by reducing its strength from 12 to 9 men. The automatic rifleman was promoted to corporal. Within the squad, the leadership remained the same with a staff sergeant and sergeant in command. There were seven technicians, 4th class (five were riflemen armed with the M1 rifle; one rifleman was armed with the sniper rifle, .30 caliber M1C; one driver for armored utility vehicle, M44, was armed with .45 caliber submachine gun). There were four .30 caliber grenade launchers, M7A1, authorized for the squad. This increase of grenade launchers followed the recommendation of the General Board, previously noted. There was no specific assignment of the launchers to individual squad personnel. The basic reason for the reduction of the armored infantry rifle squad to a total strength of ten men may be found in the fact that the recent combat ex-

RIFLE COMPANY, ARMORED INFANTRY BATTALION, USA



TOP 7-27N
6 Feb 1948

perience demonstrated it was difficult to control and direct more than eight other men in battle. Further, that the requirements of future warfare indicated that greater dispersion of all units, including rifle squads, would be the general pattern of future combat. While the standard infantry rifle squad now contained nine men, the additional or tenth man for the armored infantry rifle squad was the driver for the newly issued armored personnel carrier, M44. The M44 vehicle was equipped with a machine gun, M1917A1, which was provided with a tripod for ground mounting. (Ref. 16)

In 1946, the Army Ground Forces commented as follows:

The basic doctrines of the Armored Force have changed very little since 1940, but there have been many changes in technique. Maneuverability and gunnery became more essential to success as anti-tank weapons developed, and the principles of the combined arms and fire and movement were strongly emphasized as a result of combat experience. The combat experience of the British and American armored units had a sobering effect upon the theories of invincibility which some leaders held. They began to appreciate that tanks were not all-powerful and invulnerable, that armored infantry was needed to support them, and that armored tactics could not be based upon the assumption that tanks could force their way through a well organized defense. (Ref. 8, p. 29)

The M59 armored personnel carrier which replaced the M44, met the requirement for a highly mobile infantry personnel vehicle. In addition, it offered all-around armor protection for the infantry squad. In view of possible operations under nuclear warfare conditions, the overhead cover afforded was of especial importance. In addition to its overall armor, the M59 possessed limited amphibious characteristics and was air transportable. Weighing 18.7 tons and armed with a .50 caliber machine gun, it became the standard armored infantry vehicle. The .30 caliber machine gun organic to the squad and the .50 caliber machine gun were provided with tripods for ground mounting. Equipped with full tracks, the M59 was able to negotiate all types of terrain in supporting its tanks. This ability to keep up with the tanks ensured the close-knit cooperation of the tank-infantry team as laid down in United States Army tactical doctrine. Of further importance logistically was the fact that the M59 provided for a maximum interchange of parts with other organic standard armored vehicles. (Ref. 17, p.29)

The most significant change introduced into the armored infantry rifle squad by TOE 7-27 N, C1, 18 September 1950, was the replacement of the armored utility vehicle, M44, by the armored personnel carrier, M59. (Ref. 18)

TOE 7-27 N, C2, 15 November 1950, eliminated the grade of staff sergeant and made the squad leader a sergeant, first-class. This change was in accordance with the overall reorganization of the grade structure of the Army. The assistant squad leader remained in the sergeant grade. This elevation in grade and pay gave the rifle squad leader a position one grade below that of master sergeant, the highest noncommissioned grade. Inasmuch as platoons were often commanded by sergeants in the absence of lieutenants, this recognition of the squad command position through increased rank and pay served to add to the prestige and morale of the infantry. (Ref. 19)

In 1952, there was considerable experimentation in search of a solution for a suitable personnel carrier for the armored infantry squad. The T18 series of personnel carrier evolved from the M44 vehicle. Designated the M75, it was issued to armored infantry rifle squads. Some of these vehicles were equipped with turrets and others had machine guns affixed to pintle mounts. However, the T18E2s on trial with units were not equipped with turrets. Under TOE 7-27, 28 August 1952, armored infantry rifle squads were equipped with armored infantry, full-track, T18 series vehicles. TM 9-2800-1, February 1953, indicates that the T18E1 vehicle was equipped with a .50 caliber machine gun, with flexible mount for antiaircraft protection. With the machine gun, .30 caliber, M1919A6, with M2 tripod, the armored infantry rifle squad possessed two machine guns. (Ref. 20, p. 218 and Ref. 21)

The replacement of the half-track vehicle by a full-track vehicle was the result of the recommendations contained in Study No. 42, Organization, Equipment and Tactical Employment of the Armored Division. Ogorkiewicz discusses this important change in vehicles in his book, Armor. His comments are informative and indicative of the problem of securing a satisfactory armored infantry squad vehicle:

The first of the American fully tracked armored personnel carriers, introduced soon after the Second World War, was of the Kangaroo type. Designated the M39, it consisted of the highly mobile 76 mm gun M18 tank destroyer minus its turret and armament. It suffered from the same disadvantages as the Canadian and British Kangaroos and was still open-topped. However, it was followed fairly closely by the M44 which had armor protection all round and which was designed from the start as an armored personnel carrier. As a carrier, it was definitely more efficient, but because it was built to carry as many as 27 men, it rivalled in size a large bus. In view of the enormous target which it presented, only a few M44s were built. This model was abandoned in 1950-51 in favor of the M75. A small number of M75s were tried in the closing stages

of the Korean war, by which this model was joined in service by the very similar M59. (Ref. 3, pp. 392-393 and Ref. 15) (See Appendix D for Armored Infantry Carriers.)

Of considerable interest to armored infantrymen was the prospect of fighting mounted. From the beginning in 1940 one of the possibilities of armored infantry combat was the delivery of fire upon the enemy from the carrier and while in motion. In a sense, this was a reversion to the old cavalry tactics of mounted combat. Obviously, the design of the early personnel carriers offered slight armor protection and subsequent models were covered, which prevented the individual squad member from firing his weapon. As noted previously in this study, the tactics of the armored infantryman were essentially those of the old-time U.S. Mounted Rifleman, or Dragoon, who rode a horse to the battlefield then dismounted and fought on foot as an infantryman. This was the tactic of the U.S. Cavalry, the successor to the U.S. Dragoons. (Ref. 22, pp. 18-21)



ARMORED INFANTRY SQUAD IN SUPPORT OF TANK

Field Manual 17-20, Armored Infantry Units, Platoon, Company and Battalion, August 1957 had this to say with reference to carriers in mounted action:

