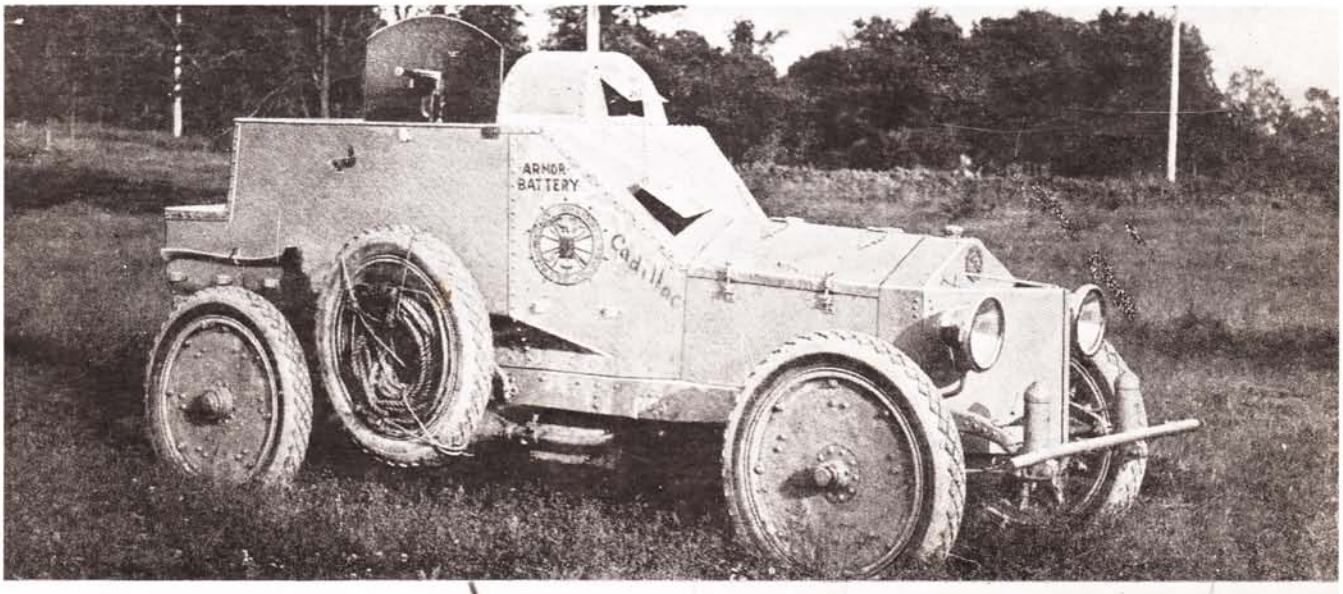
PROFILE AFV WEAPONS 40

U.S. Armored Cars

by Robert J. Icks, Colonel AUS-Retired



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General George S. Patton, Jr., one of the greatest commanders of armored forces, in the modified M3A1 scout car which he used as his command car in North Africa. He is seen here personally directing the drive towards Gabes from Gafsa in March 1943 to coincide with the Eighth Army's attack on the Mareth Line. (U.S. Army)

U.S. Armored Cars

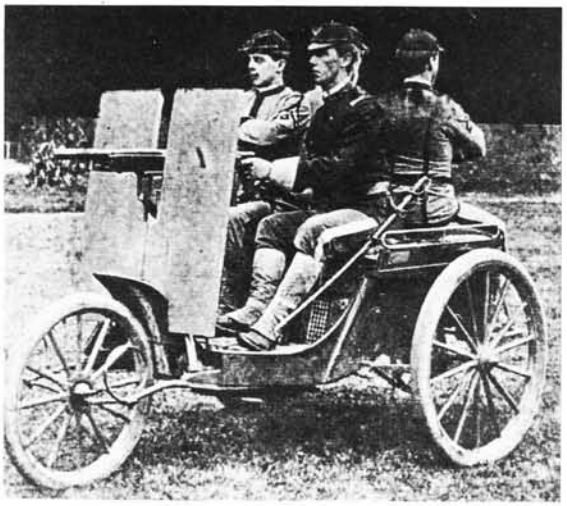
by Robert J. Icks, Colonel AUS-Retired

ARMORED cars, a familiar sight in many countries, never have been popular in the United States, although more varieties have existed there than is generally realized. There are several reasons for this apparent lack of interest in a country where the motor car has come to be a necessity rather than a luxury. One reason is the feeling that the armored car, after all, is only a motor car covered with armor plate. Since there are so many motor cars it would take very little time and effort to make the conversion to large numbers of armored cars should it ever become necessary. Another reason is that entry of the United States into World War I came at a time when the phase of tactical use for armored cars had passed. Finally, after World War I, there was acceptance of the belief that the light tank was preferable to the armored car because it could go anywhere the armored car could go and many places where it could not.

I: 1898–1918

In recounting the story of U.S. armored cars it is necessary to include some cars which were not armored or which were only partially armored, because they played a part either in the conditioning of the military or had an influence on design. The first American armored car, like the first French armored car, was only partially armored. This was the Davidson car of 1898 which was simply a Colt automatic gun with a small steel shield mounted on a commercial three-wheeled Duryea passenger runabout. It was devised by Major (later Colonel) R. P. Davidson, Illinois National Guard, commandant of the Northwestern Military and Naval Academy, then located at Highland Park, Illinois. This car was followed by two steam driven cars built by cadets at the academy. One of these is still preserved in the Museum of Science and Industry in Chicago.

The two cars were driven by cadets from Chicago to Washington, the main difficulty being that of climbing hills due to the fluctuating water level in the tubular type boilers used. It is of interest in passing to mention that a cadet named W. J. Davidson was to become one of the designers of the T17E1 armored cars built at General Motors forty years later. Lieutenant-General Nelson A. Miles, shortly before his retirement as Commanding General of the Army in 1903 was sufficiently enthusiastic over this long distance run to recom-

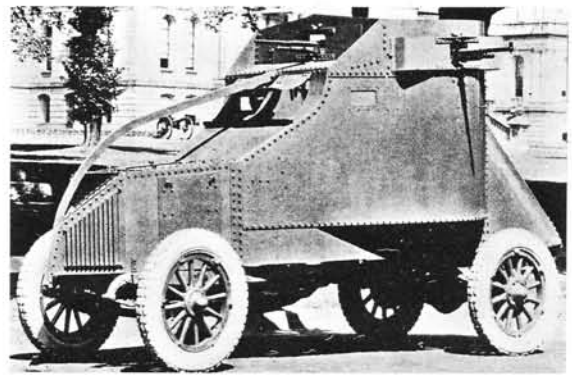


The original Davidson-Duryea car was a three-wheeler with Colt gun and shield. (Chicago Tribune)

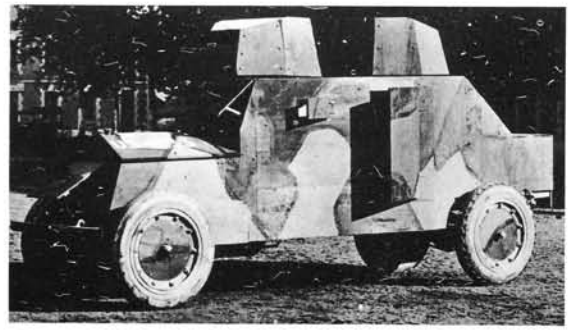
mend to Secretary of War Elihu Root the conversion of five cavalry regiments to an automobile corps but nothing came of it. General Miles' interest probably can be traced back to the time, during the Indian wars, when he placed a mountain howitzer in a tarpaulin-covered mule-driven escort wagon and won an easy victory.

