A SHORT HISTORY OF TANK DEVELOPMENT PART 1

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The French " Char B " designed in the mid-twenties, built in the thirties by Renault and used in 1940.

Seven tanks for armoured warfare

TANKS HAVE BEEN AROUND for more than half a century now. Familiar things, we take them for granted: they are just part of the scene, for soldiers as for war-gamers. How many of us ask what exactly they are supposed to do? Is what they are supposed to do now, what has always been expected of them?

Well, the work a tank has to do has some effect on its shape, and when we learn that during the period between the World Wars there were tanks as light as 2 tons and as heavy as 75; some with crews of one man and others crews of 13; that some large tanks were scarcely bullet-proof while some little ones could keep out most anti-tank shot; that some tanks would do 65 m.p.h. across country while others could do only 5 m.p.h.; and that weapons varied enormously, some having only machine guns, others howitzers, others general-purpose guns, and some cannon which fired only solid shot . . . when we see this great variety of machinery all classified under the word 'tanks', we see at once that they must have been designed for different kinds of action, by people who had differing notions of what tanks are supposed to do.

These differences date from the very dawn of tank history. The battles of 1914-18 cost so many lives because troops still advanced in close lines, which were accounted for by machine guns. Hence, tanks were invented to knock out the machine guns, and were in fact called Machine Gun Destroyers until Colonel E. D. Swinton gave them the name 'tank', to fool enemy spies.

Although this work seems straightforward, the French and British had very different ideas about it. The former thought that two types were needed—a self-propelled armoured gun carriage to " come into action when the attack had advanced to the point when wheeled artillery would have to limber-up and move forward "; and a small two-man vehicle armed with a machine gun, to accompany each infantry company.

The British thought this was putting the cart before the horse, and that if tanks were to save infantry lives, they must lead, not follow them. Hence, the great lozenge-shaped British tanks of World War One which could cross any obstacle, making paths for the infantry to follow, and fighting on their own if need be.

But none of these tanks was proof against any kind of artillery fire. They moved at walking speed, and while they protected their infantry from machine guns, the infantry were expected to protect them against field guns when they broke into the enemy's artillery zone, where the gunners could see them and take direct aim. If the infantry riflemen didn't take on the gunners, the latter could score hits on a slow tank before it could fire back effectively—the early tank weapons were inaccurate at long range, especially when the tank was lurching and sliding over rough ground. It was a hair-raising moment for a tank crew if they burst through a screen of trees to find themselves confronting a cool, well-served battery! But even so, there were occasions when a tank got right in amongst the guns and silenced the lot.

By 1918 anti-tank guns, small and easily hidden were all over the front and tanks were having a very difficult time. New designs were urgently needed and an Inter Allied Tank Committee was formed to provide them. But once again, ideas were divided. The French argued that tanks should carry shot-proof armour and be built in two sizes—small ones to accompany infantry as before, and large ones, " chars de rupture " as they were called, to take on the old British idea of leading the way through trenches and strong-points.

But in 1918 the British Tank Corps was looking ahead to an altogether new role for tanks! They thought it would be better if tanks were developed as vehicles to go much faster and farther—for this would enable them to by-pass the front of an enemy who still relied heavily on horse and railway transport, and hunt down his Generals and supply organisation—which would quickly collapse him. The Tank Corps called this ' Strategical Paralysis ', and knew they were well ahead of the rest of the world with it; they even designed and began to build their own fast long-range tank, as I described in my last article, " The World's First Fast Tank ".

Yet another line of development was put forward by the great American car manufacturer Henry Ford. In 1917 he had speeded-up the mechanisation of farming by producing the world's first cheap, mass-produced ' modern ' farm tractor; the same year, he turned his mind to fighting and suggested that if every two soldiers could be given a " tankette "—what we should call a mini-tank—the mass-production of these would prove a lot cheaper in the long-run than the cost of continuing with the ordinary type of fighting, since they could be guaranteed to end the war quickly. A few years after the war this idea was taken up enthusiastically by some Englishmen named Martel, Carden and Loyd, and some very good British tankettes were produced.

