

# Armored Cars and the Marine Corps

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AS THE Marine Corps Air-Ground Museum completed restoration of the Corps' first armored vehicle, a 1915 King wheeled, armored car, Marines in the Arabian desert employed in combat the Corps' latest wheeled armored vehicle. Today we call it the Light Armored Vehicle (LAV).

Significantly, as we shall see, the first successful armored cars were a naval venture and a naval aviation innovation at that. Moreover, they led to development of a tracked armored vehicle, the tank, first proposed by a "naval person."

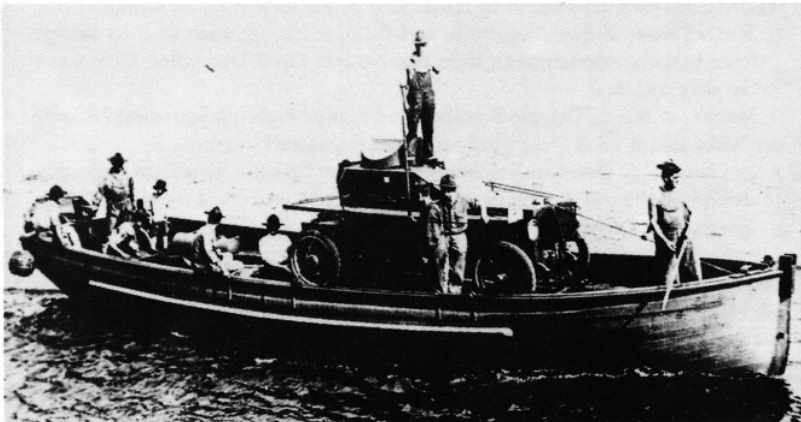
## First Motorized Armored Vehicles

When one thinks of armor one usually thinks of tanks, yet predictably the less complicated wheeled armored vehicle preceded the slower, more complicated tank.

The Germans, Benz in 1885 and Daimler in 1886, developed the first practical and enduring automobiles, using the slightly earlier German-invented Otto internal combustion engine. Soon, actually in 1898, in England and America, military innovators mounted the equally new automatic machine guns on four- and three-wheeled motorcycle-type unarmored vehicles.

In the early 1900s, machine guns with armor shields were experimentally and tentatively mounted on the proliferating motor cars. In 1902 a French company

*Test prototype King armored car being ferried ashore in a 50-foot Navy motor sailer. The car could be lifted out by a dockside crane or disassembled into a number of components and manhandled ashore. The King Motor Car Company built luxury sedans.*



*King of the 1st Armored Car Squadron with Marines in an anti-riot wedge in Haiti. The armor for the radiator and motor has been removed to reduce tropical cooling problems. The term "squadron" reflects the intended reconnaissance role for the cars.*

made a fully armored car with machine-gun turret. In 1906 the Russian Army bought 10 of the French cars. In 1905 Austria developed a four-wheeled drive, turreted armored car. The Italians, in 1912, built armored cars on Fiat truck chassis. Further development awaited the exigencies of war. That war came soon enough with the invasion of Belgium and France by Germany in August 1914.

## The Invasion of France

In executing its Schlieffen Plan the German Army advanced through northcentral Belgium and France in a massive wheel-

ing movement designed to envelop Paris and pin the French Army against Lorraine and Switzerland.

The right flank of the German Army was uncovered, except by a cavalry screen, all the way to the English Channel. As a diversionary effort to assist the retreating French and British Armies far to the south, a British naval division of bluejackets and Marines landed in Belgium. The force included Royal Naval Air Service (RNAS) aircraft squadrons for reconnaissance. Predictably, the RNAS acquired motor cars to augment its air capability by ground reconnaissance and for mobile defense of its airfields. These cars, also predictably, began to be armed with machine guns followed by gun shields and rudimentary armor to defend against German horse cavalry screening forces.

After the Battle of the Marne in September, which caused the German Army to recoil, both sides—Germans versus French and British—extended their flanks in successive attempts to outflank the other in what became known as the "Race to the Sea."

RNAS planes and their machine gun cars became flank protection for the British Expeditionary Force in the flat, well-roaded terrain of coastal Belgium. The cars proved their worth in the fluid skirmishing. By the fall of 1914 the RNAS had determined that ground reconnaissance by

wheeled armored vehicles was a viable tactic which should be retained and refined.

#### *The True Armored Car Enters Combat*

The British Admiralty placed orders with Rolls-Royce and other makers for fully armored cars with rotating machine gun turrets and the true armored car was operational. The Rolls-Royce cars arrived in Belgium in the late fall of 1914 and were an immediate success.