Colonel Davidson continued the application of the automobile to war. He purchased a Cadillac automobile in 1909 and mounted a Colt automatic gun on the dash. This car was unarmored, as was the McLean automatic 37mm gun mounted on a truck, and the Packard and Freyer-Miller trucks mounting Driggs Schroeder one-pounder guns, a concept devised by Captain (later General) J. H. Sherburne of the Massachusetts Militia and used during the 1909 Army manoeuvers. The next year Colonel Davidson purchased two more Cadillacs on which he mounted Colt guns arranged for high angle fire and which he called balloon destroyers. The inspiration for these probably was the German Ehrhardt BAK as well as the Ehrhardt semi-armored car submitted to the U.S. Army for test in 1910, this being the period of the application of the rigid and semi-rigid balloon to military reconnaissance. In 1910 also Major Hugh Gallagher of the Army designed and built a personnel carrier on a White 2-ton commercial truck. It had side-mounted seats facing outward to carry a section of two squads totalling 16 men plus the section leader. It was not taken up for lack of funds.

In 1911 the two Davidson Cadillacs were armed with a



Armored car on a Reo Model F truck chassis presented to the Michigan National Guard by the Reo Motor Truck Company in 1916. ("The Horseless Age")

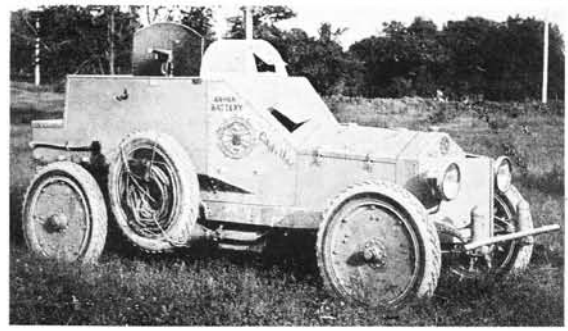


This U.S. M1918 armored car mock-up remained "tentative standard" design until 1921. (U.S. National Archives)

The T7 scout car was beginning to take the form which led eventually to the design of the M3A1 scout car. (U.S. Ordnance Dept.)

A Jeffery armored car used by the Regular Army on the Mexican border in 1916. (U.S. National Archives)

The Davidson armored car of 1915 was the first true armored car in the United States. (Courtesy R. P. Davidson)



The 1935 Studebaker scout car was assigned no official "T" number although it was built at Rock Island Arsenal. (U.S. Ordnance Dept.)

Colt gun having a coaxial searchlight which also was fitted with a heliograph shutter and with radio equipment. A telescopic mast as well as small balloons were provided for antennae. The generator for the radio set was coupled with the development of the Delco electrical starting and lighting system for automobiles.

Two of the 1910 cars were entered in the gruelling 1910 Glidden Tour over the unimproved roads of the period. With their cadet drivers they were among the nine finalists out of 38 entries. While in New York one of the cars was on display in the show window of the New York Cadillac Company where it attracted the attention of the Consul-General of Guatemala who asked to have two cars built for his country. This work could not be done at the academy so the cars were completed at the Cadillac factory. The two cars were accompanied to Guatemala by an assistant to Colonel Davidson who remained for several months as an instructor. He was required to remove essential parts each night and carry them to a labyrinth strong room under the watchful eye of a huge Indian general, and each morning to pick them up again for reinstallation.

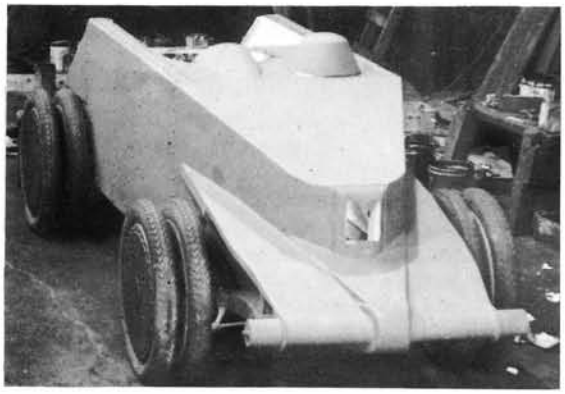
The T2E3 armored car was one of the four versions of the re-built T2 armored car. (Courtesy W. G. Olen)

Davidson meanwhile built a reconnaissance car which included a dictaphone and maps on rollers, a hospital car with stretchers and X-ray equipment, a field kitchen with an electric cooker powered by an engine-operated generator and, in 1915, a true armored car, the first in the United States. All the cars made a cross-country run to the west coast and then, at the request of General Leonard Wood who was Chief of Staff, the armored car and the hospital car were shipped by rail to Plattsburg, New York to take part in Army manoeuvers. Although they produced no further official interest, the cars continued in use at the academy until 1927. The armored car today is preserved in the Museum of Science and Industry in Chicago.

Another effort towards building an armored car was one proposed by Cleve F. Shaffer in 1915. At that time a small orchard tractor was being manufactured by Fageol Motors and was in general use on the west coast. Rather than wheels, these tractors were provided with long rimless studs or spokes which gripped the ground even when tracklaying vehicles bogged down. For road operation an endless band was provided, thus reversing the usual wheel and track method of operation. Mr Shaffer conceived the idea of armoring these tractors, making them into little one-man wheeled tanks armed with machine-guns. World War I had begun and at that time in the United States sympathies were divided between the belligerents. Shaffer offered the idea to the German Consul-General in San Francisco in 1915, but was turned down because "Germany needed no such devices in order to win the war." Efforts to interest U.S. authorities also failed.

World War I set in motion other armored car projects however. Raymond Brutinel, a former French

A production model of the M1 armored car which was the first U.S. armored car built as such rather than armoring a commercial vehicle. (Courtesy R. E. Jones)



J. Walter Christie is world-famous for his tanks, but he also built this little four-wheeled scout car. (Courtesy William Bigley)

The T7 armored car built at Holabird Quartermaster Depot had a hull interchangeable with a cargo truck body. (Courtesy D. H. Unger)

officer living in Canada, persuaded a group of Canadian business men led by Sir Clifford Sifton, to raise a regiment of motor machine-guns. The 20 cars were built and armored in the United States by the Autocar Company. These, with a 230 man force commanded by Major Brutinel, sailed for England with the first Canadian contingent. This force eventually got to France and played a significant part during the great German offensive in March 1918 when, for 19 days, it sped from place to place helping to bolster up the crumbling British front.

