

# GENERAL ESTIENNE - FATHER OF THE FRENCH TANKS

## THE FRENCH TANKS FROM WW1 TO WW2

### 1. THE FIRST WORLD WAR

General **Jean Baptiste Eugène Estienne** (1860-1936) is the father of the French tanks.



*General Estienne*

General Estienne originates from the artillery and is passionate by technical innovation. He also plays a role in the development of the military aviation before WW1. He starts WW1 as commander of the 22<sup>e</sup> Régiment d'Artillerie (22<sup>nd</sup> artillery regiment) and obtains the authorization to use an aircraft platoon with its regiment. After the first battles he looks for solutions to protect the soldiers from artillery and MG fire.

General Estienne did not invent the tank. Several inventors before, in France and other countries, have imagined an armored vehicle on the paper or have built more or less achieved prototypes. He is nonetheless the first in France to conceive a tank and its concept of use in battle. He manages to convince the French high command of the importance of the tank and the necessity to develop these new weapons in high numbers. Already on 25<sup>th</sup> August 1914, he declared that "victory will belong to those who will manage to mount a gun on an all-terrain vehicle".

On 1<sup>st</sup> December 1915 he sends a letter to the French high command, which can be seen as the first act of the birth of the French tanks : "I have attracted your attention twice in one year about the use of mobile armored units to cover the progression of the infantry. After the last attacks, I am even more convinced of the value of this idea. I also see as possible the realization of mechanized vehicles able to carry infantry through the obstacles and under enemy fire, at a speed superior to 6 km/h. I estimate that 6 months and 10 millions francs would be required to realize the required equipments for 20,000 men. This force would be sufficient to take by surprise the successive enemy lines and to allow the exploitation of the breakthrough by units maintained in the rear. Such a project requires absolute secret and the quick realization of a first armored vehicle, which is incompatible with the discussion of a classical exam commission." This proposition prefigures the mechanization of the troops and their use for a fast progression through the enemy lines. General Estienne meets successively general Janin, general Pétain, general Joffre, general de Castelnau and finally on 31<sup>st</sup> January 1916 the Assault Artillery (the tanks) is created (the French AS, often wrongly labelled as special artillery).

On 12<sup>th</sup> December 1915, he meets general Joffre and presents him his project for an armored tracked vehicle of 12 tons, with 15-20mm armor and a speed of 6-9 km/h. On 25<sup>th</sup> December 1915, Estienne meets general Pétain. With the support of Pétain and Joffre, general Estienne meets the industrial Louis Renault. Mister Renault at first tells him that his factories are already too busy to work on his project.

General Estienne collaborates with Le Creusot and on 21<sup>st</sup> December 1915 the construction of the first French tank is launched by Schneider : the Schneider CA-1. This tank is armed with a 75mm Schneider L/9.5 gun and two 8mm Hotchkiss M<sup>le</sup>1914 MGs. It weights 12.5 tons, an amor of 11+8mm, a top speed of 8.1 km/h, an autonomy of 80km and a crew of 6 men. In January 1916, Pétain completely supports the project and on 24<sup>th</sup> January 1916, lieutenant-colonel Maurice Gamelin, at this time in the French high command staff, indicates that the project must go on and that the tanks must be available before spring 1917. 400 tanks are ordered and the last is delivered in August 1918.

General Estienne is successful; the French army will have tanks. From 21<sup>st</sup> to 23<sup>rd</sup> February 1916, during the battle of Verdun, trials are performed with the new tank, which proves able to cross 2m large trenches and barbed wire networks. In March 1917, 208 Schneider CA-1 are available. They are engaged for the first time on 16<sup>th</sup> April 1917 near the Chemin-des-Dames : 128 Schneider CA-1 tanks led by commandant Bossut launch an attack near Berry-au-Bac, but they are confronted to concentrated German field guns and sustain heavy losses.

On 26<sup>th</sup> March 1916, general Estienne learns about the existence of the heavier Saint-Chamond tank, launched by the technical services of French army and built by FAMH (Forges et Acieries de la Marine et d'Homécourt). The tank is armed with a 75mm M<sup>le</sup>1897 L/36.3 gun and four 8mm Hotchkiss M<sup>le</sup>1914 MGs. It weights 22 tons, the initial 11mm armor is increased to 17mm in order to defeat the German "K" bullet. The top speed is 12 km/h, the autonomy reaches 60km and the crew is composed of 8 men. 400 Saint-Chamond tanks will be built, the last ones in March 1918. 12 Saint-Chamond tanks are engaged for the first time and with success on 5<sup>th</sup> May 1917 during the attack on the plateau of Laffaux.

General Estienne wants the development of a lighter and more mobile tank. He meets Louis Renault again in July 1916. In October 1916, Estienne is promoted by Joffre to commander of the Assault Artillery, regrouping the French tanks (at this time they are attached to the artillery). This leads to the development of the Renault FT17 tank (FT is only the designation of the model according to the nomenclature of Renault, between the FS car and the FU truck, it does not mean Faible Tonnage or lightweight as it is often written). Already in 1916, general Estienne thinks that these tanks could be used for infantry support but also in independent units. The first prototype is produced in February 1917 and the first FT17m (armed with a 8mm MG) performs trials on 14<sup>th</sup> March 1917. The prototype of the FT17c (armed with a 37mm gun) is only achieved in July 1917. The 37mm gun has a semi-automatic breech and can be manned by only one man. The Renault FT17 is used in combat for the first time on 31<sup>st</sup> May 1918 at Chaudun : 21 tanks are used without artillery support or smoke screen and all the German defenses are destroyed in a 2km wide and 2km deep area for the loss of 6 tanks. The Renault FT17 will often be used in mass attacks e.g. 480 tanks were used in the counter-attack in July 1918.

The Renault FT17 is probably the first modern and one of the most successful tanks of WW1. This light tank was the first of the classic tank design, which featured a turret with a 360° traverse. Thanks to its small size it could enter wooded areas, where larger British Mark or French Saint-Chamond and Schneider CA-1 were useless. The main task of tank units was to eliminate MG nests and destroy barbed-wire obstacles, enabling infantry to cross the no-man's-land and to pierce the enemy lines. The main advantages of the Renault tanks were their small size, agility on the battlefield and large numbers. French troops praised their support and although tank/infantry cooperation was at first poor due to lack of training, infantry units always requested the support of the tanks in offensive operations. The tactics were improved and the tanks were not only associated to infantry attacks but also cooperated with the artillery and the aircrafts. The first beginnings of the tank/aircraft couple were there. Renault FT17 tanks took part in 4356 engagements during WW1. Field guns were the main threat for the tanks, accounting for 356 totally destroyed Renault FT17 tanks of the 440 lost during the war. Anti-tank trenches, shell holes and wide infantry trenches temporarily put more tanks out of action than enemy fire.

The FT17m is armed with a 8mm Hotchkiss M<sup>le</sup>1914 MG and the FT17c is armed with a 37mm SA18 L/21 gun. The FT-17BS has a 75mm Schneider L/9.5 gun. There will be many more versions : a command radio version (TSF), a FT17 minesweeping tank with 2 plough shares mounted on the front, a searchlight variant for police use and a version carrying fascines, which could be dropped into wide trenches. The radio version is used for the first time in combat on 25<sup>th</sup> April 1918 at Malmaison.