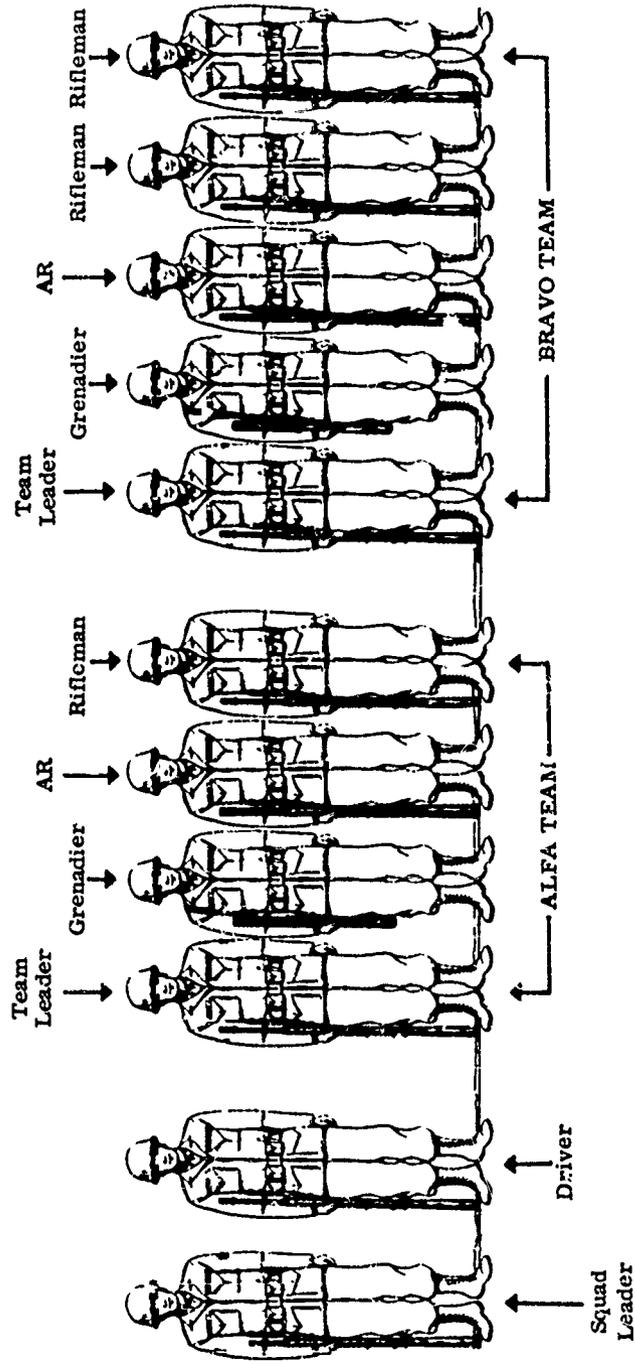
In the attack, the speed, mobility, and armor protection of the armored personnel carrier must be utilized to the utmost. This is best accomplished when tanks and armored infantry are employed together, each supporting the actions of the other. In

order to make full use of the common combat characteristics of tanks and armored infantry, armored infantry should remain mounted in their carriers as long as possible so that --

- (1) Elements of the attacking force of tanks and armored infantry can move forward at about the same speed.
 - (2) The battlefield mobility of both elements of the attacking tank-infantry force is retained.
 - (3) Casualties in areas swept by small-arms, mortar, and artillery fire are reduced.
 - (4) Both tanks and armored infantry can move forward supported by artillery air bursts.
 - (5) A degree of protection is afforded against the effects of atomic weapons.
 - (6) The energy of the armored infantry is conserved so that they are able to fight effectively when needed.
- (Ref. 23, pp. 56-58)

In 1955, the reorganization of the armored infantry squad followed generally that established for the standard infantry rifle squad. TOE 7-27R, 1 February 1955 provided that the five riflemen be classified as senior riflemen with the grade of corporal, one rifleman was armed with the sniper rifle; two riflemen were armed with the M1 rifle; two of the riflemen were rated as privates, first-class, one was the ammunition bearer, in addition to other duties; the driver was a corporal and was armed with a submachine gun, .45 caliber. The leadership of the squad remained the same: one sergeant first-class as squad leader and one sergeant as assistant squad leader. The automatic rifle team remained unchanged: one automatic rifleman was a corporal. TOE 7-27 C, 5 February 1957 made both automatic riflemen corporals. Otherwise the squad remained unchanged. The squad vehicle was designated as personnel carrier, full-tracked with no armament shown. However, FM 17-20, August 1957 indicated that the personnel carrier was equipped with a .50 caliber machine gun for antiaircraft protection and a .30 caliber machine gun with M2 tripod for ground mounting away from the vehicle.

TOE 7-27 T ROCAD (Reorganization Objective Current Armored Division) dated 1 December 1956 began the series of reorganizations within U.S. Army units which were planned to meet the requirements of warfare of the present or of the future. With increased mobility on the land and in the air stressed at all levels of organization, the armored infantry rifle squad was reorganized to form small, hard-hitting fire teams capable of independent action on a widely dispersed battlefield. The introduction of the fire teams into the squad organization of both standard and armored infantry rifle squads greatly increased the flexibility of the unit, but it also demanded that the span of control be exercised by noncommissioned officers of experience. In 1956, the



ARMORED INFANTRY RIFLE SQUAD - 1965

Chief of Infantry, Headquarters, Continental Army Command stated well the problem of control and other factors contributing to the reorganization of the standard infantry rifle squad. There is no valid reason for their non-applicability to the armored infantry rifle squad:

From ... the effects of control, capability for sustained combat, and firepower on squad organization, a limiting characteristic of a good squad organization appears: The squad must contain more men than a single leader can control effectively. Since the system of providing a leader with an assistant to direct part of the squad while the leader directs both the assistant and the rest of the squad is unsound, a squad organization with subunits is clearly indicated.
(Ref. 24, p. 54)

The TOE under discussion provided seven riflemen for the armored infantry rifle squad. Three of the senior riflemen were corporals, one of whom was armed with the sniper rifle. Three of the riflemen were privates, first-class. The driver of the armored personnel carrier was a corporal who was armed with a rifle. The total strength of the squad was 12 men. The squad was assigned three grenade launchers but no specific individuals within the squad were designated as grenadiers. The squad vehicles were shown as armored infantry, full-track, T18 series. The T18E1 vehicles were equipped with .50 caliber heavy machine gun with flexible mount. A .30 caliber machine gun with M1919A6 tripod, M2, was provided for ground mounting away from the vehicle.