These cars were merely armored open top boxes on wheels but, armed with two machine-guns they served their purpose well. One is still preserved in the Royal Canadian Armoured Corps Museum at Camp Borden, Ontario. The second Canadian contingent included Packard armored cars, also armored in the States. In general these cars did not differ too much in appearance from three cars suggested by Captain H. G. Montgomery of the New York National Guard and built in the

The Chevrolet chassis T8 armored car built at Holabird Quartermaster Depot. (Courtesy D. H. Unger)

United States through private subscriptions from a group of wealthy New Yorkers who formed the 1st Armored Motor Battery of the New York National Guard in 1916. Identical hulls were placed on three vehicles, a Locomobile, a Mack and a White. Together with staff cars, trucks and motorcycle machine-guns resembling the English Vickers-Clyno Fighting Combinations of 1915, the unit served on the Mexican border at the time of the Army mobilization following problems arising out of the Mexican Civil War.

At this time there were two Regular Army armored car units on the border, one having armored Jeffery Quad trucks, which were known as Armored Cars No. 1, and the other unit having armored White trucks known as Armored Cars No. 2. Both units also had motorcycle machine-guns, some with sidecars and shields and some with shields but with the guns mounted on a trailer arrangement. The Jeffery cars were somewhat similar to the earlier Canadian Russell cars and to the later Jeffery armored cars used by British forces in the Near East and in India after World War I. Both cars were turreted. The White cars were powered by a standard White 36 hp engine. A somewhat similar but heavier White car, known as the M1917, had a 45 hp engine. This later car was tested at the Fort Sill School of Musketry in 1917 together with other cars.

The Army had been offered in 1915 a King armored car made by the Armored Car Company of Detroit. This utilized a standard commercial King Car, one of the early 8-cylindered automobiles. This car resembled very closely the British Lanchester armored cars of World War I but the turret was smaller. One car was purchased by the U.S. Marine Corps, which also purchased a later model having a larger turret, cylindrical in the rear and having a straight front and a front bevel. The Army purchased two of these later cars which also were tested at Fort Sill. One of the Army vehicles remains in the Museum at Aberdeen Proving Ground, but minus tires.

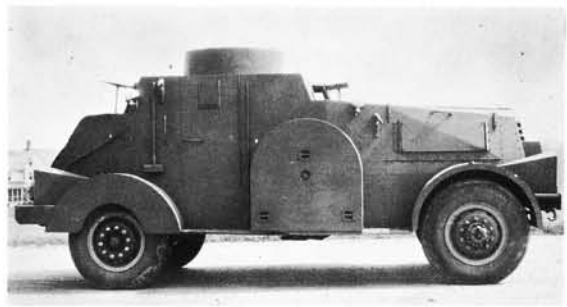
Another car furnished to a unit of the Michigan National Guard by the Reo (R. E. Olds) Motor Truck Company was taken to the Mexican border by them. It was a car of generally conventional appearance. It disappeared from sight after the United States entered World War I.

The Mexican border had erupted in March, 1916 when Pancho Villa, one of the Mexican bandit leaders, raided a U.S. Cavalry camp at Columbus, New Mexico.

The T6 armored car was a re-built T7 car, but was no longer interchangeable with a truck body. (Courtesy W. G. Olen)

The T10 armored car showing run-flat rear grouser and vision protectoscopes in hinged-down side armor. (Courtesy Bruce Palmer)

The T11E2 armored car with engine in rear gave the crew much better forward vision. (U.S. Ordnance Dept.)



The Marmon-Herrington armored car made for Iran with the original form of turret which was later replaced. (U.S. Ordnance Dept.)

This led to the formation of a punitive force under General John J. Pershing, which probed many miles into Mexico and which introduced supply by truck for the first time into the Army. The various armored car units remained at the border on patrol duty. After the United States entered World War I in April 1917, the Regular Army dropped further requirements for armored cars on the advice of the Allied Commission which had come from Europe with the information that there was no longer any need for armored cars. However, a later demand from the U.S. Service of Supply in France for cars to be used for internal security, led to the creation of an armored car mockup, the design of which remained as "tentative standard" as late as 1921.

The only other vehicles which can be considered as armored cars during the World War I period were first, a passenger car with simulated armor and mounting an aerial observation tower, a device proposed by a Peter Clark of New York City; although it received some newspaper publicity, no official recognition was given to it. And second, a massive three-wheeled Steam Wheeled Tank which resembled the contemporary German Treffas Wagen. The Steam Wheeled Tank was an officially built vehicle by the Holt Tractor Company under Ordnance Department authority.

II: 1918–1941

The Caliber or Westervelt Board appointed in 1918 to formulate a forward-looking design policy was the Army's guide for many years in the field of artillery and combat vehicles. It made no mention of armored cars. The very conservative postwar defense set-up provided under the 1920 National Defense Act was eroded through continually lessening appropriations, the usual reaction which followed every war. However, the influence of the Mechanized Force experiments in England in 1928 led to the establishment of a similar force in the United States for a period of about three months. A new Mechanized Force was created the following year as the last official act of General Charles P. Summerall before his retirement as Chief of Staff. His successor, General Douglas MacArthur, gave the responsibility for continuing the force to the Cavalry.

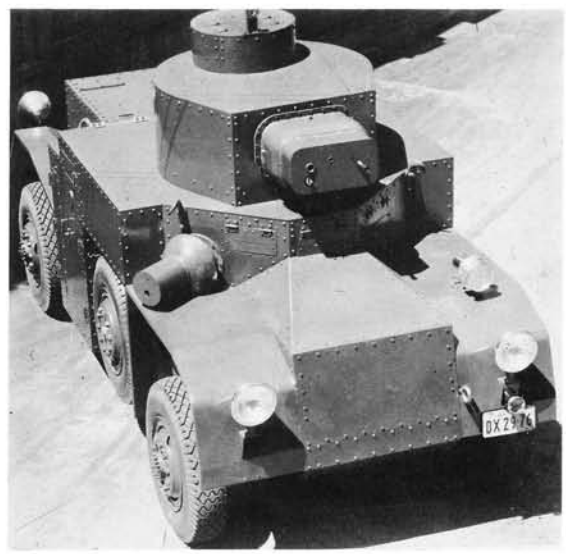
In 1932, the armored car was, as a matter of official policy " . . . next to the tank, the most important mechanized vehicle with which the Ordnance Department is concerned . . . " Five years later the requirement for armored cars was removed from the Book of Standards in favor of scout cars. How much this was due to the War Department's demand during the years of financial depression for cheapness and lightness and how much was due to the experience of the Mechanized Cavalry, is a matter for speculation.

The Mechanized Force at Fort Knox, the Cavalry School at Fort Riley, and the 1st Cavalry Division at Fort Bliss all became involved in the various aspects of combat vehicle design, and the Ordnance Department was also working on the development of half-track vehicles after having purchased a commercial model from the Citroën firm in France. Thus there were three separate lines of inquiry being instituted by several agencies, one on scout cars, one on armored cars and one on half-tracks which embraced both. Most had official "T" numbers but there were improvised cars as well.

There had been a Studebaker Scout Car in the early 1920s, consisting of an open touring car mounting a Lewis gun and shield on the dash and operated by the assistant driver. The first official scout car, the T1, was an open Pontiac car with bucket seats and a machine-gun without even a shield. The next was the T2, a commercial Chevrolet phaeton with a machine-gun and the only armor a set of shutters for the radiator. The succeeding numbers were design studies only until the T7, one of which was built by the Indiana Motors Division of the White Motor Company in 1934. It was a commercial 4×4 truck with an armored box hull.

