

THE ICONIC WWI FRENCH SERVICE RIFLE

LEBEL 1886 M 93

By Alek Wadi – Submitted by Gus Gintzburger

In France, nearly everyone had a family member involved in the WWI (Photo 1). It brings sad memories to most, even as far away as Australia. It also brings to memory the legendary Lebel rifle 1886 M 93 that made the news in France at the beginning of the 20th century in European military circles. The development of this French service rifle started soon after the France – Prussia 1870 war: a French military disaster compounded with French political instability leading to a tumultuous change of regime from the French Second Empire to the Third Republic. Tensions mounted rapidly in Europe and the Levant with the 1853-56 Crimean war, the 1866 Austro-Prussian war, and the unification of Germany led by Prussia threatening the balance of power in Europe; At the French declaration of war to Prussia (July 1870), the French army could field 400,000 conscripts and another 400,000 reservists while the Prussians army could align straight away 1,000,000 well trained troopers from the North German Confederation and southern German states of Baden, Bavaria, Württemberg, and Hesse-Darmstadt. In term of individual armament, the Germans were still using the Dreyse needle rifle 1848/M1865 (Cal 15.4mm), that had many defects while the French were issued with the superior and faster operating Chassepot M 1866 (Cal 11mm), both bolt action with lead bullet - black powder paper cartridge. Immediately after this war and rapidly catching up, the German issued the new 11.15×60mm R Mauser Model 1871 (*Infanterie-Gewehr 71*) while the French army countered with the 11×59mm R GRAS *Modèle 1874 M80* rifle both single shot/black powder/metallic cartridge. The race went on. The tension between Germany and France simmered, both side working on new rifles, finally adopting metallic cartridge, searching for a replacement for the archaic smoky-corrosive black powder and new bullet design. Soon, noticeable improvements surfaced both in France and Europe where new propellant and smaller calibres were the *ordre du jour*.



Photo 1: Alek's grandfather with his brand new Lebel 1886 at the 109^{ème} Régiment d'Infanterie (Chaumont, France, 1889)

The advent of the smokeless powder

Black powder on battle fields was seriously questioned (re- noise, smoke, corrosion); the research in propellant chemistry opened new horizons after the work of the French chemists Braconnot (1832) followed by Pelouze (1838) who developed the nitrocellulose, a highly instable media burning violently and leaving little residues; but Pelouze did nothing of it in spite of anticipating its use in artillery. Dumas (1845) and the Swiss-German Shöenbein (1846) slightly improved the stability of nitrocellulose by modifying chemical components. The final breakthrough was due to the military chemist Paul Vieille (1884) who stabilized the nitrocellulose, inventing the smokeless powder, a gelatinized pelletized or extruded granular form of nitrocellulose; it was named *Poudre B* for *Poudre Blanche* (= white powder) to distinguish it from black powder (*Poudre noire*). The *Poudre B*, by weight, was about three times more powerful than black powder. The invention of the *Poudre B* was subsequently followed by the development of Cordite (UK, 1889), Ballistite (USA, 1891; Germany, 1898), Pyrocollodion (Russia, 1891), Solenite-Cordite (Italy, 1896), etc. All these smokeless powder contributed to reducing the calibers and opening the field for more ballistically efficient bullets.

The trend towards smaller caliber and new bullet design

Up to the mid-1880s, most European army rifles used large 11-15mm calibers. The French were already testing calibers of 10, 9, and 8mm, even smaller black powder propelled bullets. So were the Swiss, the Italians, the British, the Russians, etc. The bullets tested were hard lead – round nose, certainly always lethal, but with poor ballistics preventing accurate long-distance shot. Dry or greased paper-patched bullets of various diameters were tested (France, 1880-1884 and other countries) with constant or progressive rifling. After much experimenting, the French settled for an 8mm lead bullets converting GRAS rifles with a metallic center-fire rimmed case, a quick fix from the 11x59mm R GRAS massive brass. In the meantime, in Switzerland, Colonel Rubin invented (1882) and tested lead-core bullets covered with soft steel or copper: the first full metal jacket