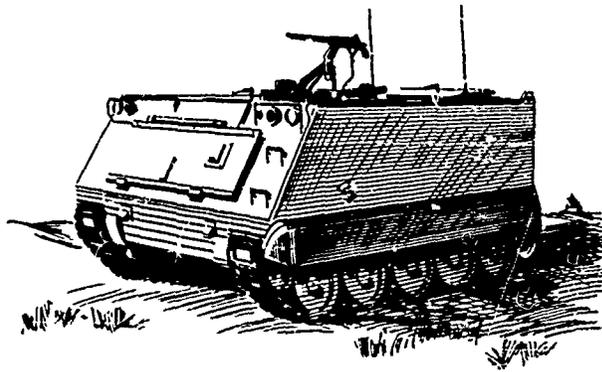
The results that were achieved by the 1960 reorganization of both the standard infantry and armored infantry rifle squad may be summed up in one word: Maneuverability. The reorganization was based on the concept that wide-ranging operations on present or future battlefields would require squads composed of highly-mobile, hard-hitting fire teams with the capability of independent action under combat conditions. The two fire teams gave the squad leader the capability of maneuvering integral units under his overall command. Prior to this change, the squad leader moved his squad personnel as individuals except in the case of the automatic rifle team.

The possible requirements of future warfare call for dispersion of units over broad fronts. To meet this challenge all units down to and including the armored infantry rifle squad must possess the ability to operate independently. In furtherance of this objective, the improved span of control of the squad leader, who now controls two fire team leaders, rather than the entire unit, should be noted. Each fire team, with its ample firepower and flexibility of response in battle areas of considerable depth, requires experienced leadership. Because of the independence of action built into the teams' tactics, the team leader, as well as the squad leader, has to be able to exert maximum control. To accomplish

the squad mission under these circumstances, the squad leaders of all grades must be well trained and highly capable of exercising command and leadership under combat conditions.

TOE 7-27 D, 1 May 1960, changed the grade of the squad leader from sergeant, first-class to staff sergeant. This was in accordance with the army-wide elimination in 1958 of the grade of sergeant first-class. The advent of the fire teams called for two fire team leaders in the grade of sergeant. All of the squad command group carried the new 7.62-mm automatic rifles. The automatic riflemen were corporals and were armed with the 7.62-mm automatic rifles, light barrel, with bipod. Seven riflemen were armed with 7.62-mm rifles. Two of the senior riflemen were corporals. The driver of the armored personnel carrier was also a corporal. Four riflemen were in the grade of private, first-class. The TOE did not show the armament of the carrier but FM 7-15, January 1962, indicates that the carrier had a mounted machine gun caliber not shown. FM 17-20, August 1957, indicated at that time that the carrier-mounted machine gun was .50 caliber. The TOE also authorized a 7.62-mm, lightweight, general-purpose machine gun, with tripod for ground mounting away from the vehicle. There is no sniper rifle authorized for the squad under this TOE. There are 12 men in the squad.

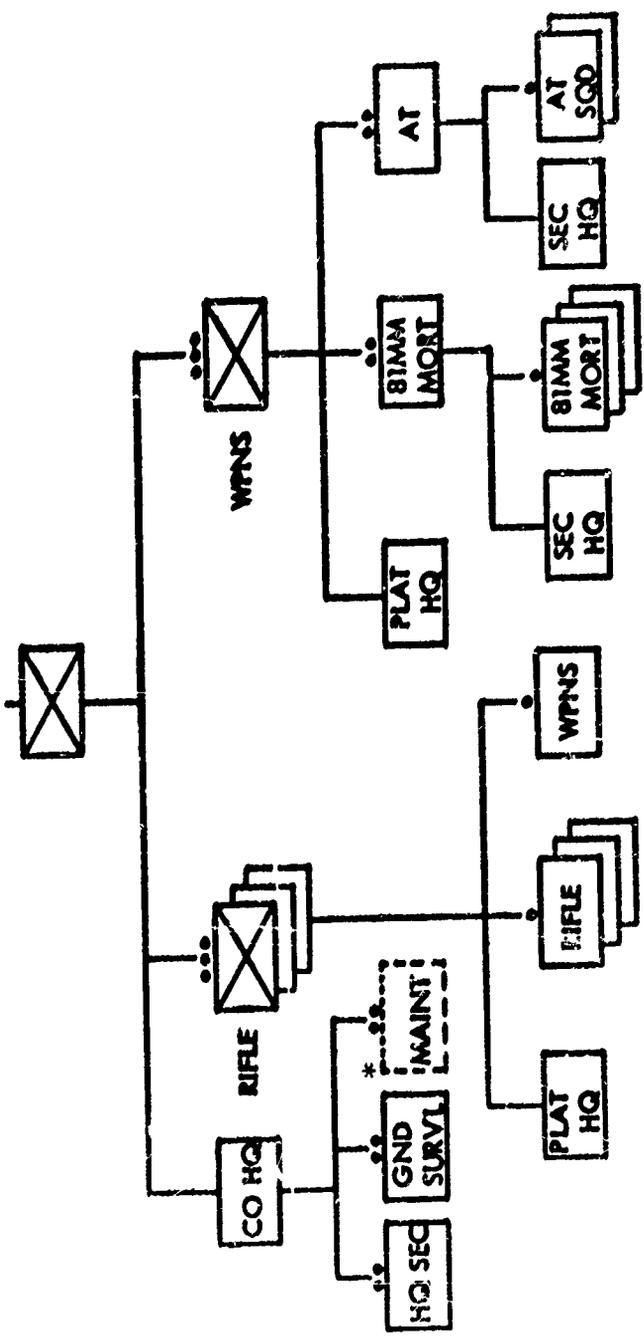
As far as infantry units are concerned, their organization has been based upon the squad or section. The squad has been commonly defined as the largest group of riflemen that one man can control and lead, although in practice, the basic unit tended to be a light-machine gun or automatic rifle team. In either case, the squad or fire team must have a minimum of four or five men and may be considered as the light weapon equivalent of the tank and its crew. (Ref. 25 and Ref. 3, pp 47-48)



M 113 ARMORED PERSONNEL CARRIER

TOE 7-47 E, Draft, 1962, retained the squad leadership and the automatic rifle teams of the 1960 TOE 7-27 D. Among the riflemen there were now two grenadiers with the grade of corporal who were armed with the grenade launcher, 40-mm, the .45 caliber pistol, and the 7.62-mm rifle. One rifleman, a corporal, was armed with the 7.62-mm rifle. He also served as the driver of the armored personnel carrier. Two riflemen were armed with the 7.62-mm rifle and were in the grade of private, first-class. As with the standard infantry rifle squads, the armored infantry squads were reduced to ten men. One of the riflemen of the armored infantry rifle squad for this reason had to function as driver, in addition to his other duties. Under this TOE, each fire team consisted of a team leader, a sergeant, a grenadier, an automatic rifleman, and a rifleman.