After test, 76 more were built as Scout Car M1. Some

The heavy TK-6 armored car made for Iran was chain-driven. (Courtesy American La France)



A John Deere standard farm tractor with modified front axle and wheels as a machine-gun unit. (U.S. Ordnance Dept.)

Armored car improvised on a World War I Liberty truck by the 15th Infantry in Tientsin, China, in 1930. (The Infantry Journal)

of these went through several field modifications at Fort Knox into command cars, communications cars and artillery observer cars, each with hull differences. The next scout car was the T9 of which 20 were built by the Corbitt Company. After modification, two more were built as Scout Car M2. These had a partial rail for a skate-mounted machine-gun. One was later modified to provide an all-round rail for the machine-gun and became the M2E1. Another became the T5E1 Mortar Carrier for the 4.2 in. mortar. The modification for the all-round rail with arrangements for better crew comfort became the M3, of which 64 were built.

The 1st Cavalry Division earlier had improvised with soft steel several scout cars on commercial Pontiac passenger car chassis. These resembled the Russian Broniefords of the same period. One scout car on a Studebaker chassis was built by Rock Island Arsenal for the Cavalry School but it received no official number. This was in 1935. In the same year a car was built by the Marmon-Herrington Company and offered commercially as the A7SC. It was tested by the Army and some were sold to China, Iran and Venezuela. The Army gave the car the number T13 and bought 38 of them in soft plate in 1938 as training cars for the National Guard. There was an International Harvester Company Scout Car numbered T12 but it was a reversion to the T3 Scout Car in having only radiator shutters and windscreen armor and was not taken seriously.

In the area of armored cars as differentiated from scout cars, the first armored car to receive a "T" number was the T1, in reality the T3 Cavalry Scout Car which had only partial armor. The T2, however, of which four were built in 1928 by the La Salle Division of Cadillac, was an armored box hull with gun ports in the sides of the hull. It was, in reality, an armored personnel carrier with a machine-gun which could be mounted on an inside pedestal and fired over the top. These four cars were modified in 1929 into four different designs of turreted armored cars, the T2E1, T2E2, T2E3 and T2E4, which differed in the amount the hull was cut down and in the size and shape of the turret.

Following the T2 cars, a whole series of cars appeared. There was no T3 car but the T4, which became the M1 Armored Car, was a six-wheeler similar to the armored

Three-quarter left rear view of the T13 armored car which closely resembled the prototype trackless tank. (U.S. Ordnance Dept.)

A production model of the 6 × 6 T17 armored car with bow machine-gun and standard turret armament of 37mm M6 gun and co-axial .30 cal machine-gun. (U.S. Ordnance Dept.)

cars being produced in England and France at the same time. Two were built to Ordnance specifications by Cunningham Motors of Rochester, New York. One feature, copied from contemporary British and French cars, was the mounting of spare wheels on free axles on either side which aided in preventing bellying on obstacles. After test of the first two, another 20 were built at Rock Island Arsenal and placed in service.

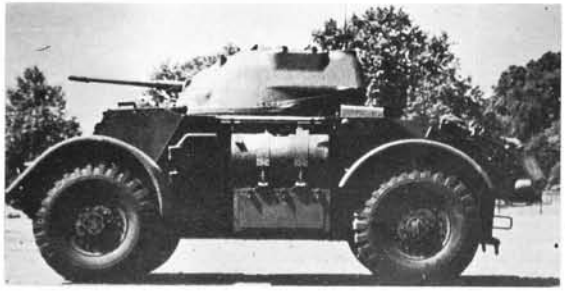
This was the period of the T3 Medium Tank (Convertible) and the T1 Combat Car, built by the U.S. Wheel Tracklayer Corporation of Hoboken, New Jersey and the forerunner of the Russian BT series of tanks. In a sense, since the tracks could be removed and the vehicles run on wheels, they also could be considered armored cars. A T2 Combat Car, also called Armored Car T5, resembled the M1 Armored Car but was a wheel and track vehicle. Some later combat cars were also convertible but these were intended primarily as tracklayers. The U.S. Wheel Tracklayer Corporation, of which J. Walter Christie was President, also built a small four-wheel non-convertible scout car which was offered commercially.

The Ordnance Department at that time was responsible for the design and procurement of armored vehicles, both wheeled and tracklaying, while the Quartermaster Corps was responsible for the design and procurement of wheeled transport vehicles. At the Quartermaster Corps design center at Camp Holabird, Maryland, near Aberdeen Proving Ground, a design for a transport vehicle was created which had a truck body interchangeable with an armored car hull and turret. This was the T7 Armored Car, one of the early attempts at design simplification and parts interchangeability.

Six of these vehicles were built. The T7 was a 4×4 design which was powered by a Franklin passenger car air-cooled engine. The armored car hull was of conventional design with a .50 caliber machine-gun in a cylindrical turret. Curiously, a redesign of this car which reshaped the armor into better ballistical form was given the designation T6. It also eliminated the feature of being interchangeable with a truck body.

Again, because the Quartermaster Corps had far more contact with commercial automobile manufacturers than did the Ordnance Department and since they were familiar with Cavalry desires from having worked with the T6 and T7, the Corps went on to design and build at Holabird several more armored cars on commercial passenger car chassis. These were the T8, of which two were built on Chevrolet chassis, the T9, of which one was built on a Plymouth chassis and the T10,

Standard production T17E1, known to the British as the Staghound I. Note jettisonable fuel tank clamped to side. (Imperial War Museum)



The T17E3 had a 75mm howitzer turret from an M8 Howitzer Motor Carriage. It was developed for British use but never put into production. (U.S. Ordnance Dept.)

The British Staghound Mark III had a Crusader tank turret with 75mm gun. It had no bow machine-gun. (Courtesy G. M. Ross)

The T18 8 × 8 heavy armored car modified with a 57mm gun and larger turret instead of a 37mm light tank turret and gun was the T18E2, known to the British as the Boarhound. This is the first T18E2 pilot model. (U.S. Ordnance Dept.)

of which three were built on Overland chassis. The hulls on these cars were practically identical as were the turrets which mounted .30 caliber machine-guns, but the turret covers were omitted on the T10s. Each car had a few features not possessed by the others, the most radical of which were the supplementary run-flat front rims and rear grousers on the T10 cars.