bullets! The French picked up the idea and developed the Lebel 8x50R mm cartridge with a copper or *Maillechort* jacketed lead-core round nose 232gn Balle M propelled with *Poudre B* for the new LEBEL M1886; the ballistic was far better in terms of flatter and longer trajectory and improved accuracy. The Germans caught up by 1888 with their Gewehr 88 (much copied from the Lebel 1886) firing the *Patrone* 88, an 8mm Swiss design rimless cartridge; soon *Capitaine* Desaleux patented the 1898 lighter 198 gn *Balle D*, a full monometal brass or copper spitzer bullet, the first boat-tail bullet, extremely accurate, still supersonic past 800m and with a verified 4.5km range. By 1905, the German issued a similar jacketed *Spitzgeschoß* bullet design by Gleinich, soon followed by the 7.92x57mm Mauser *S Patrone* to counter the 8mm Lebel. The US adopted the German spitzer design for their M 1906 Springfield. Russia followed with their own spitzer design in 1908, the UK in 1910 and the Swiss in 1911. In 1932, the 8x50R Lebel cartridge received a new 232gn Balle N.

A need for a repeating rifle

During the Russo-Turkish War (1877–1878) at the Battle of Plevna (Bulgaria), the Turks armed with repeating Winchester Model 1866 slaughtered the Russo – Rumanian troops mostly armed with the single shot M1857/67 *Krnka* rifle. The Turks lost the war, but the military value of repeating rifles became glaring; all European small armament engineers were working on it; starting in 1883, the French tested over 40 different GRAS 1874 modified with Mannlicher and clip magazines. While all were procrastinating, the Swiss Federal Council issued the improved Model 1868 Vetterli 12 shots repeater tubular magazine Winchester Type. The Germans followed soon with their first infantry rifle 8-round tubular magazine Mod 1871-84. The impatient French Navy opted (1878) for the available Austrian Kropatschek, a black powder 11x59R caliber with a 7 shots tubular magazine. That was an eye opener for the French who were starting work (1883-84) on a French Kropatschek-like infantry rifle integrating all their new technical and ballistic improvement. Progresses were sluggish; the French internal politics kicked in and precipitated the birth of the LEBEL 1886.

The French politics behind the hasty delivery of the LEBEL rifle 1886



Photo 2: French poilus with the Lebel 1886 M 93 (By H. Delaspre, 1915)

Strictly a French affair: here comes *Le Général Boulanger*, a popular high-ranking officer turning to politics. Boulanger, promoted *Ministre de la Guerre* (January 1886) immediately introduced improvements in the soldier's life, reorganize the French army; most important, considering the mounting tensions with Germany, he immediately requested that the new French Infantry repeating rifle be ready for mass production by May 1886. Three months of frantic activities in the French arsenals! And the LEBEL rifle 1886 is introduced May 1st, 1886 as expected and adopted by the French Army (April 1887) after a hasty testing period.

The Lebel rifle 1886 and the Lebel 1886 M 93

Resulting from the evolution of everything, the LEBEL 1886 (*Photo 2*) was battle ready; It was a bright synthesis of military contemporary design (bolt action, repeating mechanism, 4 rifling), industrial know-how and mass production standardization, with a metallic cartridge loaded with the *Poudre B*, and the *Maillechort* (copper nickel zinc alloy) jacketed lead-core bullet M. The tests were outstandingly satisfying in terms of long-range accuracy and perforating power.

The reported rate of fire was 20 shots/ minute. However field tests revealed some minor weaknesses soon corrected; in 1893 the most important modifications were the adjunction of a gases shield ring on the bolt head in case of a perforated primer or ruptured case and the improved fitting of the rear sight, hence the M 93 for modified 1893: a slim rifle weighing a hefty 4.4 kg with 1.3 m total length, 1.83m with bayonet, thus the fishing rod, an innocuous nickname given by the *poilus*. All parts are black bronzed except the bolt. The rifle has a two-pieces walnut wood stock linked with a steel receiver (*Photo 3*) encasing the repeating and trigger mechanisms; the fore-stock hides a spring-loaded tubular magazine.



Photo 3: The Lebel 1886 M 93 taken to parts with the bolt, the receiver (containing the repeating and trigger mechanism) linking the two stock parts

The bolt (*Photo 4*) with a short straight handle is white polished and in the line of the GRAS rifle bolt. All bolt parts are cast, forged and machined tempered steel. The new breach-block mobile head comprises four parts: the cylindrical corps, the gases shield-ring, the recessed bolt head with two large front locking lugs, all linked with a strong extractor.