In 1963, under TOE 7-47 E, dated 15 July, the armored infantry rifle squad was augmented by one rifleman. The reason for the increase of the squad was based upon the requirement that the part-time driver could not remain with the vehicle without weakening one of the fire teams. With the addition of the rifleman, the driver remained full time with the vehicle and manned the vehicular weapons in support of the squad. The carrier is shown by FM 7-15, January 1962, to have a mounted weapon with caliber not indicated. Assumption is made that it was .50 caliber M2, heavy barrel machine gun equipped with flexible mount. There was a 7.62-mm, lightweight, general-purpose, machine gun with tripod for ground mounting. There was no sniper rifle authorized.



*For mechanized rifle company only

Rifle Company, 1962

SOURCE: FM 7-11, Rifle Company, Infantry, Airborne Infantry and Mechanized Infantry, January 1962.

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CONCLUSIONS

The development of the tank contributed to the evolution of the armored infantry rifle squad. The tank overcame the rule of the machine gun and restored partial mobility to the battlefields of World War I. In so doing it established a new requirement for direct cooperation and close support by adjacent infantry units. In the initial stages of the development of the tank and its tactical doctrine, there was no definition of the relationship of the tank to infantry and vice versa.

Until recent modern times, the horse furnished mobility upon the battlefield. Additionally, the horse with his bulk and weight possessed shock power as an added weapon effect. The early tank with its mobility, shock power and crushing ability and its immunity to small-arms fire replaced the horse and changed the concept of infantry tactics. The tank with the close support of infantry could overcome its foes with its fire, shock and crushing power. Together, the tank and the infantry make a formidable weapon.¹²

Armored infantry are specialized in that they advance mounted in armored carriers and upon dismounting, fight as infantry. They can operate in combat without tanks or they may combine both mounted and dismounted action in their tactical patterns. Mounted combat from the present armored personnel carriers is difficult if not impossible for the squad personnel within the vehicle. Fires of the carrier-mounted weapons only can be delivered while the vehicle is moving. The addition of numerous gun and rifle ports in the hull would tend to weaken the personnel protection potential of the carrier. The protection afforded by the armored personnel carrier enables the armored infantry squad to get as far forward as possible the delivery of a decisive blow upon the enemy when he is subjected to or recovering from the heavy fire power of the accompanying tanks. The fires of the carrier-mounted weapons assure the squad close support when it is needed.

The armored personnel carrier is not a tank. Its purpose is to give armor protection, together with mobility, against artillery fragments,

¹² For an example of tanks operating alone, the experience of Lt. Col. Elzie Hickerson, USA, during the Battle of the Bulge is cited. In a personal interview Colonel Hickerson indicated that at BIZORY, Belgium during the period of 1-20 January 1945, his unit, the 68th Tank Battalion of the Sixth Armored Division, secured and held a position without the assistance of armored infantry. This was done by using the tank crews for ground patrolling. In addition to the tank-mounted weapons, he had available an 81-mm mortar platoon. Two tank destroyers were used to supplement the available fire power.

small-arms fire, and the effects of nuclear radiation. It is highly vulnerable to enemy antitank fire and must not be exposed carelessly to hostile fires of this type. Because of its cover, the armored personnel offers a degree of protection against fallout and nuclear radiation. With nuclear war a clear and present danger, it is conceivable that in a future war all infantry squads may be transported in armored personnel carriers.

The close support capable of being rendered by air units of the armored division would have the effect of creating an air, tank, and armored infantry team. The formation of this team would accomplish the complete integration of all military weapons of the armored division into a weapon system for land warfare.

Psychologically, the armored infantry rifle squad possesses an advantage over the rifle squad which bolsters the armored squad's collective and individual morale. This advantage is the squad's close identification with a major item of equipment - the armored personnel carrier. This identification the standard infantry squad does not have. In a sense, the personnel carrier functions as a "home", a base to which the squad is always tied regardless of the varying fortunes of combat. By this token, the armored infantry squad may have a slight edge on the standard infantry rifle squad in the matter of stability and integration.

The armored infantry rifle squad now possesses fire power and maneuverability to an extent greater than any rifle squad in our military history. By this token the leadership of the squad will require the highest type of noncommissioned officers. These small-unit combat leaders must be able to act independently and decisively in order to render effective support to the tanks. So that this support will be most effective, the rifle squads and tank crews must be welded into closely knit fighting teams. This association should be as permanent as combat conditions will permit.

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APPENDIX A
STUDY REQUEST

CDCRE-C

Directorate of Evaluation
29 September 1964

MEMORANDUM FOR: Director, CORG

SUBJECT: CORG Program of Study in Military History: Evolution of the Armored Infantry Squad

1. General. It is requested that CORG provide under its military history study program a complete and documented record of the evolution of the armored infantry rifle squad from World War II to the present time.

2. Objective and Scope. It will be the purpose of this project to show the various changes which have taken place in the organization and equipment of the infantry rifle squad, armored, including the major duties of each individual, the armament of each individual, the squad mission and capabilities in attack and defense, and for each change in squad organization the rational or justification for the change.

3. References. Memorandum from Director, Evaluation to Director, CORG, subject: Combat Developments Study Request: "CORG Program of Study in Military History," dated 24 June 1964.

4. Administration.

a. Coordination is authorized as appropriate with offices and agencies, records depositories, military libraries, and other sources of information within the Department of the Army.

b. The expenditure of three man-months of effort on this task is authorized. This study should be initiated by 15 November 1964.

c. A draft report in duplicate is required for staffing and coordination by 1 February 1965. Final report should be published by CORG in 50 copies by 1 March 1965.

d. Mr. J. E. Keith, Chief, Historical Branch, Directorate of Plans, this headquarters, will be project liaison officer.

/s/
ROBINSON

Coordination:

Director, Plans /s/ King for Bautz 7 Oct 64
ORS Division /s/ Anson 8 Oct 64

COPY

CORG-M-198

APPENDIX B

DUTIES OF ARMORED INFANTRY

- (1) Breaching or removing antitank obstacles.
- (2) Assisting in the neutralizing or destruction of antitank weapons.
- (3) Designating targets for the tanks.
- (4) Protecting the tanks against individual antitank measures.
- (5) Leading the attack when necessary.
- (6) Providing security for tanks.
- (7) Mopping up and assisting in consolidation of the objective.
- (8) Protecting the tanks in assembly areas and attack positions.