However, Germany was weaker than the Allies imagined, and the war ended suddenly in 1918 before any of these ideas could be tested.

And then another American, an engineer named J. Walter Christie, designed tanks that could swim, tanks that could motor across country much faster even than the British fast tanks, and finally, tanks that could be carried by aircraft deep into enemy territory.

So when Governments had to decide how they would spend the taxpayers' money to equip their peace-time armies, they had a bewildering variety of tanks to choose from, especially as some old-fashioned soldiers of high rank scoffed at all tanks, and ridiculed the enthusiasts of modernisation as " tank maniacs ". These old stagers were very sure of themselves, and told the politicians that the next war would be dominated by men on horses once again!

Well, there was one development simply inevitable as a result of this—a spate of theory and argument. Big industrialists, with an eye to the armament trade, notably Vickers in Britain and Skoda in Czechoslovakia, produced ' commercial ' tanks which looked modern and featured at least some of the attractions of each school of thought—and above all, were reliable vehicles and reasonably priced, in the popular ' light ' and ' light-medium ' sizes.

No doubt quite a few military advisors looked on these ' commercials ' with a sigh of relief; they saved the cost and risk of designing and building from scratch, and if they proved to be not much good for real fighting they could be re-classified as ' training machines ', and there would be no wasted production lines in the war factories.

So, in the twenty-five year period between the World Wars it was no real use to talk vaguely about tanks, for there were too many different kinds, all designed for different kinds of armoured warfare! It might be a good idea to draw up a list of them, and show who favoured which, and what happened to them. We'll start with the slowest and oldest, and end with the newest off-beat!

1. The large, slow, heavy assault tank

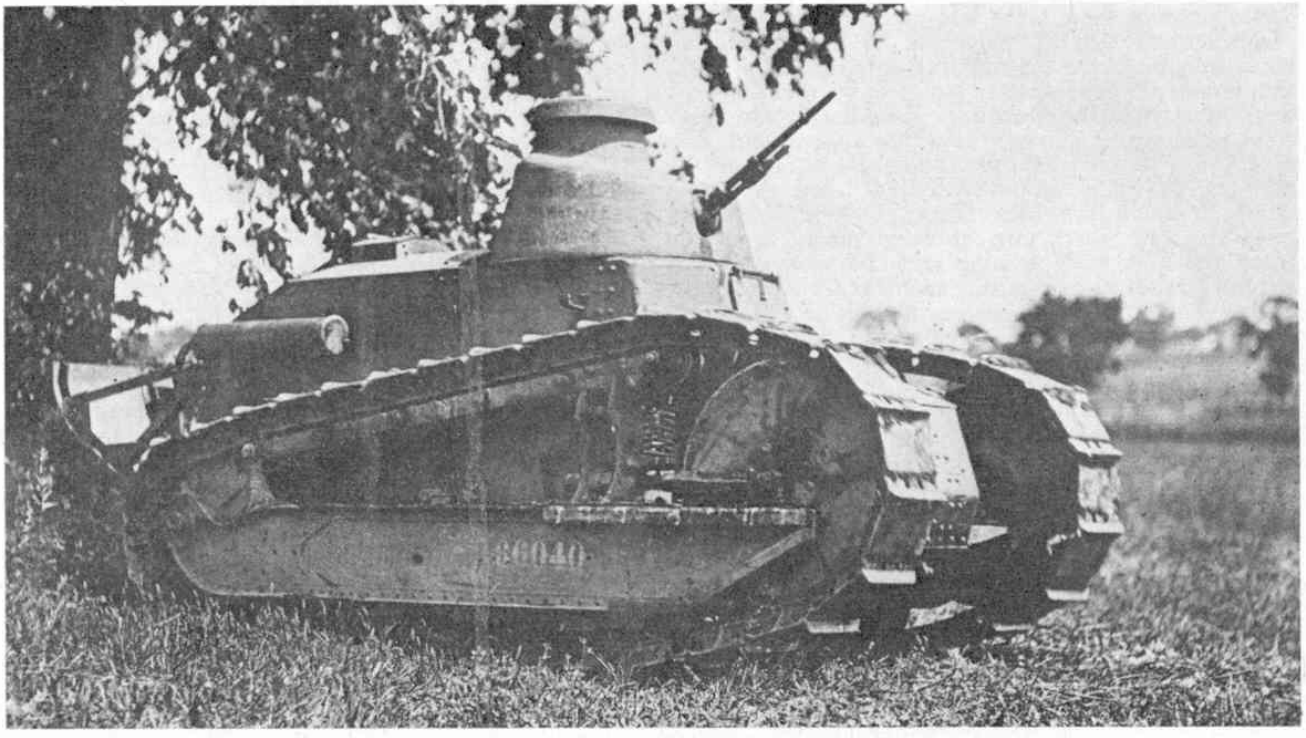
This was meant to plough through enemy positions just ahead of the main infantry attack. It is also known as a ' leading ' tank, ' char lourd de rupture ', and ' Durchbruchwagen '. It was a British idea of 1916, but as we have seen, by 1918 the British Tank Corps was thinking of much faster vehicles rupturing not the enemy's front, but his command system. The French stuck to the heavy assault tank until 1940, the British re-adopted it in the late 'thirties, with the ' Churchill ' and ' TOG '. The Americans took it up in 1919, dropped it a few years later, took it up again in 1939, and dropped it again when the Germans showed what fast, light tanks could do. The Germans experimented secretly with a durchbruchwagen in the 'twenties, then dropped it in favour of the British long-range ' paralysis ' idea. However, the German infantry chiefs and some industrialists thought this too chancy by far, and several designs for heavy tanks were pushed ahead; they lay unused until 1942 when the fighting became less mobile, and then served as groundwork for the Tiger and other super-heavy tanks.