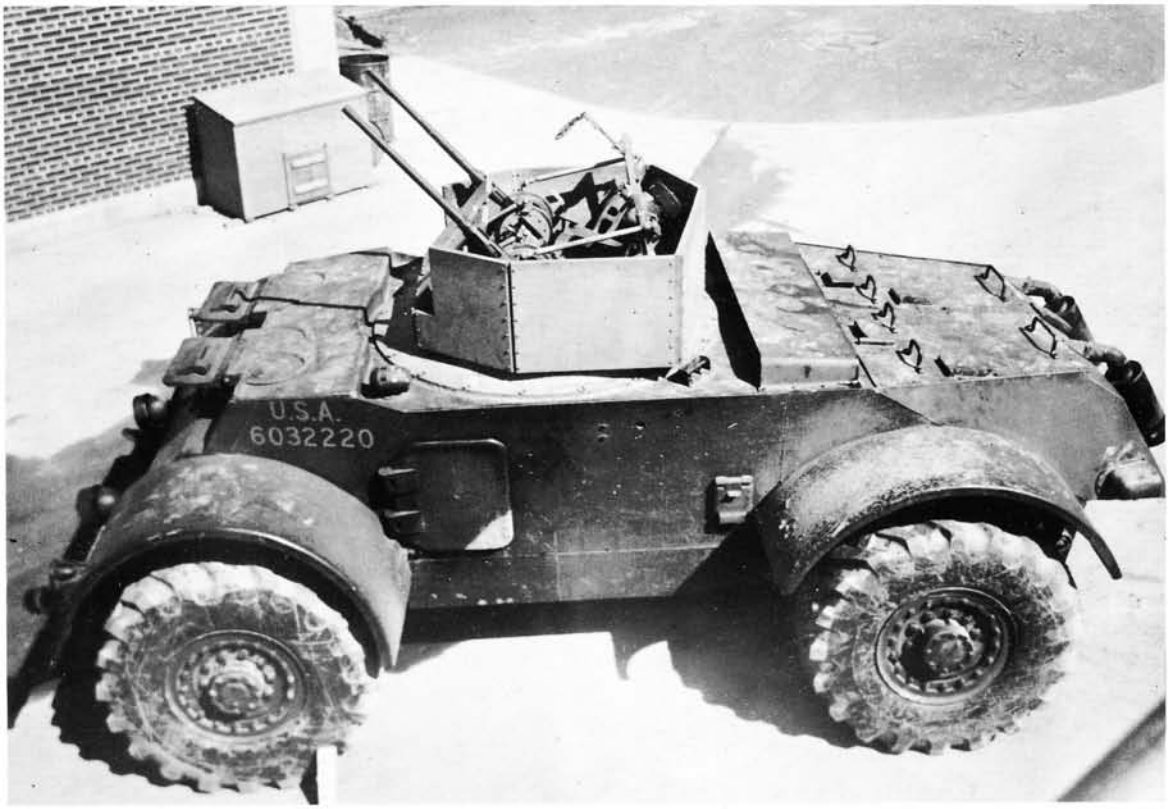
The next armored car designed by Ordnance was the T11, the prototype of which was built by the Four Wheel Drive Auto Company of Clintonville, Wisconsin. Bids were opened for building six more with the contract being awarded to the Marmon-Herrington Company. Five of these cars were used by the 1st Cavalry Division at Fort Bliss while Ordnance continued to experiment on one car with changes desired by the users. A new larger turret was substituted and other changes were made in the hull. The modified vehicle became the T11E1. With a change in engines it became the T11E2.

Between the tests and manoeuvers conducted at Fort Bliss, Fort Knox and the Cavalry School at Fort Riley the feeling grew that the tactical uses for which armored cars were fitted could just as well and perhaps better be carried out by the lighter turretless scout cars and this is when the Army began to place its emphasis on the scout car. Commercially, however, there was a demand for armored cars by some of the smaller countries.

Iran was interested in various developments, purchasing LT38 and AH IV tanks in Czechoslovakia. After purchasing A7SC Scout Cars from Marmon-Herrington, the Iranians expressed a desire for armored cars as well. Marmon-Herrington built a number of TH310 ALF-1 cars for Iran in 1934 but the turrets were unsatisfactory to the purchasers who replaced them with turrets made by the Swedish firm of Landskrona, Sweden, after which the cars were designated TK-5.

The American La France Company, internationally well-known firm of builders of firefighting equipment,

The T17E2 armored car, Staghound AA, had a Fraser-Nash turret and no bow machine-gun. (U.S. Ordnance Dept.)

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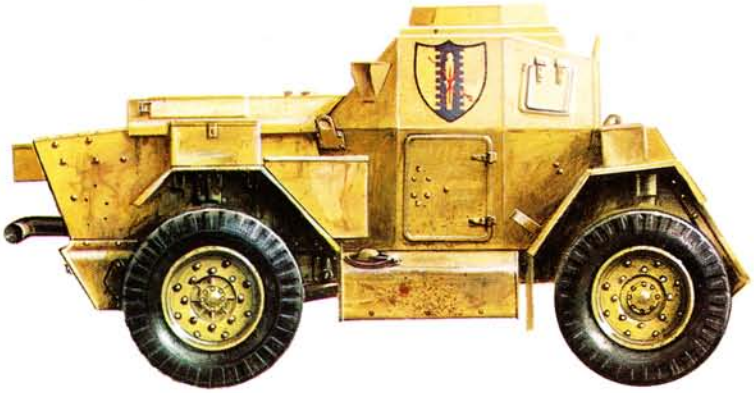
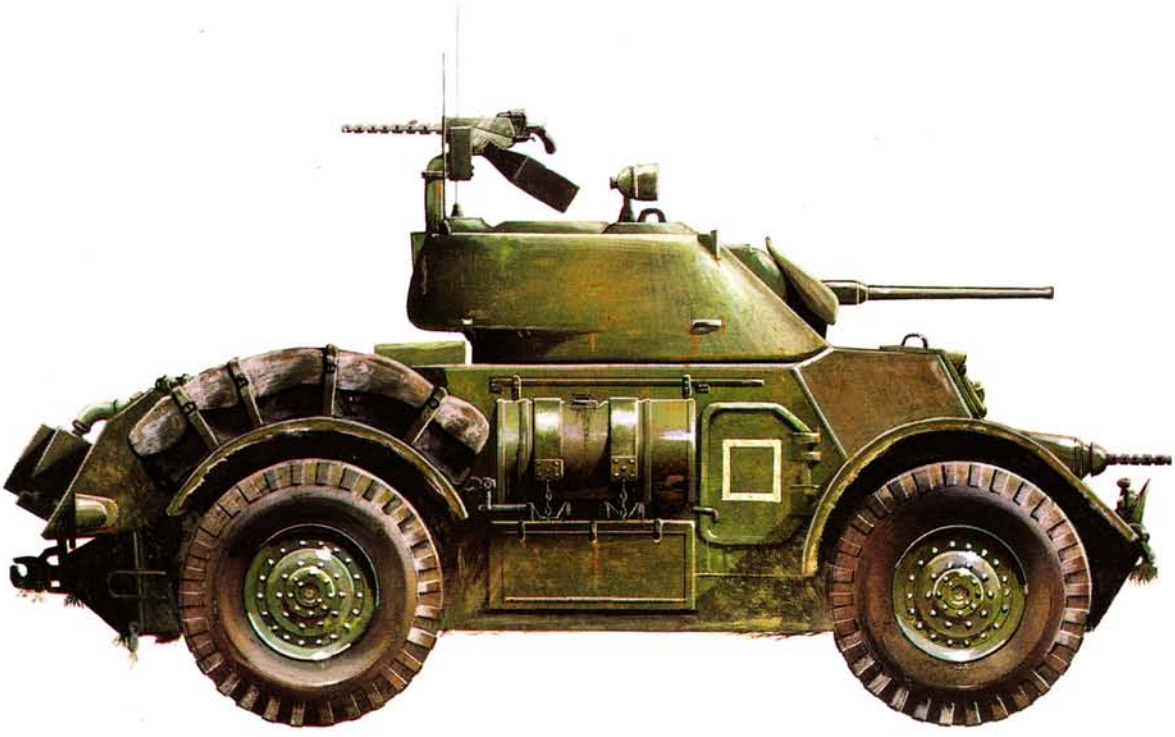




Left:
Four views of M8 Light Armored Car in service with U.S. troops in France 1944. The M8 in British service was called Greyhound. It had a magnificent cross-country performance. The M20 Armored Utility Car was built on the same chassis.