The first 100 FT17 are armed with a MG and have a completely cast and rounded turret. This first turret is not adapted for the mounting of the 37mm gun. Two kinds of turrets, able to receive either a MG or a gun, are then adopted : the polygonal OMNIBUS turret (made of bolted rolled armor plates) and the rounded GIROD turret made of several cast armor parts.

3728 Renault FT17 tanks have been built in France until 1921 (2100 with MG, 1246 with 37mm gun, 39 with 75mm gun, 188 TSF and 155 for school units) with more than 3177 during WW1 alone (by the Renault, Berliet, Somua and Delaunay Belleville factories). It has also been widely exported : Belgium, Spain, Brazil, Canada, China, Czechoslovakia, Finland, Netherlands, Japan, Poland, Yugoslavia etc. Italy produced the Fiat 3000 on the basis of the Renault FT17. The USA produced about 100 Renault FT17 and 450 copies called "six tons". The USSR also produced the MS1, MS2 and MS3 based on the Renault FT17 tank. The French and the Spanish armies used the Renault FT17 during the Rif war between 1919 and 1926. The Polish 1<sup>st</sup> tank brigade built with French officers used this tank in 1919-1920 against the Bolsheviks. Despite being completely obsolete, 1297 FT17 tanks were still in

service in 1940 : 1062 tanks in France and 235 in the colonies. From the 1062 FT17 tanks in France, 462 were in combat units and many others were in airfield protection platoons, anti-paratroops tank companies, regional platoons protecting important buildings protection etc.

Weight : 6.7t

Length : 4.10m

Width : 1.74m

Height : 2.14m

Crew : 2 men

Maximum armor : 22mm on the turret, 16mm on the hull and 8mm on the top

Maximum speed : 7.5 km/h (Renault engine, gasoline, 35 hp at 1500 rpm, 4480 cm<sup>3</sup>, water cooled)

Autonomy : 35 km

Armament : a 8mm Hotchkiss TMG (4800 cartridges), a 37mm SA18 L/21 gun (240 shells including 12 canister shells) or a 75mm L/9.5 BS gun (probably 40-50 HE shells)

In Great-Britain, Winston Churchill plays a role in enabling people like Sir Albert Stern, colonel Swinton, colonel Elle and colonel Fuller to create the first armored units. The first tanks of WW1 were developed according to the British concept of "landship", a heavy tank (in fact the first real heavy tank is the later French FCM-2C). The landships committee created on 24<sup>th</sup> February 1916 is directed by Eustace Tennysson d'Eyncourt and is an emanation of the Royal Navy. It leads to the development of the Mark tanks series from 1916 to 1918 (Mark I, II, III, IV, V which weights 26 tons), 150 tanks are produced in 1916.

The Mark I is the first real tank used on the battlefield. It saw action in small numbers for the first time during the battle of the Somme on August/September 1916. Although the performance of the first tanks, proves disappointing in battle, colonel Fuller, chief of staff of the Tank Corps, remains convinced that these machines could win the war. After the battle of the Somme, Fuller persuaded Sir Douglas Haig, Commander in Chief of the British Army to continue the development of these landships. On 20<sup>th</sup> November 1917, for the first time the British use an important number of tanks during the battle of Cambrai : 324 tanks makes a 5 km breakthrough in the German lines. It is a surprise attack. At the end of the first day, 179 tanks are out of use, 65 due directly to enemy fire but the planned objective is not reached : the defensive position on the hilly woods of Bourlon is still in German hands. Four German divisions arrive on 21<sup>st</sup> November and seven more were on the way. The Germans pulls the British back. Finally the battle ends beginning December with a draw and 45,000 losses for the belligerents. Nonetheless, Cambrai is a turning point in the war, the evidence that technology and movement will rule the war. The British also develop a lighter tank with the Whippet. It is used for the first time in March 1918. Finally during WW1 the British produced about 2600 tanks.

In Germany very few tanks were produced during WW1. About 100 Sturmpanzerwagen A7V were ordered in December 1917 but a maximum of 35 were apparently produced and delivered. Ground clearance was only 40mm and the tank proved unstable and had only limited all-terrain performance.

Finally, during WW1, the Germans only produced about 35 tanks, the British about 2600 tanks and the French 3977 tanks (3177 Renault FT17, 400 Schneider CA-1 and 400 Saint-Chamond).

Already on 9<sup>th</sup> October 1916, general Estienne laid the basis of the first French doctrine for the use of the tanks. The assault artillery (the tanks) opens the way for the infantry and covers its progression. Once the first enemy lines taken and the enemy batteries destroyed or captured, the tanks go on for the attack of the second line, without waiting for the infantry, which will follow as soon as possible.

The instruction of 30<sup>th</sup> October 1917 determines the tactics. A group of 12-16 tanks is assigned with a single objective to take. There should be at least 1 tank every 100 meters. The infantry should follow the tanks. The whole attack has to be protected by an advancing artillery barrage. Already on 8<sup>th</sup> May 1917 the French high command estimated crucial the protection of the tanks by aircrafts.

A note by general Estienne on 1<sup>st</sup> January 1917 explains his doctrine of the use of the tanks. The tanks support the infantry, cover its progression by neutralizing the MG nests and open the way through the barbed wire networks. The tanks are armed with guns but the continuous progression constitutes the most powerful power. The tanks and the infantry are closely linked together but the tanks have not to wait for the infantry. The tanks support the infantry, the infantry supports the tanks. Each of them waits for the other component only if it cannot continue to progress alone anymore. The tank versus tank warfare is not yet taken in consideration, there are no German tanks. The tanks have to be used without artillery support, for a surprise attack, or after an artillery preparation. Once the maximum range of the supporting artillery is reached, the tanks have to provide at short range the support to the infantry.

During spring 1917, the ideas of general Estienne have made their way in the high command. The production of tanks is increasing and the doctrine is adapted after the conclusions of the first trainings and combined exercises with the infantry.

The Assault Artillery saw action for the first time at Berry-au-Bac on 16<sup>th</sup> April 1917 during the so-called Nivelle offensive. During this attack the French tanks were engaged 4 hours after the artillery preparation and the infantry

attack. The infantry had to conquer the 2 first enemy lines and the tanks had to support the infantry for the attack of the 3<sup>rd</sup> enemy line, which was out of range for an efficient artillery support. 128 tanks (organized in groups of 16 tanks) were deployed but immediately spotted by German aircrafts. They will continuously be under the direct and indirect fire of the enemy artillery. They will manage to reach the 3<sup>rd</sup> enemy line, but without enough infantry support they moved back at the beginning of the night.

The tactical conclusions form the engagement modified the use of the tanks. The tanks were not to be exposed to enemy artillery fire more than 1 hour. They have to better use the cover of the terrain, the smoke or the night to avoid to be spotted. During an attack deep in the enemy lines, the tanks should only be engaged when the enemy observation posts in the first line have been neutralized. The tanks will not anymore be engaged at a scheduled time after the beginning of the attack but according to the developments of the battle and after the orders of the Army, the Army Corps or the infantry division. The Group of 16 tanks is too heavy. The groups (12 tanks) and batteries (4 tanks) commanders should have light command tanks.

Since mid-1916, general Estienne insists on the fact that light tanks have to be developed. Their lightweight would allow trucks to transport them as close as possible to the infantry in the first line. In December 1916, the production of the Renault FT17m is launched. These tanks will not anymore be engaged after the infantry but with the infantry, in constant support of the infantry, moving at the same speed than the infantry.