2. The small infantry escort

A slow, two-man tank to accompany infantry at walking pace, originating with the French, who stuck to it until 1940. The British adopted it in 1936, but believed that a tank should be crewed by more than two men, so created the three-man Matilda, which for a short time proved to be absolutely invincible. At the same time, the German infantry wanted to take up this type of tank, but were over-ruled by the Panzer forces, who wanted fast, long-range machines. The Americans adopted slow infantry-escorts in 1918, but dropped them in the 'thirties, as did the Russians and Italians.

3. The fast, long-range medium

Here was Britain's most notable contribution to modern armour, the beginnings of which I described in my last article. Its original aim was to by-pass slow, costly frontal fighting, and collapse an enemy swiftly and cheaply by paralysing his command system. But only a few soldiers were able to grasp this idea, because it was so different from the soldiering they were used to. It was rejected in Britain, and the men



Although built in America, this small infantry escort tank was a close copy of the French Renault F.T. *Photo by courtesy of the National Archives.*

who strongly supported it, General Fuller and Captain Liddell Hart were forced out of the Service. The British Army chiefs would allow only that fast tanks could be used for skirmishing, guarding flanks, and pursuing an enemy who had been defeated in a pitched battle. They renamed fast medium tanks, calling them 'cruiser' tanks. But some far-sighted soldiers in Russia and Germany took up the idea. In the Red Army, Marshal Tukhachevski and Colonel Kalinowski built up a large, fast Mechanised Corps in the early 'thirties. Unluckily for them, they fell out of favour with the great Russian Dictator Stalin, who had them both shot. The Mechanised Corps was then broken up, as Stalin had decided that all tanks should be usable in pitched battles. In Germany, Generals Lutz and Guderian created a similar mechanised force, but gained the favour of the German dictator, Hitler, and so were able to build up a number of Panzer (Armoured) Divisions—which gave Germany her lightning successes in Europe, Russia and Africa between 1939 and 1941.