DUTIES OF TANK ELEMENTS

- (1) Neutralizing or destroying hostile weapons by fire and maneuver.
- (2) Clearing paths for dismounted armored infantry through wire and anti-personnel minefields.
- (3) Neutralizing fortified installations with direct fire.
- (4) Supporting by direct fire the advance of the armored infantry when dismounted armored infantry lead the attack.
- (5) Providing antitank protection.
- (6) Leading the attack.

Source: FM 17-20, Armored Infantry Units, Platoon, Company and Battalion, Department of the Army, 1957.

APPENDIX C

THE ARMORED INFANTRY RIFLE SQUAD

The rifle squad rides in one armored personnel carrier; there is one carrier for each squad. The squad consists of a squad leader, two fire teams, and a driver. Each fire team consists of a fire team leader (non-commissioned officer), an automatic rifleman, and three riflemen. In addition to individual weapons, the squad is armed with a caliber .30 machine gun with ground mount plus the carrier-mounted caliber .50 machine gun.

Source: FM 17-20, Armored Infantry Units, Platoon, Company and Battalion, Department of the Army, 1957.

DUTIES OF THE ARMORED INFANTRY SQUAD LEADER

The rifle squad leader is responsible for the discipline, training, control, and conduct of his squad. His squad is trained to use and care for its weapons, equipment, and vehicle; to move and fight efficiently as individuals; and to function effectively as a team, with or without tanks. When the squad is mounted in its armored personnel carrier, the squad leader is the vehicle commander. He is responsible for maintaining intervehicular distances in mounted formations; employment of the vehicular weapon; stowage of ammunition, supplies and equipment in the vehicle; rotation of drivers on long marches; and first-echelon maintenance of the vehicle.

Source: FM 17-20, Armored Infantry Units, Platoon, Company and Battalion, Department of the Army, 1957.

DUTIES OF THE DRIVER, ARMORED INFANTRY RIFLE SQUAD

The driver is responsible for the efficient operations of the armored personnel carrier. He works with the personnel of the company maintenance section on all maintenance and repair operations on his vehicle. He accompanies his vehicle to the battalion maintenance platoon for major checks and repairs.

Source: FM 17-20, Armored Infantry Units, Platoon, Company and Battalion, Department of the Army, 1957

DUTIES OF THE ARMORED INFANTRY RIFLE SQUAD

FIRE TEAM LEADER¹³

The fire team leader performs duties assigned by the squad leader to assist the latter in the execution of his duties. The principal duty of the fire team leader in combat is to control the actions and fires of the fire team in the accomplishment of the assigned mission. The fire team leader acts as an integral part of the fire team, supervising its actions at the same time.

Source: FM 17-20, Armored Infantry Units, Platoon, Company and Battalion, Department of the Army, 1957.

SQUAD FORMATIONS, GENERAL

Three basic formations are used in tactical movement by the squad: squad column, squad diamond, and as skirmishers. A simplified column formation, the single file, is used mostly for administrative movement. . . . Armored infantry habitually works with tanks. During an attack, the armored infantry normally remain mounted in their carriers until the assault phase of the attack is commenced or until resistance is met which requires dismounted armored infantry action to assist the continued advance of the tanks. When his squad is dismounted and operating with tanks, the squad leader, in deciding which combat formation to adopt, must consider the basic combat formation of the tanks and the resultant protection his squad gains, the nature of the enemy resistance, his mission, the terrain, and the overall requirement for the armored infantry to provide protection for and assist in the successful advance of the tanks. Also, he must anticipate that the tank formation as well as his own formation may require frequent change to meet varying situations in the conduct of the assault.

Source: FM 17-20, Armored Infantry Units, Platoon, Company and Battalion, Department of the Army, 1957.

¹³ No individual is formally designated by tables of organization as assistant squad leader. In the absence of the squad leader, one fire team leader . . . acts in the squad leader's place in addition to his own duties.

APPENDIX D

THE ARMORED PERSONNEL CARRIER

The organization of armored divisions in 1940 comprising a force of the combined arms including Infantry Regiments (Armored) made the development of a vehicle for the transportation of the Infantry element of the armored division necessary. The 7th Cavalry Brigade (Mechanized) had been equipped with an assortment of armored and unarmored vehicles, both wheeled and half-track. Because of the superior crosscountry mobility of the half-track, it was decided to design an armored half-track as a personnel carrier for the infantry, and for such other incidental uses as might be required.

The vehicle was designed to carry a rifle squad of twelve men and a driver. It consisted of a heavy duty chassis with front-wheel drive and tracks substituted for the rear driving wheels. An opentopped, box-like body of half-inch armor in front, one-fourth inch armor on the sides and rear extending high enough to give protection to the head and body of the men, the vehicle weighed approximately 18,000 pounds.

In its various models this vehicle became the utility vehicle of the Armored Force. It served as personnel carrier, reconnaissance vehicle, radio vehicle, ambulance, 81mm mortar carriage, prime mover for antitank guns, the first tank destroyer gun mount, and as an antiaircraft automatic weapons mount. Despite the multiplicity of its uses, the half-track was never a fully satisfactory vehicle; its crosscountry mobility was limited, its armor was inadequate, and it afforded no overhead protection. But it was rugged and dependable and except for minor modifications continued to the end of the war as the most widely used vehicle in the Armored Force. In Tunisia a charge by a platoon of halftracks with machine-guns firing enabled one armored infantry company commander to break up a counterattack and restore his position, which indicates that it was not always employed just as a means of transportation.

As the war in North Africa and Europe progressed the demand for a better personnel carrier became insistent. Armored commanders demanded a vehicle with cross-country ability equal to or better than that of the light tank, overhead protection, a wide radius of operation, and mounting supporting weapons. As a result of this demand the full-tracked armored utility vehicle, T-16, was developed. This vehicle, capable of carrying 16 men and their equipment, had high road speed, great cross-country ability, a wide radius of action, and afforded overhead protection against battlefield missiles.

Source: Army Ground Force Study No. 27, The Armored Force Command and Center, Historical Section, Army Ground Forces, 1946, p. 91.

ARMORED PERSONNEL CARRIER, M75 (T18E2)
(with two 12.7mm anti-aircraft machine guns)

Development: Evolved in 1952 from the M44 Personnel Carrier. It has been tried with a rotating turret with externally mounted machine guns, as well as with the machine guns on pintle mountings, but the T18E2 on trials with units had no turrets.

General Characteristics: Five road wheels and two return rollers. Very high vertical side plates and a slightly sloped driver's front. Engine at the front, on the right-hand side, alongside the driver. Rear access door.

Employment: Used by the armored infantry battalions of armored divisions.