The battle of Cambrai showed the efficiency of concentrated tanks during a surprise attack on 20<sup>th</sup> November 1917. It also proved that the idea of using tanks to conquer the first enemy line and disorganize their second line is a valuable one. But the tanks are still not seen as a totally sure weapon. There are many mechanical breakdowns and the enemy artillery manages to inflict heavy losses. After battles like Cambrai, which were largely fought on open terrain instead of the classical trench war, a note of the French high command dated from 30<sup>th</sup> December 1917 insisted on the fact that the French army should be prepared to manoeuvre in open terrain and that the movement is a decisive characteristic of the offensive.

Following the first battles involving tanks and the lessons that are learned, the first French instruction manual for the tanks is available on 20<sup>th</sup> December 1917. The tanks are used to support the progression of the infantry. The tanks are used as mobile artillery, which has to neutralize the enemy obstacles and strongpoints. The tank units are trained to support the infantry but the infantry is not really trained to support the tanks. The infantry doctrine does not change. The technical limitations of the first tanks and the fear to concentrate many tanks on a very small area because of the enemy artillery hindered the development of the mechanized units as they were imagined by general Estienne.

On 26<sup>th</sup> January 1918, a note of the French high command insisted on the fact that only the tanks were able to make a breakthrough. The ideas rapidly evolved. It was estimated that a deep disorganization of the enemy lines would allow a progression of 50 km. The tanks are ready to be as a decisive tool for the victory, once their technical features will be sufficient of course.

Successive notes from general Pétain in April 1918 will achieve in 3 months the new offensive doctrine. The attacks will have to be prepared in a short period of time, using flanking and encirclement tactics and they will largely rely on the use of tanks. According to Pétain, the attacks had to be simple, audacious and fast. The strategic surprise will be obtained by absolute secret. The tactical surprise will be obtained by intense but short artillery preparation and air bombings or without artillery preparation but with the use of large numbers of tanks. In the last months of the war the tanks will play a crucial role.

The availability of the Renault FT17 light tanks led to the publication of a new document to explain how to use them in June 1918. But the tactical doctrine remained roughly the same, the single difference was that the light tanks were more mobile than the first medium tanks. The evolution of the doctrine came slowly after the lessons of the different battles. The first flanking attacks and exploitation of breakthroughs with tanks, deeper in the enemy lines were seen. The Renault FT17 was the main technological advance on the battleground in 1918. Unlike the Schneider CA-1 and Saint-Chamond medium tanks, these light tanks were intended to be used in mass attacks.

Heavy tanks were nonetheless not abandoned. General Estienne still planned to develop a "char de rupture" (breakthrough tank) able to pierce strongly defended enemy lines. This kind of tank is seen as necessary for the planned offensive of 1919 against the German lines.

The very heavy tank FCM-2C was built by the "Société des Forges et Chantiers de la Méditerranée". It was developed as a heavy breakthrough vehicle in WW1. The order called for a vehicle that would span all German trenches (it could cross 4.25m wide ditches), that explains the length of the tank (10.27m), it was not very wide (2.95m) in order to be transported by train and it was 4.01m high. The FCM-2C was the very first heavy tank (68t, the British Mark V had only 26t), seriously armored (40mm) and armed with a 75mm gun in a turret (320° traverse) for the first time of history. The tank had a powerful engine and a modern architecture for its time, including 2.5x stroboscopic sights. 300 FCM-2C tanks are ordered on 21<sup>st</sup> February 1918 but none is delivered before the armistice. Only 10 tanks were built between 1919 and 1921. The FCM-2C was planned to be used in big numbers,

concentrated on a large front, followed by hundreds of Renault FT17 light tanks and infantry waves. Such events could have been seen if the war would have continued in 1919 and 1920.

The offensive in Lorraine planned for 14<sup>th</sup> November 1918 will never be launched, the war ending on 11<sup>th</sup> November, but it would have been supported by 600 tanks and hundreds of aircrafts protecting and supporting the tanks. This evolution shows already what will be the Second World War. The war as it was fought in 1918 was as different from the war in 1914, than the war from 1914 compared to 1814. In only 4 years the concepts and technological means had drastically evolved.

## **2. THE FRENCH DOCTRINE AFTER WW1**

### **2.1 The lessons of WW1 and the ideas of General Estienne**

The French doctrine for the use of tanks at the end of WW1 is mainly based on the infantry support concept. The concept of breakthrough tank was then only theoretical; it was not tested on the battlefield.

The development of the military aviation and of the radio communications plays a role in the doctrine of the tanks. The lack or the bad use of radio sets is often used to explain the defeat of 1940, but these were in fact already taken into consideration in the first French tanks.

The observation aircraft has to follow the progression of the tanks. At the beginning the aircrafts have no fire support role but the task to observe and eventually to direct counter-battery fire to neutralize the enemy guns firing on the advancing tanks. The utilization of the radio was planned in that way. In each Assault Artillery group there should be 1 radio/command tank. The radio was used to receive the orders of the divisions but also to receive the information provided by the spotting aircraft. One can see that concepts, which were largely used during WW2, were already conceived by the French army during WW1.

The aircraft/tank cooperation evolved at the end of WW1 and fire support mission are envisaged. To cover the noise of the advancing tanks the doctrine plans also to use aircrafts flying at low level. The British used already 1 dedicated reconnaissance squadron with their Tank Corps after the battle of Amiens. They had the task to blind enemy spotters with smoke bombs and eventually to attack the enemy field gun batteries.

At the end of WW1, France have thousands of tanks and crews who saw combat. The following years will be important for the development of the French armored units. But the context of the time is an economical, morale and human crisis after the big slaughter.

The French doctrine at this moment could be summed up as following :

- At the strategic level, the surprise attack led by tanks is still envisaged. The belief is that any attack without surprise cannot have deep and decisive results. The use of tanks allows reducing the very long artillery preparations of WW1, giving back the means of manoeuvre and mobility to the high command, key of the success. The French doctrine for the tanks as it is seen after WW1 has nothing obsolete at all concerning these points.
- Nonetheless, at the tactical level, most officers still consider the tank as having only an auxiliary role for infantry support. They base their knowledge and tactics on the previous battles. The French tanks only support the action of the infantry; the tanks don't have the main role. The core of the army is the infantry, which controls the choice and the rhythm of the actions. The new born tank units as well as the aircrafts are only there to help the infantry. With such a doctrine, only slightly improved and modified, the French army started later WW2.

The ideas of general Estienne are different. He sees the invention of the tanks and its impact as being as important as the development of gun powder. He thinks that the infantry should let to the tanks the main mission of conquering the objectives. The infantry should support the tank and follow them. The tanks are the core of the attack. The infantry remains nonetheless the king of the battle since its static defense enables to hold the ground and to gain the victory.

General Estienne said that the tanks "are an independent arm, without similarity with the infantry, differing by its armament, its tactics and its organization. The tanks require, on the rear lines, powerful supply and recover/repair means". According to him, the tanks have to be grouped in units kept in general reserve. They are then issued temporarily to specific armies or divisions to fulfil missions formerly given to the cavalry : establishing contact with the enemy troops, pursuit, deep raid on the rears of the enemy etc.

He wants to concentrate all the tanks in a single mechanized corps. This mechanized unit would be very mobile and powerful. This unit would be very closely supported by the aircrafts for reconnaissance and close air support. He fears that the attachment of the tanks to the infantry will block their role to the single infantry support mission. According to him the tanks have to be grouped in an independent arm to develop their own tactics and doctrines. Already during and after WW1 he has envisioned the modern use of tanks.