By the spring of 1915 the Western Front had stabilized with trench lines protected by barbed wire stretching continuously from Switzerland to the Channel. The wheeled armored car with limited cross-country and no trench-crossing capability was out of a job. But, its utility in open and roaded terrain well established, it found employment in other theaters of war and was taken over by the British Army.

The Rolls-Royce proved to be the most successful of the armored cars and continued in production throughout the war. It performed valuable service against the Turks in Palestine and in Mesopotamia, now known as Iraq. It was made famous by Lawrence of Arabia in his Trans-Jordan campaign against the Turks and was employed in the Southwest and East Africa campaigns.

The attributes of the Rolls were relative reliability, economy, and mobility over firm open terrain. Its deficiency was its lack of mobility over trench lines and a battlefield churned up by artillery fire. This deficiency was corrected by development of the tank in 1916, another story. Suffice it to explain here that a prime mover in proposing the tank was the naval person, First Lord of the Admiralty, Winston S. Churchill, who had sent the Rolls-Royces to Belgium and was impressed by their combat utility, if not their battlefield mobility.

#### *Enter The U.S. Marine Corps*

The United States' intervention at Veracruz, Mexico, in April 1914 was by a Marine brigade without motor transport. The oversight was corrected in typical Marine Corps fashion; three Benz trucks in a dockside warehouse were commandeered. Protected mobile firepower, technically feasible, still was lacking, however. The need for wheels and armor was impressed on Marine Corps leadership.

Six months later, Headquarters, Marine

Corps, no doubt became aware of the successful employment of RNAS armored cars in Belgium. The landing of the British Naval Division with its Royal Marine Brigade and supported by RNAS aircraft and armored cars for reconnaissance fitted nicely the Corps' combined arms and air-ground team Advance Base Force concept, as worked out in the 1913 Culebra maneuvers and the Veracruz landing. When an American armored car was produced in 1915, the Marine Corps embraced it.

A disabled veteran of the British experience, "Captain" W. A. Ross, seeking to profit from his knowledge, came to the United States and designed an armored car for the Armored Motor Car Company of Detroit. The King Motor Car Company of Detroit furnished the chassis and engine. The Armored Motor Car Company fabricated the armored body shell mounted with a rotating machine gun turret. The Commandant and the Secretary of the Navy persuaded Congress to appropriate \$20,000 to buy two of the King cars for test. Ross's design was a slightly smaller version of the successful Rolls-Royce car.

#### *The King Armored Car*

King was noted for its luxury sedans and touring cars. The chassis and motor selected for the armored car could be termed an American Rolls-Royce as to quality. Its motor was a state-of-the-art V-8 engine of 70 horsepower which boasted advances such as dual ignition, electric starter and lights, and tapered roller bearings.

The car ran on wire spoke wheels with pneumatic tires. Rear wheels were duals and a spare single and dual were mounted amidships to help prevent bellying up on obstacles. The car could make up to 65 miles-per-hour on good roads. With 3/16ths-inch armor plate it was impervious to rifle fire and its turret mounted a .30-caliber M1909 Benet-Mercie light machine gun. With a crew of three on board, fueled, and with a full load of ammunition it weighed in at 5,500 pounds or 2 3/4 tons. Like our Light Armored Vehicles of today, it was tested by the U.S. Army and rejected.

The King was thoroughly tested. On an endurance run between Washington and Philadelphia it kept pace with a King touring car making 35 to 40 miles-per-hour. A top speed of 70 mph was claimed. It successfully negotiated rough Virginia back country, including rocky ground,

sand hills, and water-filled ditches. It was loaded in a 50-foot Navy motor sailer and landed by a dockside crane. For landing in four smaller boats or manhandling from the 50-footer, the armor could be removed in three sections.

In late 1916 the Marine Corps procured five of the King armored cars with some improvements resulting from testing the two prototypes. The turret was changed from one with angled sides to one with a sloping front and accommodating the Lewis machine gun which had just been adopted by the Marine Corps.

We can only speculate on whether or not the Marine Corps wanted to take the cars to France for use in the "open warfare" that Gen Pershing intended after the American Expeditionary Force breached the German trench lines. For that matter, we do not know whether the Army would have permitted the Marines to take the cars overseas. We do know that the Army wouldn't let the Marines field a complete division, a second infantry brigade, or even its own artillery which spent the war waiting in Quantico. The Army didn't permit the 1st Marine Aviation Force to support the ground Marines as an air-ground task force as Headquarters intended and even made the Marines discard their beloved Lewis guns for the hated French Chauchat automatic rifle.