Above (top):
Daimler Scout Car (Dingo) re-modelled in Viet Nam with superstructure and cupola by U.S. 4th Cavalry whose badge is on vehicle's side.

(bottom):
T17E1 in British service, where it was known as Staghound I. The Staghound was tough and sturdy but had a somewhat conspicuous silhouette.

The T19E1 with a lighter, lower turret than the T19 and mounting a 37mm gun. (U.S. Ordnance Dept.)

Three-quarter front view of T22 with turret traversed to rear. (U.S. Ordnance Dept.)

had built T3E2 medium tanks for the Ordnance Department and later built for Iran a heavy chain-driven armored car called the TK-6. A well known automotive promoter named Preston Tucker produced a vehicle called the Tucker Tiger Tank, in reality an armored car. It was offered commercially and, like the TK-5 and TK-6, was tested by Ordnance. A special feature of the Tucker car was the bullet-proof glass dome turret which mounted a 37mm gun, a .50 caliber machine-gun and two .30 caliber machine-guns which could be fired at either surface or aerial targets. Another feature was the provision for a supplementary track which made the vehicle into a full tracklayer.

An AAC-10 armored car was offered commercially by the American Armament Corporation but there is no evidence that such a 10-wheeled vehicle was actually built. The John Deere Company offered an armored tricycle farm tractor which might have had a limited military use but hardly qualified as an armored car. Ordnance modified this to replace the small steering wheels which were standard on the original with an axle and two larger wheels, making it into what was intended as a machine-gun carrier. No military need was found for it and the project was dropped.

During this period the Four Wheel Drive Company produced an anti-aircraft gun car for the government of Guatemala but the hull was of soft steel. The Smart Engineering Corporation produced a commercial Riot Control Scout Car at about this time and International Harvester Company produced a turreted armored car for the government of Argentina.

Unofficial military vehicles during the 1930s included cars improvised on standard Army Liberty truck chassis by the 15th Infantry which was for many years on legation duty in China. There was a Dunlop car made by a National Guard officer of the same name, and a Johnson scout car made at Fort Meade by an officer of that name. The Howie Machine-Gun Carrier was a squat four-wheeled vehicle mounting a machine-gun and operated by a prone driver. A similar vehicle was the Palan Tactical Cart but in this, the driver sat.

Two little known vehicles were designed by Ordnance at the request of the Infantry School at Fort Benning. They were intended as personnel carriers. The first was the Squad Car T1 which was a standard Ford passenger sedan with armored radiator shutters. The next was the Squad Car T2, an open car with three rows of seats facing forward. Squad Car T3 had two rows of seats facing outward back to back. These also had armored radiator shutters.

Then came World War II in Europe, the period of U.S. rearmament, the joining of the Infantry tanks and

The T21 armored car, like the T22 and T23, was armed with the 37mm gun and co-axial 30 cal machine-gun. (U.S. Ordnance Dept.)

The T18E1 6 × 6 project was dropped before completion in favour of the T19, another 6 × 6 car, which was considered superior.
(U.S. Ordnance Dept.)

The T22E2 was the T22 with modifications, including addition of radio sponson, improvements in the turret and addition of sandshields. The T22E2 was standardized as the M8 armored car.
(U.S. Ordnance Dept.)

M8 armored car in action near Epernay, France, 1944. The M8, known as the Greyhound to the British who admired its magnificent cross-country performance, was extensively used by the U.S. armies in the North-West Europe campaign. (U.S. Official)

Three-quarter left rear view of the T69 Multiple Gun Motor Carriage with its Quad 50 cal machine-guns at full elevation. The T69 had the M8 armored car chassis. (U.S. Ordnance Dept.)

The prototype T26 armored utility vehicle with modified upper hull showing details of hull hatches. The T26 was eventually standardized as the M20 armored utility car. (U.S. Ordnance Dept.)

The Chevrolet T28 was standardized as the M38 light armored car, sometimes called the Wolfhound. (U. S. Ordnance Dept.)

The ubiquitous jeep in the T25E2 scout car version was overloaded with armor. (Courtesy R. P. Hunnicutt)

Cavalry combat cars into the Armored Force in July 1940, followed by U.S. entry into the war in December 1941.

III: 1941–1945

Perhaps the first serious proposal considered by the Army was the so-called Trackless Tank, an 8×8 car offered by the Trackless Tank Corporation of New York. Seventeen of these were ordered early in 1941 as the T13 Armored Car mounting a 37mm gun. Then, at the request of the Armored Force, four more were ordered as the 3-inch Gun Motor Carriage T7, and still later two more were ordered as the 105mm Howitzer Motor Carriage T39.

Here can be seen the confusion in concepts between a wheeled gun motor carriage and an armored car. There was to be more of this as will be seen a little later. At about this time, under the influence of British needs in North Africa, a number of other projects were initiated. Development of the T17 and T17E1 Armored Cars began in July 1941 as a result of the composite requirements of the Armored Force and the British Army Staff. Ford Motor Company and the Chevrolet Motor Car Division of General Motors Corporation were given contracts for the production of one pilot car each. Ford was to produce a 6×4 car and Chevrolet a 4×4. After tests, production of 2260 T17 cars was authorized in January 1942, and 1500 more were ordered in June of that year. At the same time, 2000 T17E1s were ordered and again later, 1500 more. Both of these cars had turret mounted 37mm guns and were light cars, the former (T17) 6×6 and the latter (T17E1) 4×4.

The T18 project was for a heavy 8×8 armored car, built to British specification by General Motors Truck and Coach Division, utilizing a 37mm light tank turret. The T18E1 car was a 6×6 vehicle. The need for a better anti-tank gun than the 37mm led to substituting the 57mm gun on the T18, making it the T18E2, known to the British as the Boarhound. The T18E1 project was dropped because the T19, another 6×6 car with a T17E1 turret, was operating and was considered superior. One T19 pilot was built, as well as one T19E1 with a lighter lower turret, and one re-armed with the 75mm M3 tank gun to become the T66 Gun Motor Carriage.

There was a T20 armored car project, a commercial

Three-quarter left rear view of the M38 light armored car (Wolfhound) after substitution of the M24 light tank turret. (U.S. Ordnance Dept.)

The experimental Reo 4 × 4 personnel carrier 3-ton version was a little known vehicle. (U.S. Quartermaster Corps)

The T24 scout car utilized standard quarter-ton truck (Jeep) components to become a 6 × 6 vehicle. (U.S. Ordnance Dept.)

M3A1 scout cars were among the many thousands of armored vehicles furnished to the Soviet Union under Lend-Lease. (Imperial War Museum)

The Studebaker T27 armored car suspension system followed ground conformation closely. (Courtesy A. R. Avakian)

The O.P. tender T2 was a small 4 × 4 liaison vehicle type for the artillery, dropped after partial testing. (U.S. Ordnance Dept.)