Special Features: Expensive, special-purpose vehicle. It has a very high silhouette and there is no provision for the crew to fight from within it.

Source: Dr. F. M. Von Senger und Etterling, "The World's Armoured Fighting Vehicles," Garden City, N.Y.: Doubleday and Company, 1962.

ARMORED PERSONNEL CARRIER, M59

(Length: 18 ft., Width: 10 ft. 9 in., Height: 8 ft. 2 in., Weight: 18 tons)

Similar vehicles:

M84 Mortar Carrier
Armored Ambulance
Carrier for "Dart" or SS-10 missiles (prototype)

Development: Introduced as a cheaper replacement of the M75 personnel carrier.

General Characteristics: Externally similar to the M75 but slightly lower. Vertical superstructure side plates and a sloping front plate with a trim vane hinged on it, the vane being pushed forward for movement in water. Access to personnel compartment at rear by means of a large folding-down ramp, or a small door in the ramp and folding doors over the compartment. Chassis (is) similar to that of the M41 tank but with the driving sprocket at the front and two commercial engines, one on each side of the superstructure. It can float and propel itself in water by means of its tracks.

Employment: Since 1954 it has replaced the M75 armored personnel carriers, which cost twice as much, in the armored infantry battalions.

Special features: Less expensive than its predecessor but still has an unsatisfactory layout. Essentially a transport vehicle since there is no provision for fighting from within it. Low power-to-weight ratio, and consequently limited cross-country performance.

Source: Dr. F. M. Von Senger und Etterlin, The World's Armoured Fighting Vehicles, Garden City, N.Y.: Doubleday and Company, 1962.

M113 ARMORED PERSONNEL CARRIER ¹⁴

(Length: 15 ft 9 in., Width: 8 ft. 9 in., Height: 7 ft. 3 in., Weight: 10 tons, Horse-power: 205, Crew: 1 plus 12.)

Similar vehicles:

T 117 Armored Personnel Carrier
T 257 Mortar Carrier

Development: Result of a 1956 U.S. Army contract for a simpler, lighter, and less expensive armored personnel carrier. In 1957 it reached the development stage with the Food Machine and Chemical Corporation. In the summer of 1958 a 1.5 million dollar contract was signed for the manufacture of three prototypes, and in 1959 an order was placed with the Food Machine and Chemical Corporation, San Jose, California, for the delivery of 900 T113E2 carriers at a price of \$34,633,327.

General Characteristics: Five medium-diameter road wheels, no return rollers, and raised idler. Vertical superstructure side plates. Engine at the front on the right-hand side, driver's cupola on the left. In the center of the vehicle there is the cupola for the commander and an anti-aircraft machine gun. A large folding door or ramp(s) at the rear. New aluminum armor in contrast to the T117 which has normal steel armor.

Employment: Experiments with prototypes started in 1958 and, since 1959, it has been tried by the armored infantry battalions of armored divisions and the transport battalions of infantry divisions.

Special Features: A significant new development, considerably lighter and more suited to transport by air than other American personnel carriers. It is lower because of the new simpler track assembly, but its shape is still unsatisfactory, having been sacrificed for the sake of the ability to float. Production costs (are) fifty per cent lower than those of the M59.

Source: Dr. F. M. Von Senger Und Etterlin, The World's Armoured Fighting Vehicles, Garden City, N.Y.: Doubleday and Company, 1962.

¹⁴Now deiselized.

APPENDIX E

INFANTRY ARMORED RIFLE SQUAD MTP 7-1

12 September 1943

Text References

FM23-5, U.S. Rifle, Caliber .30, MI, 30 July 1943.

FM23-45, Browning Machine Gun, Caliber .30, HB, M1919A4, Ground, 12 April 1943.

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FM23-55, Browning Machine Gun, Caliber .30, M1917, 20 June 1940.

FM5-15, Field Fortification, 1 October 1940.

FM5-20, Camouflage, 1 June 1940.

FM7-10, Rifle Company, Rifle Regiment, 2 June 1942.

FM21-25, Elementary Map and Aerial Photograph Reading, 12 April 1941.

FM21-55, Protective Measures Individuals and Small Units, 10 March 1942.

FM21-100, Soldier's Handbook, 23 July 1941.

FM22-5, Infantry Drill Regulations, 4 August 1941.

FM24-5, Signal Communication, 19 October 1942.

FM30-10, Observation, 30 Nov 1940.

FM5-15, Field Fortifications, 1 October 1940.

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FM21-45, Protective Measures Individuals and Small Units, 10 March 1942.

FM21-100, Soldier's Handbook, 23 July 1941.

FM22-5, Infantry Drill Regulations, 4 August 1941.

FM23-85, 60mm Mortar, MI, 22 April 1943.

Training Circular No. 52, Infantry Intrenchments and Weapons Emplacements, War Department, Washington, 12 August 1942.

Training Circular No. 9, Hasty Entrenchments, War Department, Washington, 6 February 1942.

Army Regulations 775-10, Qualifications in Arms and Ammunition Training Allowances, 30 December 1943.

APPENDIX F

EXTRACTS: TABLES OF ORGANIZATION AND EQUIPMENT 1940
to 1963 INCLUSIVE

ARMORED INFANTRY RIFLE SQUAD

(TOE 7-27 P (Tentative) 16 July 1940)

Rifle Squad

Peacetime: Leader is a Corporal

Wartime: Leader is a Sergeant
Corporal is Assistant Squad Leader

Peacetime: 7 men

Wartime: 11 men

Automatic Rifles¹⁵

A copy of TOE 7-27 P (Tentative) 16 July 1940 is not available but it is assumed that the early Armored Infantry Rifle Squad had the same organizational structure and equipment as the authorized Infantry Squads under the provisions of TOE 7-17, 6 December 1938. In conformity with the TOE for regular Infantry Rifle Squads, two squad members of the Armored Infantry Rifle squad were assigned to and trained in the duties of scouts.

ARMORED INFANTRY RIFLE SQUAD
(T/O 7-17, 15 November 1940)

Rifle Squad

1 Sergeant, Squad Leader
1 Corporal, Assistant Squad Leader
10 Privates, or Privates First-Class, Rifleman
12 men total

The strength, weapons and organizational and grade structures were the same as those authorized regular Infantry Squads under the provisions of TOE 7-17, 1 October 1940.

¹⁵ None authorized for the squad but when the M1 was authorized for the rifleman, there were not enough available so the M1903, one BAR and one pistol was authorized in the place of one rifle.