Instead the five cars and their crews were activated in Philadelphia as the 1st Armored Car Squadron, part of the Advance Base Force Brigade. Note the designation "squadron," a term for a cavalry unit and just coming into vogue as the term for the basic aviation combat unit. This usage reflects the intended reconnaissance role for the cars as well as their aviation origin. The squadron remained in Philadelphia through 1918 and transferred to Quantico in January 1919.

The Advance Base Force was tasked to defend our naval base in the Azores but due to Portuguese objections to so large a force, only a 7-inch gun battery and the 1st Aeronautic Company of anti-submarine seaplanes were sent. The balance of the brigade remained in readiness at Philadelphia throughout World War I for whatever contingency might require its deployment. The Armored Car Squadron was an integral element.

In December 1919 the squadron was attached to the 1st Regiment of the 1st Ad-



*M3A1 scout car landing from an LCM-6, circa 1941. The M3 and motorcycles with sidecars equipped the 1st and 3d Scout Companies of the 1st and 2d Marine Divisions, until jungle operations on small Pacific islands made their use impractical. The scout companies were in the South Pacific in early 1942 but when the divisions moved north the cars were left in New Zealand.*

advance Base Force Brigade and deployed to the Island of Hispaniola for duty in both Haiti and Santo Domingo. On 4 May 1921 the squadron was deactivated.

#### *World War II*

Wheeled armored vehicles for reconnaissance did not reappear in the Marine Corps until 1940 when the U.S. Army's M3 scout cars were procured for the 1st and 2d Scout Companies of the 1st and 2d Marine Divisions. In the two years before Pearl Harbor the Marine Corps was tasked in two directions by contingency plans—to the Pacific in the event of a war with Japan and against a German advance into French Northwest Africa. For the latter mission in open country armored reconnaissance units were clearly essential.

The scout companies accompanied the 1st and 2d Marine Divisions to the South Pacific in early 1942 but when the divisions moved north to the Solomon Islands

their M3s and motorcycles were left behind in New Zealand.

The Pacific War reconnaissance on jungle-covered islands or coral atolls meant foot patrols operating by stealth or patrols landed in inflatable rubber boats from submarines. In the continental warfare of the European Theater, on the other hand, mechanized reconnaissance was the rule at division and higher level, making use of the M3 scout car and later the M8 armored car, with a 37mm gun in a turret, and the M20 open-top troop-carrying version of that Ford-built six-wheeled armored car. Light tanks were also used in this role. At the infantry regiment level in the U.S. Army the intelligence and reconnaissance platoon was mounted on 1/4 ton trucks, the ubiquitous "jeeps."

#### *Post-World War II*

In the post-World War II period this doctrine continued in the European-

*The Marine Corps' LAV-25, acquired in 1985, proved its worth in Operation Just Cause in Panama, and formed the successful fighting reconnaissance screen for I MEF in Operation Desert Storm. The LAVs were too nimble for Iraqi tanks to engage effectively.*



oriented Army. Terrain in the Korean and Vietnam War, however, did not lend itself to use of armored ground reconnaissance. Foot, jeep, and helicopter-inserted patrols were used by both Army and Marines.

In the Marine Corps, the division reconnaissance battalion was jeep-mounted and also was inserted by helicopter. The force reconnaissance mission of landing operations in a hostile environment dictated parachute insertion and continued use of rubber boat and underwater swimmer landings from submarines.

#### *The Threat Today*

Geographical and threat realities of the last quarter of the 20th century and into the 21st dictated a change in Marine Corps thinking. The Corps began to be increasingly continentally oriented in contingency plans centered on the land masses of Europe and the Middle East-Southwest Asia theaters. The threat to be faced in these areas was large numbers of Soviet or Soviet-type armor—tanks, reconnaissance vehicles, infantry fighting vehicles, and self-propelled artillery. If Marine forces were to be successful it became apparent that operational reconnaissance and screening tasks would require more than foot-, jeep-, and helicopter-borne patrols.

The Marine Corps clearly required an armored reconnaissance vehicle with a capability to carry some infantry for the operations which would characterize warfare in Europe or the Middle East. High mobility, firepower, and survivability were the essentials. This idea was underscored by both studies and the recommendations of BGen Alfred M. Gray, Jr., later Commandant, who from

*Fortitudine*, Fall 1991

1976 to 1978 commanded an expeditionary brigade in Northern Europe NATO exercises.