This experimental Fargo 6 × 6 scout car was tested by the U.S. Army but not adopted. (U.S. Ordnance Dept.)

The essential components of this Baker jumping car were tested and found feasible for installation, but the full-sized car was not completed. The tests showed that the vehicles could spring over objects four feet high a distance of 47 feet. (Baker Mfg. Co. Courtesy A. J. Clemens)

M3A1E3 scout car was a version armed with a 37mm gun on gun mount M25. (U.S. Ordnance Dept.)

The AAI scout car, with squat centrally-placed turret, has inner run-flat grousers. (Courtesy AAI Corporation)

The Chrysler SWAT (Special Warfare Armored Transporter) is an 8 × 8 armored personnel carrier. (Courtesy J. W. Loop)

design which was offered. Four pilots were authorized and then cancelled.

The T21 was a 6×4 car originally designated 37mm Gun Motor Carriage T43. It was offered by the Studebaker Corporation and was very similar to several succeeding cars. The T22 was a 6×4 car and the T22E1 was a 4×4 car. A pilot of each was built by the Ford Motor Company. The T23 was a 6×4 car and the T23E1 was a 4×4 car. A pilot of each was built by the Fargo Division of Chrysler Corporation. All of these were based on demands of the Tank Destroyer Force and are perfect examples of the muddled thinking of the 1941 period because they were intended as self-propelled 37mm anti-tank guns. The same changes in thinking that upgunned other vehicles caused these to have their designations changed from gun motor carriages to armored cars.

Because a decision was needed in order to stop scattering efforts and to bring a limited number of vehicles to a production status, a Special Armored Vehicle Board, sometimes called the Palmer Board, was formed to evaluate the vehicles available. This board conducted comparative tests during the winter of 1942–1943 and made its recommendations. It considered some of the vehicles tested to be tanks on wheels and adopted as one recommendation a definition that an armored car was one which was an armored wheeled reconnaissance vehicle weighing not over seven short tons. The recommendations of the Board resulted in cancellation of the orders placed for the T13 armored cars, the T7 Gun Motor Carriage, and the T39 Howitzer Motor Carriage, which were being built by the Reo Motor Truck Company, and the T17 Armored Cars except for 250 which had been produced. The earlier order for quantities of the T17E1 cars had been cut back to 250 and the Board recommended cancellation of these, but the British Army Staff requested that production be continued. Before production stopped, 2844 T17E1 cars (known to the British as the Staghound I) had been produced plus 1000 T17E2 (Staghound AA), which was the same car but with a Fraser-Nash anti-aircraft turret. Both in the United States and in England the 75mm howitzer turret from an M8 Howitzer Motor Carriage was installed experimentally (T17E3). In Britain other variations were the Mark II, which had a 3-inch tank howitzer instead of the 37mm gun, and the Mark III, which was the substitution of a Crusader tank turret with a 75mm gun. In British service some Staghounds were modified by removing the turrets and equipping them as command cars.

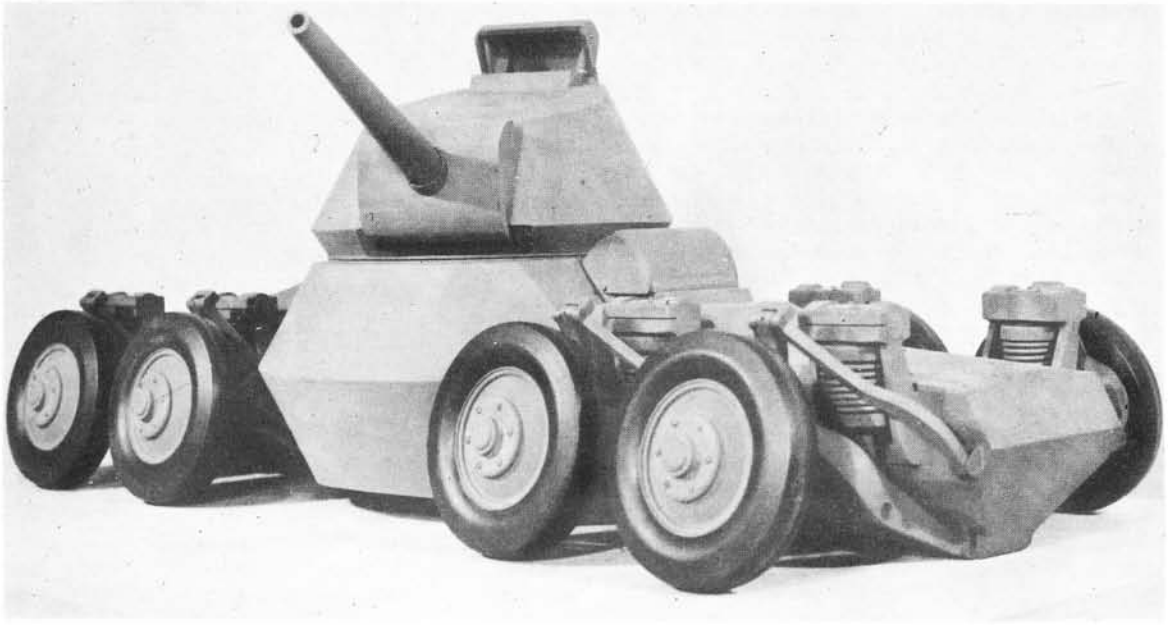
The T115 four-man wheeled carrier (Bat weapon version) was a 1956 experimental anti-tank vehicle. (U. S. Army)

The Board's recommendations also closed the T18E2 project except for 30 completed at British request and known to the British as Boarhounds. The T19, T19E1 armored car and T66 Gun Motor Carriage projects were dropped by Board action as well. The T21, T22, T22E1, T23 and T23E1 projects ended with the completion of pilots, but the Board recommended adoption of the T22 design provided certain changes were made. These included modification of the hatches, addition of a radio sponson, improvements in the turret and the addition of sandshields. These changes resulted in the designation of T22E2 and then standardization as the M8 Armored Car (called Greyhound by the British). The Board also recommended development of a utility car on the same chassis. A pilot T26 Armored Utility Car resulted. It went through several hull changes, finally being standardized as M10 and, a month later, as the M20 Armored Utility Car. There also was a multiple gun anti-aircraft vehicle built on the M8 Armored Car chassis and known as the T69. By the end of the war, 8523 M8s and 3791 M20s had been built by the Ford Motor Company. During and after the war, they were furnished to many countries in the world.

The Board's recommendations also closed down the T27, an 8×6 armored car armed with a 37mm gun. This car was built by the Studebaker Corporation. The 6×6 Chevrolet-built T28 Armored Car was standardized as the M38, sometimes called the Wolfhound. However, none were produced after the prototype because there was no U.S. Army requirement for an armored car other than the M8. The M38 later had an M24 Light

The XM808 armored car based on the well-tested articulated Lockheed Twister chassis. (U.S. Army)

South Vietnamese troops include Commando armored cars among their armored equipment. (Courtesy J. W. Loop)



An 8-wheel version of the Baker jumping car, or jumping tank, was built only in model form. (Baker Mfg. Co. Courtesy A. J. Clemens)

Tank turret substituted experimentally for the original turret. There are some who maintain that the T28 was the inspiration for the post-war British Saladin and Saracen but there is no evidence to support this view.