ARMORED INFANTRY RIFLE SQUAD
(T/O 7-27, 1 March 1942)

Rifle Squad

1 Sergeant, Squad Leader
1 Corporal, Assistant Squad Leader
9 men (8 riflemen armed with M1; 1 driver for car, half-track, M3,
armed with .45 caliber submachinegun)
11 men total

Car, half-track, M3, is equipped with one .30 caliber heavy machine gun, M1917A1, with tripod, M1917A1, for ground mounting when required. The automatic rifleman and his assistant have been dropped from the squad, as the heavy machinegun mounted on the half-track vehicle is capable of providing the base of fire formerly provided by the automatic rifle. A driver for the half-track is added to the Armored Infantry Rifle Squad. With the vehicle weapon manned by the driver, the squad is able to maintain the necessary mobility for the support of mechanized forces.

ARMORED INFANTRY RIFLE SQUAD
(TOE 7-27, 15 September 1943)

Rifle Squad

1 Sergeant, Squad Leader ¹⁶
1 Corporal, Assistant Squad Leader ¹⁶
12 men total

10 men (9 riflemen armed with M1; 1 driver for M3A1 half-track armed with .45 caliber submachinegun.) The rocket launcher is M1A1.

ARMORED INFANTRY RIFLE SQUAD
(TOE 7-27, C2, 7 January 1944)

Rifle Squad

1 Staff Sergeant, Squad Leader
1 Sergeant, Assistant Squad Leader
12 men total

10 men (9 riflemen armed with M1; 1 driver for personnel carrier, M3A2, is armed with .45 caliber submachinegun.) The rocket launcher is now the M9.

¹⁶ Armed with M1.

ARMORED INFANTRY RIFLE SQUAD
(TOE 7-27, C3, 2 August 1944)

Rifle Squad

1 Staff Sergeant, Squad Leader
1 Sergeant, Assistant Squad Leader
12 men total

10 men (9 riflemen armed with M1; 1 driver for personnel carrier, M3A2, is armed with a pistol, in addition to .45 caliber submachinegun. The rocket launcher is now M9A1 and two grenade launchers, M7, are authorized for the Squad.

ARMORED INFANTRY RIFLE SQUAD
(TOE 7-27, 16 June 1945)

Rifle Squad

1 Staff Sergeant, Squad Leader
1 Sergeant, Assistant Squad Leader
12 men total

9 men (8 riflemen armed with M1; 1 driver for M3A2 personnel carrier is armed with .45 caliber submachinegun. The driver is no longer authorized pistol. The rocket launcher is now the M9. 1 Private is now Automatic Rifleman and is armed with BAR, M1918A2.

ARMORED INFANTRY RIFLE SQUAD
(TOE 7-27, 16 June 1945)

1 Staff Sergeant, Squad Leader
1 Sergeant, Assistant Squad Leader
9 men including:

Technician, Grade 4	Total: 9
Technician, Grade 5	Riflemen: 8
Private, First-Class	BAR: 1
Private	(Sub-machine gun, Cal. .45)
1 Driver, Half-Track	

Squad total: 12 men

ARMORED INFANTRY SQUAD ARMAMENT
(TOE 7-27, 16 June 1945)

1 Car, Half-Track, W/O Armament
1 Gun, Machine, Cal. 30, Heavy, Flexible
1 Gun, Submachine, Cal. 45
1 Launcher, Rocket, 2.36-inch
1 Rifle, BAR, Cal. 30, M1918A2
10 Rifles, M1, Cal. 30

There were three rifle platoons in the company: each platoon was composed of two rifle squads, each.

ARMORED INFANTRY RIFLE SQUAD
(TOE 7-27N, 6 February 1948)

Rifle Squad

1 Staff Sergeant, Squad Leader
1 Sergeant, Assistant Squad Leader
1 Corporal, Automatic Rifleman
10 men total

7 T/4 (5 riflemen are armed with M1); 1 rifleman is armed with .30 caliber sniper rifle, M1C1; 1 driver for armored utility vehicle, M44, is armed with .45 caliber submachinegun. There are four .30 caliber grenade launchers, M7A1, authorized for the squad. The TOE does not designate the personnel armed with the launchers. There are no rocket launchers in the squad. Automatic Rifleman is armed with BAR, M1918A2. The armored utility vehicle, M44, is equipped with a M1917A1 machinegun. This vehicle replaces personnel carrier, M3A2. The tripod for ground mounting of the machinegun is authorized.

RIFLE SQUAD, ARMORED INFANTRY COMPANY
(TOE 7-27N, 6 February 1948)

1 Staff Sergeant, Squad Leader
1 Sergeant, Assistant Squad Leader
1 Corporal, Automatic Rifleman (drives vehicle, utility, Armored) (BAR)

1 Technician, Grade 3 TOTAL: 7
1 Technician, Grade 4
1 Technician, Grade 5
4 Privates, First Class or
Privates¹⁷

1 Ammunition Bearer¹⁷ (Rifle)

¹⁷ Included within the total of seven above.

1 Driver, Vehicle, Utility, Armored (Submachine Gun cal. 45)
1 Rifleman is armed with Sniper's Rifle cal. 30.
4 Rifleman are armed with Rifle, U. S. M1, cal. 30.

Squad total: 10

SQUAD ARMAMENT
(TOE 7-27N, 6 February 1948)

1 Caliber .30 Machine Gun (M1917A1)
1 BAR (M1918A2)
7 Rifles, U. S. Cal. 30, M1
1 Rifle, U. S. Cal. 30, M1C (Sniper's)
1 Vehicle, Utility, Armored, M44

ARMORED INFANTRY RIFLE SQUAD
(TOE 7-27 N, C1, 18 September 1950)

Rifle Squad

1 Staff Sergeant, Squad Leader
1 Sergeant, Assistant Squad Leader
1 Corporal, Automatic Rifleman
10 men total

7 T/4 (5 riflemen are armed with M1); 1 rifleman is armed with .30 caliber sniper rifle, M1C; 1 driver for armored personnel carrier, T-18, is armed with .45 caliber submachinegun. There are four .30 caliber grenade launchers, M7A1, authorized for the squad. The TOE does not designate the personnel armed with the launchers. There are no rocket launchers in the squad. Automatic Rifleman is armed with BAR, M1918A2. Armored personnel carrier, T18, is equipped with both .50 and .30 caliber machineguns, both of which can be ground mounted. The armored personnel carrier, T18, replaces the armored utility vehicle, M-44.