Nevertheless the offices of the French high command start also thinking at new doctrines. Beginning 1919, the note titled "la guerre de l'avenir" (the war of the future) proposes to reduce the infantry units exposed in open terrain and

to create anti-tank forces, including the tanks themselves. The tank versus tank warfare is already in the minds. This is rather far away from the infantry support role of the tanks.

The French army plans 2 main types of tanks :

- Light and mobile tanks for infantry support
- Heavy tanks with better crossing capabilities will open the way for the light tanks and the infantry. These heavy tanks have to destroy the enemy strongpoints, destroy the enemy AT guns (and be able to resist to the enemy AT guns) and engage the enemy tanks

Other types of tanks are planned like observation tanks for the artillery, radio/command tanks, supply tanks etc. But all these projects are limited by the shattered economy after WW1 as well as by the good will of the high spheres of decision. The whole infantry cannot be mechanized and the whole artillery cannot be mounted on tracks.

The Ministry of War starts in 1919 to study the lessons of WW1. All the units have to prepare reports concerning the organization, the equipments, the tactics, the issues etc. Concerning the Assault Artillery (the tanks) the problem mentioned most frequently deals with the liaisons/communications in a pure infantry support context. Nevertheless, several officers are more original. **Colonel Pierret** wrote about the importance of tank versus tank and tank versus anti-tank guns warfare in the next war. Other reports concerned the importance of the radio sets and the lack of time to really determine their concept of use during WW1.

The tank versus tank warfare was an important idea for several officers and offices of the French high command in 1919. It was therefore possible to envision the development of a French tank arm, with more mobile and more powerful tanks, which would have been a revolution in the French tactics and strategy. If people like general Estienne had been listened too this new arm would also had been independent. But all these ideas and proposals will have to face people who were completely against such projects or who at least didn't believe in them.

After long discussions, on 13<sup>th</sup> May 1920, the Assault Artillery (tank) is officially not anymore a part of the artillery but a subdivision of the infantry. The "Artillerie d'Assaut" units become "Chars de Combat" units. The "groupements", "groupes" and "batteries" of the artillery become "bataillons" (battalions), "companies" (companies) and "sections" (platoons). The ranks of the men become those of the infantry. This reinforces of course the infantry support role of the French tanks, the core the French Army remains the infantry. There will not be independent mechanized units as wished by general Estienne. The doctrine for the French tanks will therefore remain in a kind of status quo. The doctrine for the tank units of 1921 and 1936 will never change that fact.

General Estienne will nevertheless continue to act in two ways :

- Trying to make of the tanks and independent arm
- Trying to convince people about the new strategic possibilities of this arm

He has to accept the attachment of the tanks to the infantry but always tries to make the tanks more independent. On 25<sup>th</sup> May 1919 in "Mémoires sur les missions des chars blindés en campagne", he concludes that the armored troops have to constitute an independent arm.

During a conference held in Brussels on 7<sup>th</sup> May 1921 (in front of the King of Belgium), he defends the tanks as being an independent arm. For him the apparition of the tanks on the battlefield is a revolution and it changes the war in its tactics and strategies. According to him, when looking at several great leaders like Alexander, Napoleon Bonaparte or Foch the key factor to victory is the mobility.



*Ferdinand Foch*

For Estienne, the required mobility condemns the horse since the motorized and mechanized units are superior. He imagines the strategic and tactical advantages of a mechanized corps of 100,000 men able to cross 80 km during one night and to attack the enemy by surprise. This corps will include an assault force of 4,000 tanks and 20,000 men. First heavy tanks to destroy the enemy defenses, followed by mechanized infantry and light tanks including fast tanks to exploit the breakthrough deep in the enemy lines. The attack would be supported by aircrafts and the heavy rail road artillery would shell the enemy rears thanks to its long range. A few days later, after resupply and refuelling, this 100,000 men corps would be able to fight the enemy some 100 km away. His views in 1921 already condemned the horse in favor of the mechanization. The tanks had to be used to break the front, to enlarge the breakthrough and to exploit it deeper. His ideas were not that far away from the so-called Blitzkrieg of 1940.

In the article "Les forces matérielles de la guerre" published in 1922, he demonstrates that the tanks constitute a separate arm because of their armament. On the basis of simple technical considerations, the tanks should be considered as a different arm. The cavalry without its horses would only be a subdivision of the infantry, but with the horses it is the cavalry. In the same way of thinking, the tanks with all their features cannot simply be part of the infantry. General Estienne will study the tanks, the tank/aircraft cooperation and their doctrine until 1933. He will die in 1936.

## 2.2 The other thinkers of the French tanks during the 1920's and the 1930's

General Estienne was not completely alone during the 1920's. General **Maxime Weygand** also defended the view of a mechanized army in "La Cavalerie et la revue de la Cavalerie". For him the horse mounted cavalry was obsolete and the mechanized forces constituted the future. The French army should be equipped with fast and light tanks, armored cars and self-propelled artillery. These mechanized forces should be supported by aircrafts and infantry carried by trucks. For Weygand the future consisted in motorization and mobility.



*General Weygand*

Officers having served in the tanks gave also their opinion like **lieutenant-colonel Velpry** (501<sup>e</sup> RCC). He insisted in 1923 in "L'avenir des chars de combat" about the development of a heavy tank for tank versus tank warfare.

All these works and advices were not really taken in consideration by the highest military leaders of the time. The French army, after having developed the first modern tank with the Renault FT17 and produced the highest number of tanks during WW1, missed many opportunities to develop a revolutionary mechanized corps with a brand new doctrine.

Many opportunities were missed since many things were tested or suggested at the tactical and strategic level as well as in the field of inter-arms cooperation :

- At the strategic level : concentration of the tanks on one point of the front (as will the Germans do in 1940 in Sedan), but the tanks will be spread in the battalions for infantry support. In 1935-1940 big armored units will be created (DLM and DCR) but the high command proved unable to choose a new doctrine. France had 6 big armored units with several innovations but at the same time the bulk of the tanks was still spread in battalions to support the infantry.
- At the tactical level : concentration of the tanks to have the advantage of their grouped shock and firepower. But the official doctrine was to avoid concentrating too much because of the enemy artillery.
- The tank versus tank warfare was seen as very important already in 1922, but was largely ignored. In 1939-1940 only some reports and documents from armored division were seriously dealing with the question. Before

that it was only mentioned in a case of self-defense, since the main task of the tanks was to support the infantry.

- The better opportunities were probably missed in the inter-arms cooperation field. The tank/aircraft couple had its roots in WW1. The concept was developed after WW1 in several articles and was strongly supported by general Estienne, but was never seriously considered but the highest leaders.

What are the main reasons of this status quo ?

**1)** The experience of WW1 and the technical limitations played an important role in the status quo of the French doctrine for the tanks. The first use of the Schneider CA-1 tanks on 16<sup>th</sup> April 1917 showed that a breakthrough attack was difficult to achieve. Nonetheless the tanks had successfully supported the infantry and the introduction of the lighter Renault FT17 tanks modified the initial concept. The WW1 experience conducted several military and civilian leaders to think that the best role for the tanks was to support the infantry, as the Renault FT17 tanks did in 1918.

Contrary to the first medium tanks, the light FT17 tanks proved very efficient. This success reinforced the views of the men defending the tank as infantry support, in opposition to the men defending the tank as independent arm and core of the army, being able to break the enemy line. This belief was also reinforced by the technical problems with the first medium/heavy tanks, which lacked mobility and crossing capabilities in comparison to the FT17 tanks.