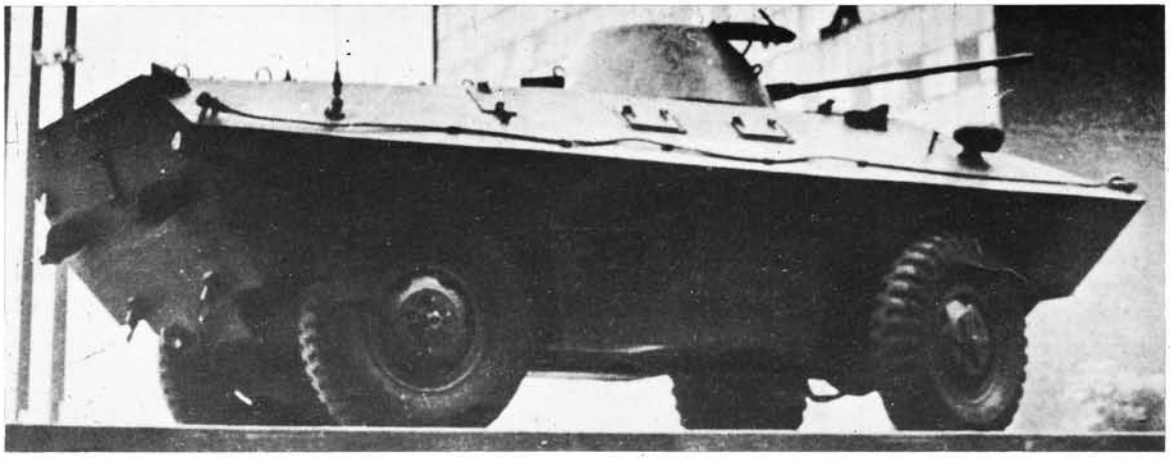
There were other vehicles which were cancelled by Board action. The T24 Scout Car was the only remaining one of armored car type. It was an armored version of the T14 Gun Motor Carriage. Only one was built. It was a 6×6 car built of jeep components.

The ubiquitous jeep also was involved in a proposal by the Smart Engineering Corporation to apply a small amount of armor to it. In the course of testing the vehicle, which was topheavy, Lieutenant Max Munson, for whom the all-weather Munson test course at Aberdeen Proving Ground was named, was killed. The project was closed but a month later was reopened. Successive T25E1, T25E2 and T25E3 vehicles appeared in various hull designs, all of which were overloaded for the basic chassis and the project again was dropped. It is rather interesting that a very similar design was put in use as a field fix in Europe by the 82nd Airborne Division in pursuit of the Germans following the Rhine crossing.

Two little known wheeled armored personnel carriers had been designed by the Quartermaster Corps before its wheeled vehicle responsibility was taken over by Ordnance in 1942. They were Reo 1½ ton and 3 ton vehicles of interesting design; but Ordnance did no more work on them since wheeled armored personnel carriers were not demanded by the using arms. Two small armored OP Tenders T1 and T2, intended as artillery observer vehicles, were built, but were dropped in 1942 after undergoing partial tests.

There were also some semi-armored and armored gun motor carriages which underwent test. They included the 75mm T27 and T46, the 37mm T33 and the 57mm T44, the 3-inch Gun Motor Carriages T55 and T55E1. There was also the Fargo M6 Gun Motor Carriage, the first weapon of the Tank Destroyer Force, of which 5380 were produced. Chrysler also submitted Fargo Scout Cars, one on a 4×4 chassis and one on a 6×6 chassis.

Chrysler 4 × 4 light armored car available commercially. (Courtesy R. Surlémont)



Some mention should be made of the projects carried on by the National Defense Research Council during World War II. This was an officially constituted group of scientists and inventors. In their code-named "Turtle" project they designed a series of tanks which was ignored by Ordnance and also two interesting armored cars. These were the so-called Baker Jumping Tanks. Both a four-wheel and a six-wheel version were contemplated. Designs were prepared and the hydraulic and spring suspension units were tested sufficiently to prove that the vehicles could spring over objects four feet high a distance of 47 feet. Funds were not made available to complete the vehicles and no further action was taken.

All through the first years of World War II the White Motor Company was turning out M3A1 Scout Cars. These were the pre-war M3 Scout Cars with a wider hull and a sprung roller in place of a front bumper. A total of 20,856 of these vehicles was built during the war. Some additional experimental vehicles modified from M3A1 cars included the M3A1E1 which had a Buda Lanova diesel engine, an M3A1E2 which had an armored roof, and the M3A1E3 which was armed with a 37mm gun. An order had been placed in 1939 for 100 M3A2s which differed only in that Buda and Hercules engines were used. However, these later were rebuilt to standard M3A1 specifications. Some of the cars in service were modified into command cars. Among them was one which General George S. Patton Jr. had remodelled to his needs.

The M3A1 Scout Cars were furnished to many countries during and after World War II and were used with and without modification, one example being the installation of flanged wheels for using the car on railroad tracks, another with a roof like that on the M3A1E2. In Israel some were converted to armored cars by changes in the hull and the addition of a rotating turret.

IV: SINCE 1945

Since World War II, although there was no official interest in scout cars because jeep type vehicles have replaced them, there has appeared a miniature 6×6 car known as the Disposable Squad Car, a very compact little personnel carrier, as well as a still smaller 6×6 chassis called Little David which is intended as a remote control demolition vehicle. Another Ordnance design intended as a general purpose vehicle is the T115 Utility Vehicle. One variation of this was as an anti-tank vehicle mounting a recoilless rifle.

Commercial offerings by the Chrysler Corporation include both a light and a medium 6×6 armored car and an 8×8 armored car known as SWAT or Special Warfare Armored Transporter. Another well known commercial offering is the Commando made by Cadillac Gage Company (not connected with the Cadillac Motor Car Company). This is a very agile car of symmetrical appearance. The U.S. Army purchased some of them for use in Viet Nam by military police units. There variations have appeared, including one fitted out as an ARV. Commando cars have been sold to other countries as well.

Many improvised cars have appeared in Viet Nam, both in the army of South Viet Nam and in the U.S. Army, on chassis all the way from jeeps to 6×6 trucks.

Daimler Dingo re-armored by U.S. troops in Vietnam with superstructure and cupola. Badge on superstructure side is of 4th Cavalry.
(Courtesy J. W. Loop)

One Daimler Dingo found by U.S. troops was re-modelled by them into a small turreted armored car.

Other commercial offerings include a scout car produced by AAI Corporation. It is a 6×6 vehicle with a squat center-placed turret mounting a 20mm gun and a machine-gun. The wheels have inner grouser rims reminiscent of the rear outside grouser rims of the pre-war Armored Car T10.

The U.S. Army in recent years has been much interested for the first time in articulated vehicles as a possible replacement for small tracked vehicles. One of these is the Gama Goat, which is being produced in large numbers. It is natural, therefore, that there should be great interest in an armored version of the Lockheed Twister having the designation XM 808. Spectacular cross-country ability was shown by the bare Twister chassis and similar results are hoped for from the fully armored version.

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