ARMORED INFANTRY RIFLE SQUAD
(TOE 7-27 N, C2, 15 November 1950)

Rifle Squad

1 Sergeant First-Class, Squad Leader
1 Sergeant, Assistant Squad Leader
1 Corporal, Automatic Rifleman
10 men total

7 T/4 (5 riflemen are armed with M1); 1 rifleman is armed with .30 caliber sniper rifle, M1C; 1 driver for armored personnel carrier, T18, is armed with .45 caliber submachinegun. There are four .30 caliber grenade launchers, M7A1, authorized for the squad. The TOE does not designate the personnel armed with the launchers. There are no rocket launchers in the squad. Automatic Rifleman is armed with BAR, M1918A2. Armored personnel carrier, T18, is equipped with both .50 and .30 caliber machineguns, both of which can be ground mounted. The armored personnel carrier, T18, replaces the armored utility vehicle, M-44.

ARMORED INFANTRY RIFLE SQUAD
(TOE 7-27, 28 August 1952)

Rifle Squad

1 Sergeant First-Class, Squad Leader
1 Sergeant, Assistant Squad Leader
1 Corporal, Automatic Rifleman
10 men total

7 T/4 (5 riflemen are armed with M1); 1 rifleman is armed with .30 caliber sniper rifle M1C; 1 driver for armored personnel carrier, T-18, is armed with .45 caliber submachinegun. There are four .30 caliber grenade launchers, M7A1, authorized for the squad. The TOE does not designate the personnel armed with the launchers. There are no rocket launchers in the squad. Automatic Rifleman is armed with BAR, M1918A2. Armored personnel carrier, T18, is equipped with both .50 and .30 caliber machineguns, both of which can be ground mounted. The armored personnel carrier, T18, replaces the armored utility vehicle, M-44.

ARMORED INFANTRY RIFLE SQUAD
(TOE 7-27R, 1 February 1955)

Rifle Squad

1 Sergeant, First-Class, Squad Leader
1 Sergeant, Assistant Squad Leader
1 Corporal, Automatic Rifleman
9 men total

5 riflemen (3 senior riflemen are Corporals -- 1 is armed with sniper rifle .30 caliber, M1C, and 2 with the M1); 2 riflemen are Privates, First-Class, 1 is also ammunition bearer; 1 Corporal, armored infantry vehicle driver, is armed with .45 caliber submachinegun.

ARMORED INFANTRY RIFLE SQUAD
(TOE 7-27 T, ROCAD, 1 December 1956)

Rifle Squad

1 Sergeant, First-Class, Squad Leader
2 Sergeants, Fire Team Leaders
2 Corporals, Automatic Riflemen
12 men total

7 riflemen (3 senior riflemen are Corporals, 1 of whom is armed with sniper rifle .30 caliber, M1C); 3 riflemen are Privates, First-Class; 1 Corporal armed with rifle is the driver of the personnel carrier. There are 3 grenade launchers in the squad. The Armored Personnel Carrier, is of the T18 series. The T18E1 vehicle is equipped with .50 caliber heavy machinegun, flexible. The squad is authorized a .30 caliber Machinegun, M1919A6, with M2 tripod.

ARMORED INFANTRY RIFLE SQUAD
(TOE 7-27 C, 5 February 1957)

Rifle Squad

1 Sergeant, First-Class, Squad Leader
1 Sergeant, Squad Leader
2 Corporals, Automatic Riflemen
9 total

5 riflemen (3 senior riflemen are Corporals -- 1 is armed with sniper rifle .30 caliber, M1C, and 2 with the M1); 1 riflemen is a Private, First-Class, and ammunition bearer; 1 Corporal is armed with .45 caliber submachinegun and is the driver of the armored infantry vehicle.

ARMORED INFANTRY RIFLE SQUAD
(TOE 7-27 D, 1 May 1960)

Rifle Squad

1 Staff Sergeant, Squad Leader
2 Sergeants, Fire Team Leaders
2 Corporals, Automatic Riflemen
12 men total

7 riflemen (2 senior riflemen are Corporals) armed with 7.62mm rifles; 1 Corporal is driver of armored personnel carrier; 4 riflemen are Privates, First-Class. The Automatic Riflemen are armed with 7.62mm rifle, Lt Bbl., with bipod. There is no sniper rifle authorized.

TOE authorized a 7.62 mm, lightweight, general purpose. machinegun with tripod for ground mount. There are 3 grenade launchers provided for the squad. The armored personnel carrier has a mounted machinegun.

ARMORED INFANTRY RIFLE SQUAD
(TOE 7-27 E, Draft, 1962)

Rifle Squad

1 Staff Sergeant, Squad Leader
2 Sergeants, Fire Team Leaders
2 Corporals, Automatic Riflemen
10 men total

2 grenadiers (Corporals) are armed with grenade launcher, 40mm, .45 caliber pistol, and 7.62mm rifle; 1 rifleman (Corporal) with 7.62 mm rifle drives the armored personnel carrier; 2 riflemen (Privates, First-Class are armed with the 7.62mm rifle. The carrier mounts a machinegun with tripod for ground mount. There is no sniper rifle authorized.

ARMORED INFANTRY RIFLE SQUAD
(TOE 7-47 E, 16 July 1963)

1 Rifleman is added to the squad in order that the driver can devote full-time to his driving duties.
11 men total

BIBLIOGRAPHIC DATA

ASDIRS No.:

Study Category: Development Study

Initiated by: Dir. Plans, Hq., USACDC

Study Sponsor: Hq., USACDC

Study Agency: Combat Operations Research Group, Hq., USACDC

Reference Number: CORG-M-198

Title: Evolution of the Armored Infantry Rifle Squad

Study Subcategory: Force Structure, General Weapons, Firepower; Mobility; Surface

Starting Date: January 1965

Completion Date: March 1965

Availability Date: April 1965

Abstract: The concept of the mobile, armored soldier is followed from its basis in antiquity to the modern tank-infantry team doctrine as conceived and practiced by the United States Army. The historical background is traced from the campaigns of the ancient Britons, Egyptians, and Romans through the armored cavalry concept to the formation of the Armored Force in 1940. From 1940 to 1965 the evolution of the Armored Infantry Rifle Squad is detailed by reference to tables of organization and equipment, to doctrinal literature, and to the writings of field commanders and historians who have chronicled the exploits of armor and armored infantry in more recent times.

Time Frame: 1940-1965

Study Descriptors: land warfare, armored, infantry, mechanized, Machine Gun M-60, anti-tank

Classification: UNCLASSIFIED

Contributes to: Weapon system development, IRUS-70, MICV-70, Army Historical Program

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Study Descriptors: land warfare, armored, infantry, mechanized, Machine Gun M-60, anti-tank

Classification: UNCLASSIFIED

Contributes to: Weapon system development, IRUS-70, MICV-70, Army Historical Program