The receiver is steel forged and machined, enclosing the trigger and repeating mechanisms (*Photo 5*). Shooting single shoot is no problem – open completely the bolt; place a single cartridge in the auger-elevator in up-position by pushing forward the chequered button (located bottom left on the right side of the receiver); close the bolt to chamber the cartridge and shoot. Open the bolt and note that the auger remains in the elevated position to continue shooting in non-repeating mode. In repeating mode, open completely the bolt; place the chequered button in the rearward position; push down with your finger the auger-elevator in lower position; place a cartridge into the auger and push it into the tubular magazine, repeat one after another (8 in total); and place the last one into the auger. When closing the bolt and chambering cartridge one, the auger drops down, freeing from the tubular magazine cartridge two sliding into the auger; shoot. The trigger has a clean two-stage 2.5kg pull. When reopening (briskly) the bolt to extract – eject the spent case one, it automatically elevates the auger with cartridge two in it; close the bolt to chamber cartridge two while again the auger drops down to accept a new cartridge three, and so on. The magazine holds 8 rounds, plus one cartridge in the auger-elevator plus one cartridge in the chamber.

The magazine, lodged into the forestock, is 1.7 cm diameter x 67cm long tinned steel tube containing a thin 0.7mm - 75-80 coils steel spring ending with a plunger. The forestock is hooked to the receiver (*Photo 3*) and fastened to the barrel with a middle band and nose cap.

The barrel is 800mm long, tapered, 30mm diameter at the chamber to 15mm at the muzzle; it has 4 anticlockwise rifling with a 1/240 cm twist. The bore is an 8.0mm on the groove and 8.30mm in the land. Lebel barrels were said to shot about 14 000 Balle D before being worn-out when bore exceeds 8.20mm. In fact, considering that 6.5 billion 8mm Lebel cartridges and about 3.5 million Lebel barrels were produced in France, an ordinary Lebel (or Berthier rifle also using the Lebel barrel) would have shot an average 1800-2000 cartridges... so plenty life left in most Lebel barrels! In terms of precision, official 1920 army tests with a standard issued Lebel attests that an experienced shooter would impacts 12 shots at 200m in 3-4 MOA comparable to other standard issued WWI service rifles, i.e. capable of consistently hitting a 40x40 cm target at 400m. The long Lebel barrel gives a V° of 640 m/s for the balle M, 700 m/s for the balle D and 690m/s for the heavier balle N. The balle M and the balle D drop 81cm and 54 cm respectively at 400m.

The rear sight has an unprotected U-notch; the front sights were mostly post type. The rear sight is fixed to the barrel by two brazed prongs (post 1893). Luminescent front and rear sights were introduced by the St-Etienne Manufacture from 1916. The line of sight ranges from 640 to 700mm. The ladder rear open sight initially graduated up to 2000m for the balle M was replaced (1898) with the one for the Balle D and graduated 4 to 800m with a 900-2400m ladder extension (*Photo 6*) for volley firing. Tilting the ladder fully forward sitting on the barrel exposes a notched sight to aim at 250m. The front sights, soldered on the barrel, were of the grooved or post types (*Photo 7*).

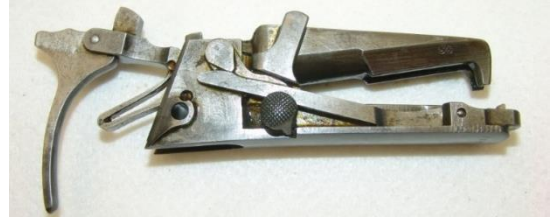


Photo 5: The Lebel 1886 M 93 bolt dismantled



Photo 4: The Lebel 1886 M 93 auger-elevator and the trigger mechanism (Note the chequered button-lever to manually tilt the auger up or down)

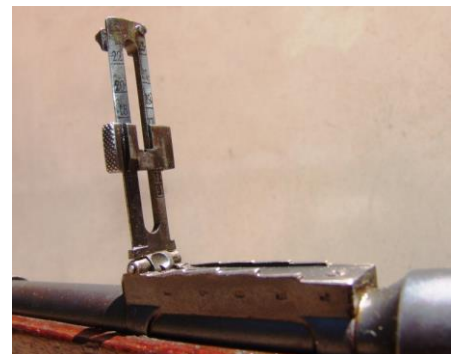


Photo 6: Lebel 1893 M 93 ladder rear sight

The bayonet, affixed to the nose cap, is light (420g - 52 cm long), slim, cross-section and pointed; issued as the *Épée-Baïonnette* Modèle 1886, with initially a curved steel quillon attach to the round Mailechort handle (*Photo 1*). The bayonet Modèle 1915 (*Photo 8*) was modified and the curved Quillon removed as it easily got caught into barbed-wire. Several variants appeared up to 1920 with different handle (brass, bronze, or cast iron), blade mounting and shorter length.