**2)** The role of the men in the status quo of the doctrine :

- the fear of change
- the will to protect his arm against a new one (infantry and horse-mounted cavalry against an armored mechanized force)
- the role of Pétain

Each evolution is accompanied by the fear of the unknown and can even conduct to a reject of the proposed changes. The tanks were really a revolution on the battlefield of that time.

The cavalry wanted to preserve its traditions and the horse. The infantry feared to loose its main role and saw only the tank as an auxiliary force. Since the tanks were attached administratively to the infantry, the evolution of the doctrine was blocked.

Marshal Pétain limited the evolution possibility of the doctrine. He believed in the importance of the tanks as a weapon but had a really limited vision of their use. For him only the infantry support mission was really important. The doctrine was strictly the defense on a continuous front. His position in the high command enabled him to impose his views against people like Estienne.

**3)** The social, political, economical and international context.

All the military decisions were not only resulting from choices of military leaders. The society was led by civilian leaders, whose choices were limited by economical and international restraints.

The high human cost of WW1 led to a strong pacifism in the 1920's. The disarmament conference at Geneva, the League of Nations and the general fear of a new war led to the reject of all offensive doctrines. The political leaders in France wanted to be in accordance with the pacifist society of the 1920's and blocked the development of offensive doctrines and therefore hindered the development of the tanks. It led also to other choices like the Maginot Line in France. The financial and political issues between 1919 and 1930 led to the main effort on light tanks instead of medium main battle tanks. These light tanks appeared less offensive and therefore in adequacy with the international pacifist context. From 1928 to 1934, only 2.4% of the budget for armament production was dedicated to the tanks and in the 1930's. Other people said that tanks could only be manned by professional soldiers and not conscript, because of the required technical level. A professional army was frightening in France, especially in the pacifist context of the 1920's.

The international context played a main role in limiting the development of the French tanks. At that time the economical help from the USA or from UK was also restricted to purely defensive strategic choices. Of course, Germany on its side left the League of Nations and developed its own tanks during the 1930's, despite the interdiction of the Versailles treaty. All these factors hampered the development of the French tanks and their doctrine. It is probably one of the main reasons for the French defeat of 1940. Finally in France in 1940, there was not an independent tank arm, the armored units were dispersed in the cavalry and in the infantry, whereas in Germany the Panzerwaffe became an independent arm concentrating all the tanks.

The British were the first to engage tanks in WW1 but the reluctance to abandon horse-mounted unit for mechanized ones was even stronger than in France. General Fuller and Liddel Hart will defend an independent tank arm. General Blakiston-Houston will conduct the motorization of the cavalry in 1934. The British will start WW2 with only few tanks and on May 1940 they have only one very immature armored division, roughly without supporting infantry, artillery, engineers or services.

During WW1, Germany did not produce a significant number of tanks. After the big shock of having to face the allied tanks from 1916 to 1918, the importance of these weapons appeared rather obvious to the Germans. In the 1930's, officers (younger than in France) will reach key positions in the German high command. The creative

people will be listened to, unlike in France. In 1922, Heinz Guderian is captain and starts to collect information about the tanks. He studies the French and the British developments. In 1929, Guderian is convinced that the tanks will have to constitute an independent arm. The Austrian general Ludwig Ritter von Eimannsberger is probably with general Estienne the strongest thinker of tanks during the post-WW1 period of time. He wrote a book, which was sent to the German high command in 1933. This book was also translated in French in 1937 by lieutenant-colonel Rousseau. The Germans, with people like Heinz Guderian, will use the foreign experiences and concepts as basis to create their own armored units, which will create the surprise in Sedan in May 1940.

The French introduced the first modern tank with the Renault FT17. France produced also the highest number of tanks during WW1. France was rather ahead during WW1 and the 1920's in the development of the doctrine with people like general Estienne but the status quo of the highest leaders annihilated the advance of the French tanks on the German ones. Heinz Guderian is usually credited with creating the so-called "Blitzkrieg". However, the ideas of men such as Estienne or Charles de Gaulle tend to be forgotten. Whereas Guderian was given Hitler's full support after 1933, the French thinkers like Charles de Gaulle were never supported by the French high command.

During the 1920's, several personalities acted for the development of the French tank arm. General Estienne of course was the main one. Marshal **Ferdinand Foch** (1851-1929) also played an important role; he was a strong supporter of the offensive doctrine and the mobility. Foch was Marshal of France, Great-Britain and Poland. He received multiple French, US, British, Belgian and Moroccan awards. General **Buat** was convinced of the importance of technology in the development of the new weapons and especially for the tanks. He participated to the creation of the armament engineers' corps. General **Doumenc** conducted various studies and led conferences about the composition of an eventual armored division but was completely ignored by the high command. General **Maxime Weygand** (1867-1965) defended the mechanization and supported general Flavigny in 1931.

During the 1930's, general **Jean Adolphe Louis Robert Flavigny** (1880-1948) organized the mechanization of the cavalry from 1931 to 1940, which will enable to create the 3 first French armored divisions. The 1<sup>e</sup> DLM created from 1932 to 1935, followed by the 2<sup>e</sup> DLM and the 3<sup>e</sup> DLM. The German will copy the organization of French DLM to create their Leichten-Divisionen.



*General Flavigny*

During the 1930's, the real spiritual son of general Estienne was **Charles de Gaulle** (1890-1970).



*Lieutenant-colonel de Gaulle and President Lebrun in 1939*



*General de Gaulle*

He started WW1 as captain in the 33<sup>e</sup> RI. He was WIA in 1914 in Dinant and in 1915 in the Somme. In 1916 in Verdun he was WIA for the third time and captured. He tried 5 times to escape but was liberated after the armistice in 1918. He spent 22 months in Poland during 1919-1921 among 600 other French officers sent to Poland to help

Marshal Josef Pilsudski against the Bolsheviks. In Poland he was infantry instructor. He fought against the Soviets and after a combat near the Zbrucz River was awarded the Virtuti Militari, the highest Polish military decoration. In Poland he was influenced by the use of tanks (see boxed piece of text below about French soldiers and Renault FT17 tanks in Poland), fast manoeuvres and the combat in open terrain.

The Headquarters of the Polish Army in France issued the first order starting the formation of the 1<sup>st</sup> Tank Regiment on 15<sup>th</sup> March 1919 using the historical opportunity, which presented itself after the end of WW1. The fall of all three powers : Russia, Germany and the Austro-Hungarian Empire involved in partitioning of Poland allowed for the formation of strong and independent Polish armed forces.

The French 505<sup>e</sup> RCC (Régiment de Chars Combat = tank regiment) with its Renault FT17 tanks and its soldiers served as a seed around which the first Polish tank regiment was created on 22<sup>nd</sup> March 1919 in Martigny-les-Bains. Ethnic Polish volunteers from France and the USA as well as Polish POWs from German and Austro-Hungarian armies filled the ranks of the regiment. The Poles never before had their own armored unit ; hence they had to rely on the knowledge and expertise of French instructors. The unit was commanded by lieutenant-colonel Jules Maré (from 21<sup>st</sup> March 1918 to 15<sup>th</sup> October 1919) and later by lieutenant-colonel Adolf Engel. Introductory work on the formation of the unit was completed by 1<sup>st</sup> May 1919. The regiment boasted 120 Renault FT17 tanks. The 1<sup>st</sup> regiment was transported by train to Poland between 1<sup>st</sup> and 16<sup>th</sup> June 1919. On the arrival in Poland, the 1<sup>st</sup> regiment numbered 34 French officers, 11 Polish officers, 354 French NCOs and 442 Polish NCOs and men. The process of gradual taking over the unit by the Poles began in October 1919.