### *The Light Armored Vehicle*

The Secretary of Defense, Harold Brown, soon initiated a program to test and select Light Armored Vehicles (LAVs) and Mobile Protected Gun Systems (MPGS) for the Army and Marine Corps. The program was later cancelled by the Army but the Marines went ahead with procurement of 758 LAVs in eight variants. The vehicle finally selected after exhaustive testing at Twentynine Palms, California, was the Swiss-designed, General Motors of Canada-built, eight-wheeled MOWAG Piranha.

The basic car was the LAV-25 with a turret-mounted Hughes 25mm chain gun. Other variants included a LAV/M with an 81mm or 120mm mortar, LAV/R recovery vehicle, LAV/L logistics vehicle, LAV/C2 command and control vehicle, and LAV/AT anti-tank vehicle with TOW missile launchers. There were two still in development, a LAV/AG assault gun vehicle with a 90mm or 105mm gun in a turret and a LAV/AD air defense vehicle with possibly a 25mm General Electric Gatling gun and Stinger missiles.

Each Marine division was to field a light armored infantry (LAI) battalion which would include a mix of the variants. Missions for the LAI battalions would include screening or ground surveillance and early warning, guard operations to prevent enemy ground observation and direct fire on the main body, and as a covering force to delay, fix defeat, or attrit an enemy by trading space for time.

Employment of a Marine light armored infantry company in Panama, both before and during Operation Just Cause, was a complete success in validating both concept and equipment. The LAI battalions accompanied their divisions to Saudi Arabia and in Operation Desert Storm were in the forefront. They streamed through the gaps cut through the Iraqi defensive lines by the engineers and spread out as wide covering forces ahead of the main bodies of Marine tanks and infantry mounted in Amphibious Assault Vehicles (AAV), formerly LVTP-7.

The LAVs were too nimble for the Iraqi tanks to engage effectively while they destroyed light armor and thin-skinned ene-

my vehicles. Their 25mm guns pinpointed Iraqi tanks at night, enabling LAVs with TOW missiles and helicopters with TOWs and Hellfire missiles to destroy the tanks. It was a perfectly run operation worked out over the past five years at the Marine Corps Air-Ground Combat Training Center at Twentynine Palms.

In adopting and successfully employing the LAV in combat, the Marine Corps has come full circle back to the 1914-1915 Royal Navy/Royal Marine air-ground team which

inspired the U.S. Marine Corps' 1916 1st Armored Car Squadron with its King armored cars. Although it did not see combat in World War I the King was the first United States armored vehicle in regular service, and the 1st Armored Car Squadron was the first armor unit in the United States.

The King armored car together with a LAV-25 and other Desert Storm war-winning hardware, is on exhibit at the Air-Ground Museum in Quantico. □1775□

## Restoring the King at Quantico

The Museum's King armored car is one of the two tested by the U.S. Army and is identical to the Marine Corps Kings. We found it rusting away in the outdoor armored vehicle park at the Army Ordnance Museum, Aberdeen Proving Ground, Maryland. The Army's Center of Military History graciously transferred it to the Air-Ground Museum because of our interest and because we promised to restore it and exhibit it indoors. The fate of the five cars of the 1st Armored Car Squadron is unknown.

The restoration section of the Museum received the car in 1986 and other priorities prevented an immediate start on work. But by 1988 restoration chief Mr. Joseph E. Payton was able to put a team of regular employees and volunteers to the task. The King was completely disassembled down to engine, drive train, wheels, armor sections, and turret. The pieces were sandblasted and primed, and painted the Marine Corps shade of green in use in 1916.

The wire-spoked wheels had to be rebuilt. The rims were partially rusted away as were some of the spokes. Proper size tires, nine in all, counting the spares, were difficult to find. But there are companies which have saved the old molds and still make tires to order for collectors of antique automobiles. The restored wire wheels are weak, so we do not intend to run the King. The weight is taken off the wheels by jackstands under the axles when it is exhibited.

The powerful V-8 engine could have been restored to running condition only by a disproportionate effort requiring a completely rebuilt ignition system, carburetor, and radiator, and as we won't be running it due to the weak wheels these restorations were not done. The King is exhibited in the "Early Years—1900-1940" hangar of the Air-Ground Museum in the section presenting the pre-World War I development of the Advance Base Force.—FBN