Photo 7: Different Lebel front sights (grooved/luminescent (1917), post, and grooved)

Markings and Mending

The name of the manufacturer and rifle model appears on the left side of the receiver.

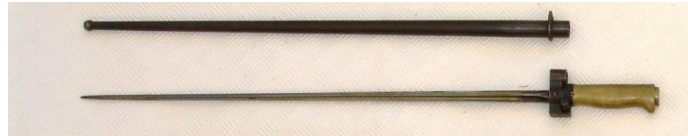


Photo 8: Lebel Spike bayonet Mle 1915

On the chambers right side is stamped the manufacturer (MAC for Châtellerault, MAS for St-Etienne, MAT for Tulle and MAP for Paris) and the production year of the barrel. The firearm serial number appears on the left side of the chamber with one or two letters (A to E – in English Roundhand fonts) for Châtellerault, F to L for St-Etienne and R to T for Tulle) followed by up to 4 to 5 digits. This serial number also appears on under the elevator mechanism, under the bolt handle, under the forestock, and on the bayonet handle. Some 3.5 million Lebel 1886 were produced up to 1920 when the production ceased.



Photo 9: Photo 10: The barrels manufacture and date (with the post-1932 N stamp)

Most of these have seen the battle fields; many were destroyed or damaged; after the battles, all firearms were dutifully collected and re-furnished/restored in the French arsenals and re-allocated to troopers, thus many damaged WWI Lebel rifles would have barrels and other parts changed or repaired bearing strike-out old serial number and getting new ones; skilled cabinetmakers would perfectly mend the stocks with inlays. So, do not worry if your Lebel has different serial numbers and bears battle scar. This is part of WWI History.

Starting in 1932, the Lebel had their chamber re-reamed for the larger neck of the machine gun cartridge with the Balle N (232gn) and identified with an N stamped on the chamber and the barrel (*Photo 9*).

Special Lebel 1886 M 93

By 1915 carefully selected Lebel were used as sniper rifles with a 3-x magnification APX Mle 1915 or 1916 scopes (dial up to 800m) mounted on side or later on top of the receiver (*Photo 10*). Two only such Lebel rifles were assigned with selected ammunitions to the best marksmen per 1016-men WWI battalion. Also, due its rugged construction compared to the Berthier rifles, two selected *V.B.* grenade launcher Lebel were assigned per 13-trooper's squad.

The French troopers' perception of the Lebel

Despite the fact that the Lebel rifle was beautifully manufactured top-of-the-art in 1893 with powerful and accurate ammunition, the soldiers had reservations about its weight, its slow reloading process, the complicated auger mechanism catching dirt and debris in combat and the overall length of the rifle more appropriate for volley-firing than trench combat. The Lebel soon appeared superseded as the Germans issued the Mauser G88 and the Mauser G98 with a 5x (7.92x57mm) cartridges stripper-clip allowing much faster reloading. Furthermore, the 8mm Lebel double truncated rimmed cartridge also used in Chauchat and Hotchkiss machine guns would cause recurrent malfunctions.

What happened to the LEBEL rifles?

By 1918, some 2.5 million Lebel and Berthier were in service while the French army was already testing semi-automatic rifles and new cartridges similar to the German 7.92mm. Between 1935 and 40, some 50 000 long barrelled Lebel were transformed into a short carbine (1886-93 R35), 3 cartridges 8mm Lebel, with a 45.5cm new barrel and a short 35-40cm spike bayonet to equip auxiliaries, gunners and French



Photo 11: Sniper Lebel rifles with a 3x magnification APX Mle 1915 or 1916 scope

Saharan troops. During WWII, captured long and short original Lebel were issued to German troopers as the *Gewehr 301 (f)* and *Gewehr 305 (f)*.

Many countries in Western, Northern and Eastern Europe, the Middle-East, South-East Asia and Africa bought and used the Lebel up to the mid-1960s. Tonnes of Lebel were sold or donated to many countries, hence resurfacing in recent conflict zones (Ex-Yugoslavia, Libya, Chad, Mali, Syria, etc) supplied with 8x50R cartridges produced in Serbia.

In conclusion, the Lebel 1886 M93 remains a classic of the WWI firearms. In spite of being obsolete soon after being issued, it was persistently and abundantly present on all WWI fronts in France, Europe and in the French colonial empire along the much-preferred Berthiers rifles and carbines. They are worth remembering for the 100th anniversary of the 1918 Armistice.