The 2<sup>nd</sup> company of the 1<sup>st</sup> battalion was the first unit engaged in the battle. The 2<sup>nd</sup> company, with 24 tanks, supported action of the 58<sup>th</sup> infantry regiment of the 14<sup>th</sup> Wielkopolska Division, against the Bolshevik forces defending Bobrujsk (Bobruysk) on 19<sup>th</sup> August 1919. The unit was used to break the Russian lines and open the way for an infantry attack. On 28<sup>th</sup> August 1919, the tanks accompanied by infantry entered Bobrujsk to the enthusiastic welcome of the local population. The company was commanded by the French capitaine Dufour and all the other officers of the company were French. After successful action, the tanks were transferred by train north, where the 2<sup>nd</sup> company helped the 1<sup>st</sup> Legion infantry division in the storm of the forts of Dyneburg (Dvinsk). Lieutenant-colonel Jules Maré has directed this action personally, sometimes leading his tanks on foot. Most of the French personnel departed back to France after their subsequent return to Warsaw, though some French officers remained as advisers. The 1<sup>st</sup> Polish tank regiment did not take part in the fighting until the spring of 1920.

The most important developments in which the Renault FT17 tanks participated during the battle of Warsaw took place around Radzymin, east of the capital. The 2<sup>nd</sup> platoon, 5<sup>th</sup> company, 3<sup>rd</sup> tank battalion supported the 1<sup>st</sup> Litewsko-Bialoruska infantry division in a counter-attack at Radzymin. The battle at Radzymin was prominent in stopping the main Soviet thrust to capture Warsaw.

The Polish Army turned to the offensive on the morning of 16<sup>th</sup> August 1920. They sliced through the weak defenses of the Mozyrska Group and turned northeast in order to encircle the Soviet forces storming Warsaw. By that time 3 companies with 6 FT17 tank platoons were gathered in Major Nowicki's armored group. The task of this new unit was to open communications between the capital and Mińsk Mazowiecki to the southeast of Warsaw. The advance from Miłosna toward Mińsk Mazowiecki started on 17<sup>th</sup> August, with 2 tank companies attacking, one on each side of the railroad. The tanks were assisted by infantry and 3 armored trains. The enemy was quickly defeated and thrown back.

The armored group was next assigned to the 18<sup>th</sup> infantry division with the task of cutting off retreating 3<sup>rd</sup> cavalry corps, which attempted to avoid encirclement by slipping east along the East Prussian border. Major Nowicki established a cordon defense between Ciechanow and Mława using 3 armored trains, 2 FT17 tank companies on flat cars as improvised armored trains and 1 FT17 tank company patrolling on the ground. Polish forces were surprised when the 3<sup>rd</sup> cavalry corps attacked on the foggy morning of 22<sup>nd</sup> August. Major Nowicki was killed by artillery fire in the armored train "Danuta" and Bolshevik cavalry broke through. Although successful this time, Ghai-Khan was finally pressed against East Prussia and forced to cross the border.

The 2<sup>nd</sup> battalion, which did not participate to the battle of Warsaw, defended Lvov and joined the offensive of the 6<sup>th</sup> army in Ukraine. The tanks helped in capturing Zadworze and Sknilow. After completing this task the tanks returned to Lvov and did not take part in subsequent fighting. The 1<sup>st</sup> tank regiment was placed in reserve, where it stayed until cessation of hostilities.

During the fighting in Poland, Renault FT17 tanks were subjected to prolonged mobile operations unlike in the Western Front. Only 8 tanks out of 120 were definitely lost in combat, mainly because they could not be recovered from the battlefield. This speaks highly of the tank's durability and skills of engineers who, in primitive conditions, repaired and refitted tanks keeping them operational. Soldiers of the 1<sup>st</sup> regiment were awarded 34 Virtuti Militari crosses, the highest Polish award for bravery on the battlefield. The 1<sup>st</sup> tank regiment was dissolved on 11<sup>th</sup> August 1921 and 3 independent tank battalions were created in its place. The 1<sup>st</sup> June was established as the day of the Polish armored forces and celebrated until September 1939.

After defeating the Red Army in 1921, Poland was proclaimed by international military experts as having the 4<sup>th</sup> most powerful army of the world, though this rating did not last for long. To compare, the USA were considered at that time a 19<sup>th</sup> rated power, weaker than Portugal. With a peace treaty ended the Russo-Polish war in 1921, and the Polish armored forces were reorganized along French lines. While the armored cars were given to the cavalry, the tanks became part of the infantry and were established into a tank regiment composed of 3 battalions.

Interesting book in Polish about the French Military Missions to Central Europe 1919-1938 :

"Francuskie Misje Wojskowe w Panstwach Europy Srodkowej 1919-1938" by Tomasz Schramm (Uniwersytet im. Adama Mickiewicza w Poznaniu, seria historia Nr.143, Poznan 1987). The book is in Polish but contains French resume and numerous citations of French documents.

<http://geocities.com/witekij/> (complete text by Witold J. Lawrynowicz) (note in the text he talks about major Jules Mare but it is in fact lieutenant-colonel Jules Maré from the French army).

<http://mailer.fsu.edu/~akirk/tanks/Stories/eMagazine4-1-2/Witold2/GrodnoEng.html>

<http://mailer.fsu.edu/~akirk/tanks/Stories/emagazine/PAF/index.html>

At the beginning of WW2, lieutenant-colonel De Gaulle is in the 3<sup>rd</sup> tank brigade led by general Delestraint. This brigade consists in the 507<sup>e</sup> RCC in Montigny-les-Metz, the 511<sup>e</sup> RCC in Verdun and the 512<sup>e</sup> RCC in Châlons-sur-Marne. On 24<sup>th</sup> December 1937 he is promoted colonel and becomes commander of the 507<sup>e</sup> RCC. De Gaulle was in competition with colonel Jean Perré for this position.



*507<sup>e</sup> RCC insignia*

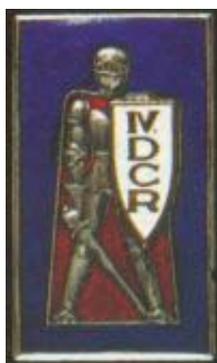
Charles de Gaulle published several books and articles before WW2, including :

- "La discorde chez l'ennemi" (1924)
- "Le fil de l'épée" (1932)
- "Vers l'armée de métier" (1934) - published in English under the title "The army of the future" whereas the French title means "towards a professional army".

In his books he repeated many points from general Estienne. He supported the new ideas of mechanized troops and the creation of specialized armored divisions. These fast moving forces would be able to break through the enemy defenses, to advance deep in the rears, to destroy key positions and to disorganize the whole enemy deployment. He is also advocating a different command style, from the first lines, in contact with the continuous changes on the battlefield. He is also convinced of the important role of the aviation to support the tanks. Such views will be confirmed in 1940, but by the Germans.

De Gaulle is of course in contradiction with the official and politically correct defensive doctrine. He is also advocating an army of professional volunteers instead of conscripts. He therefore encountered hostility from the political and civilian leaders through the 1920's and the 1930's, except President Paul Reynaud, which will play a significant role in his career. The thinkers of the German high command were influenced by people like Charles de Gaulle but in France, Pétain rejected most of his theories.

In May 1940, de Gaulle is promoted general and commander of the new born 4<sup>e</sup> DCR. Unfortunately, this new division is an emergency formation initially used to block the German advance towards Paris. It is engaged in battles like Montcornet, Crécy-sur-Serre and later to eliminate the German bridgehead at Abbeville on the Somme River. Formed on 15<sup>th</sup> May 1940, with only a few units ready when ordered to the front, it was nearly two weeks before it reached its peak strength beginning June. The units were not trained to act together and at the beginning even the engineers were used as supporting infantry. The 4<sup>e</sup> DCR seems strong but the units were at first engaged one by one as they arrived and had often not their theoretical strength. Too weak, too late, not developed according the de Gaulle's views, the 4<sup>e</sup> DCR tried to launch several counter-attacks but the impact was very limited.



*4<sup>e</sup> DCR insignia*

**Charles Georges Delestraint** (1879-1945) also had faith in the big armored units and was convinced of the importance of the air support.



*General Delestraint*



*General Delestraint and colonel De Gaulle in 1938, inspecting the 507<sup>e</sup> RCC in Metz*

In 1914, he commanded the 9<sup>th</sup> company of the 58<sup>e</sup> BCP (Bataillon de Chasseurs à Pied). For an outstanding action on the Meuse River, capitaine Delestraint was awarded the "Croix de Guerre" and made "Chevalier de la Légion d'honneur". In Chesnoy, near Reims, on the Aisne River his company was engaged in a sacrifice mission to delay the enemy. He was captured and returned in France in 1918. After a period in the War School in 1920, he chose to serve in the tanks in 1923. He was appointed as battalion commander to the 517<sup>e</sup> RCC based in occupied Germany.

From 22<sup>nd</sup> October 1925 to end 1926 he was in the "Section Technique des Chars" and worked on the tank doctrine. On 22<sup>nd</sup> March 1927 he was second commander of the "Ecole d'application des Chars de Combat" and on 25<sup>th</sup> December 1927 he was promoted lieutenant-colonel.

On 13<sup>th</sup> March 1930 he was appointed to the inspection of the tanks under the command of general Bezu. He tries to convince general Matter, director of the infantry, of the importance of the Renault B tanks, but Matter does not consider the B tanks as infantry support tanks and is not interested.

In 1932, he was commander of the 505<sup>e</sup> RCC in Vannes. This command enabled him to test all his views about the tanks. On 21<sup>st</sup> December 1932, he was promoted colonel. He did not stop to struggle for the delivering and deployment of the Renault B tanks. He wanted numerous heavy tanks.

In 1936 he was promoted general at the head of the 3<sup>rd</sup> tank brigade in Metz. He will command Charles de Gaulle from 1937 to 1939. They will often talk and work together about the French tanks and their doctrine. In May 1940 he was in command of the 1<sup>e</sup> groupement cuirassée (2<sup>e</sup> DCR and 4<sup>e</sup> DCR). In October 1942, he became the leader of the "Armée Secrète" (Secret Army), reporting directly to Charles de Gaulle, the leader of the French resistance in London. The French Secret Army was created in 1942, on the initiative of Jean Moulin, to regroup all the existing resistance groups and wage guerrilla warfare against the Germans. General Delestraint was captured on 9<sup>th</sup> June 1943 by the Gestapo, tortured and sent in the concentration camps of Natzweiler, Struthof and Dachau. On 19<sup>th</sup> April 1945, just 10 days before the Dachau concentration camp was liberated by the US 7<sup>th</sup> Army, General Charles Delestraint was allegedly executed at Dachau and his body was burned in the crematorium.

**Jean Perré** (1893-1971), who was already mentioned as wanting the command of the same regiment as lieutenant-colonel de Gaulle also played a role in the development of the French tanks. In 1914, lieutenant Perré was serving in the 82<sup>e</sup> RI and was WIA on 6<sup>th</sup> September 1914. He was promoted captain in 1916. He was WIA a second and a third time in 1916, in Verdun. In 1917 he was appointed to the tanks (assault artillery). From 1917 to 1918 he was fighting with his tanks and participated for example to the attack of Malmaison.

In 1919, he went in Poland to command a Renault FT17 tank company and later a tank battalion of the first Polish armored unit against the Soviets. He was also in the command staff of the 1<sup>st</sup> armored Polish brigade and later among the French advisors introduced in the Polish high command. From 1922 to 1924 he was in the "Ecole de Guerre" in Paris (War School) and after that he was appointed to the Ministry of War.

He participated also to the Rif war in Morocco (1921-1926). In 1928, he was promoted commandant, leading a tank battalion in Versailles during 2 years, before returning to the Ministry of War. He was promoted colonel in 1938.

In 1939, he was appointed to the high command of the French army and became beside general Keller the director of the French tanks. In February 1940, he was staff officer in the 2<sup>e</sup> DCR. On 25<sup>th</sup> May 1940 he replaced General Bruché on the head of the 2<sup>e</sup> DCR, before the 3<sup>rd</sup> attack on Abbeville.

He wrote several books and articles before WW2, among them :

- "L'évolution du char de combat aux Etats-Unis." (1928)
- "Les chars de combats. Essai de classification positive." (1937)
- "Batailles et Combats des Chars français - 1917" (1937)
- "Batailles et Combats des Chars français - 1918" (1937)

Other generals were rather in favor of the development of the French tanks : general **Héring**, general **Billotte** or general **Mendras**. General **Bloch** (Dassault) allowed to continue the development of the DLM and DCR armored divisions. He also accepted a new order of Renault B1bis tanks when he was in the French high command.

Squadron commander **Touzet du Vigier** had in charge the "armored cavalry" course in the cavalry school at Saumur from 1931 to 1934. During his teaching and in various conferences in 1937-1938 he proved very open to the innovative ideas concerning the tanks. In 1914, he led a cavalry raid deep behind the German lines during 5 days. In 1937, he took part to the writing of the cavalry doctrine with general Flavigny. In 1940 he commanded the 2<sup>e</sup> Régiment de Cuirassiers of the 3<sup>e</sup> DLM and fought during the battle of Hannut, the first big tanks battle of WW2. In 1944, he will be commander of the 1<sup>st</sup> French armored division included in the first French army. Like colonel de Vernejoul, commander of the 1<sup>e</sup> Régiment de Cuirassiers (3<sup>e</sup> DLM) in 1940 and commander of the 5<sup>th</sup> French armored division in 1944, he applied his views and the spirit of the French cavalry to its new units. His teaching influenced many officers like capitaine de Hautecloque.

On 10<sup>th</sup> June 1940, **capitaine de Hautecloque (as known as "Leclerc")** led part of the groupement Maître for the northern French counter-attack on the Annelles - Perthes axis (elements of the 3<sup>e</sup> DCR : 17 Hotchkiss H39, 9 Renault B1bis and the 3 infantry companies of the 16e BCP). He walked in front of the infantry and the tanks with his famous stick. 12 tanks were lost but the German advance was delayed. The 16<sup>e</sup> BCP managed to take Perthes and to rescue the French 127<sup>e</sup> RI still fighting in the town. Together they defended the town until 22h00 when they received the order to pull back. Thanks to this attack the 14<sup>e</sup> DI (general De Lattre, future commander of the French 1<sup>st</sup> Army) could retreat in good conditions. Capitaine de Hautecloque is an example of a captain in 1940 becoming commander of an armored division. Leclerc's column took the Koufra oasis (and the El Tag fort) in Lybia to the Italians in 1941 and all the Fezzan area (south-west Lybia) between March 1942 and January 1943. Leclerc's force quickly crushed the Italian defense in southern Libya and marched 1500 miles north, reaching Tripoli on 23<sup>rd</sup> January 1943 just as the British arrived from Egypt. Leclerc placed himself under the command of Field Marshal Montgomery and his corps played a major role in the advance of the 8<sup>th</sup> Army in Tunisia. He was promoted general on 5<sup>th</sup> May 1943 and ordered to Morocco to form the 2<sup>nd</sup> French armored division.

Colonel **Camille Rougeron** could also be mentioned for his work about the aviation. He published several articles to expose his modern ideas about air support and bombing. His article "Le bombardement en piqué" (dive bombing) published in 1934 was also translated in Germany. His other publications are :

- "La bombe soufflante" (1934)

- "L'aviation de bombardement" (1936)
- "Les enseignements aériens de la guerre d'Espagne" (1939)

### 3. EVOLUTION OF THE FRENCH TANKS AFTER WW1

During the inter-wars period, the infantry and the cavalry developed their tanks separately. The infantry had tanks long before the cavalry but created big armored/mechanized units (divisions) later. The development of the cavalry armored vehicles begun in 1930/1931 and led to many armored cars, but also tanks like the Hotchkiss H35/39, the Somua S35 and the Renault ACG1.

After World War 1, the Schneider CA-1 and Saint-Chamond tanks were retired and only Renault FT17 tanks were available. The Renault FT17 light tanks were replaced by the Renault D1, Renault R35 (later R39 and R40), Hotchkiss H39 and FCM36. In 1935, The Renault R35 and the Hotchkiss H35 tanks were produced but already in 1937 they appeared insufficient. The Renault R35 was adopted by the infantry and the Hotchkiss H35 by the cavalry only. It was rejected by the infantry which accepted only the later Hotchkiss H39, better armored (40mm instead of 35mm for the hull) and with a more powerful engine (120 hp on 2800 rpm for 36.5 km/h onroad and 16km/h in medium difficult offroad). The 37mm SA38 L/33 gun was nevertheless rare and only introduced in March/April 1940. In 1940, most of the tanks had only the 37mm SA18 L/21 gun. The heavier Renault D2 was produced in 1937.

The concept of breakthrough tank introduced with the FCM-2C tank will lead to the development of the Renault B1 and B1bis tanks. Conceived by general Estienne in 1920, this tank had an original conception. In 1929-30, Renault and FCM had built 3 prototypes. The B1 tank was the production version of the B tank. Production began in December 1935. Only 34 Renault B1 tanks were built before construction changed to the more powerful B1bis in July 1937. The Renault B1bis tank was developed between 1921 and 1938 and was strongly supported by general Delestraint. During this time it became heavier (increased armor to 60mm) and more intricate and despite an always more powerful engine (307 hp) it had lost in autonomy compared to the initial project. The B tanks were conceived as infantry support tanks, transported by railway behind the frontline, used to pierce the frontline by neutralizing the MG nests and fortifications, moving at the speed of the infantry, opening the way to the infantry and the cavalry which were in charge of exploiting the breakthrough. Destroying a strongpoint and moving then to the next position to neutralize. The B1bis tank's autonomy (about 150 km) was therefore totally sufficient according to this doctrine and was in fact not bad at all compared to the other tanks of 1940. Nevertheless this heavy tank used a lot of fuel, especially during combats because the tank had to turn on the spot to aim the 75mm hull gun. The practical autonomy was of about 6 hours. The Renault B1bis tank is able to cross ditches 2.75m wide, to climb slopes at 41° (90%) (on hard ground) and to cross obstacles 1.33m high. In 1940, these heavy tanks are used at the rhythm of a medium tank and they proved able to play this role. The Renault B1bis was used as infantry support tank like in Abbeville but it was also successfully in tank vs tank warfare. The Renault B1bis was nonetheless not able to follow the fast and mobile strategic warfare imposed by the German Panzerwaffe. The infantry high command refused to equip the DCR with the Somua S35 tanks of the cavalry, despite being better adapted to mobile tank vs tank combats.

### 4. CONCLUSION

Pétain during the 1920's and Gamelin during the 1930's defended the status quo for the French tank doctrine, against the innovative ideas and efforts of several significant people :

- Defensive doctrine
- Dispersion of the tanks
- Main role of the tanks : infantry support
- Obsessed by the continuous front
- Faith in the concrete of the Maginot Line to defend France

General Estienne and his spiritual son, General de Gaulle, could not convince the highest military and civilian leaders of their views :

- Offensive doctrine
- Independent and powerful mechanized units
- Importance of the tank/aircraft cooperation
- Concentration of the tanks on a part of the front

General Weygand, Commander in Chief of the Levant, replaced general Gamelin in June 1940 as Commander in Chief in France. He abandoned the obsession of the continuous front. The defenses were organized in all around hedgehogs / strongpoints in the towns, villages etc. blocking the road to the Germans. These strongpoints included infantry, artillery guns used in AT role, MGs etc. Such a defensive organization proved very successful against the XIV.Panzerkorps (9.PzD, 10.PzD, 13.ID (mot), 9.ID and "Grossdeutschland" regiment) south of Amiens.

Finally in 1940, France had 6-7 armored divisions (3 DLMS and 3-4 DCRs) but 70% of the tanks were nonetheless spread in battalions supporting the infantry. France had also 4 different doctrines for the tanks :

- 1 for the **cavalry tanks** (1935, 1937 and 1939) with classical missions of the cavalry : reconnaissance, establishing contact with the enemy, delaying the enemy, pursuit of the enemy, exploitation of a breakthrough etc.
- 3 for the **infantry tanks** :
  - "L'accompagnement" (**infantry support**), developed during WW1 and main role of the tanks in the doctrine of 1921 and 1936
  - "L'action d'ensemble" (**concentration of tank battalions**) was born in 1938-1939 but manuals were rarely distributed to the units
  - One doctrine for the **armored divisions of the infantry (DCR)** developed in 1938-1940. But the DCR remained generally in support of infantry units.

The French tanks units were not independent in 1940. They were dispersed in the cavalry and in the infantry. During the 1930's there were also probably too many tank projects instead of only several well chosen ones. There were also too many doctrines, the French high command proved to be schizophrenic from 1936 to 1940. Some modern ideas were introduced, leading to various new doctrines and manuals, but the infantry support was never abandoned and remained the main mission of the French tanks.

#### Sources :

- "L'Arme Blindée Française (Tome 1) : Mai-juin 1940 ! Les blindés français dans la tourmente" (Gérard Saint-Martin)
- "Les engins blindés français 1920-1945" (Pierre Touzin)
- "Weygand, De Gaulle et quelques autres – La Somme 16-28 mai 1940" (Henri de Wailly)
- <http://perso.wanadoo.fr/delestraint/>
- [http://www.stratisc.org/partenaires/cfhm/rihm/81/RIHM\\_81\\_PESQUEUR.html](http://www.stratisc.org/partenaires/cfhm/rihm/81/RIHM_81_PESQUEUR.html)
- [http://www.stratisc.org/pub/EAN\\_11.htm](http://www.stratisc.org/pub/EAN_11.htm)

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