In America, a civilian engineer named J. Walter Christie saw that this type of tank—speedy and long-ranged—would be vital to the U.S.A.'s transcontinental defence organisation. He built several very fast medium tanks, but the U.S. Army would have none of them. The Red Army, however, copied them in large numbers for its short-lived Mechanised Force—and these subsequently became the basis of the T 34 general purpose tank. The British Army also took them up as 'cruiser' tanks in preference to Vickers designs.

The first, fast, thinly-armoured, long-range mediums were of course British designs, but they were not developed, and as hinted in the last paragraph, were soon overtaken by Christie's designs in the U.S.A. The Germans then built their own entirely original machines, the Panzers 3 and 4. The U.S. Ordnance Department also produced an interesting one called the M2, which however was developed like the Russian Christies into a general-purpose tank.

4. The tankette

We would call this a mini-tank nowadays! It was originally Henry Ford's idea, to overwhelm the German positions on the Western Front with infantry all protected inside little 15 m.p.h. vehicles. Later the British re-introduced the idea as a means of enabling infantry to keep up with fast tanks. But most army chiefs and governments saw the tankette as a means of saving money rather than time or lives—they bought them for issue not to the infantry, but to the tank forces, as cut-price tanks! Vickers did a brisk trade with them, selling them to money-saving War Departments all over the world. All the infantry got was a modified version to carry their heavy weapons for them—it became known as the Bren Carrier. The Artillery also asked for some, to use as field-gun tractors.

The actual tankettes were of course soon found to be pretty useless as tank-substitutes, so Vickers marketed a new alternative to it. . . .

5. The fast light tank

. . . which was very cheap, costing no more than a luxury motor-car (a good, full-scale medium tank in the late 'twenties cost £16,000), but had full protection, could carry a cannon and/or machine guns, had a speed of at least 20 m.p.h., and could travel a hundred miles or more. Vickers' great breakthrough in marketing fast light tanks was the invention of lightweight forged steel tracks, of open skeleton type, which would run great distances before wearing out. Basically, the same kind of track is still in use on tanks all over the world today. Vickers' commercial fast light tank weighed about 6 tons and could (with a little imagination) be classed suitable for a variety of roles. Some nations wanted them as infantry escorts. The Americans took up the Vickers layout, but went on to build their own machinery around it. The Japanese used them for any purpose because they were cheap. The Italians copied them for the same reason, but by adding a few inches here and there, turned the original into a sort of Medium tank. The Germans bought Vickers

chassis and built their own fighting bodies on to them, to serve as training tanks until their own Medium Tank building programme was under way. In fact, these little training tanks had a great part to play in the lightning conquests of Poland in 1939, and France in 1940! Britain used Vickers light tanks in considerable numbers, again, to save money, and there was talk of using them as ' cavalry ' tanks, especially when it was known that the new German armoured divisions used them a lot. It was not realised that the Germans kept them on because of a dire shortage of full-scale mediums! As soon as these became available, the Panzer forces promptly passed their light tanks to the Artillery, to be converted into gun-carriages.

6. The general purpose medium tank

Here, Soviet Russia stepped into the lead. When the armies of the West were bickering among themselves about the respective merits of Infantry and Cavalry tanks, and the uses of Light tanks, Stalin solved the problem by shooting the men who spoke in favour of fast, long-range, lightly armoured tanks, then ordering a new type of General Purpose Tank which would have a speed of around 30 m.p.h., wear enough armour to keep out most kinds of anti-tank shot, and carry a big gun useful in all kinds of action. Simple! Why had no one thought of it before ? Fortunately, for the Russians, they had two tanks, the T35 and the Christie, which were the right sort to build on, and by 1939 these had been worked and re-worked through a whole series of experimental models into the Klimenti Voroshilov Mark 1 and the T34. They were simple, in some ways they were crude, but they had huge diesel engines, 17 pounder cannons, bigger than any other tanks of their day, and wonderfully stout armour. They could be used in mobile war as well as in pitched battles, and they were very reliable. In spite of having such thick armour, the KV weighed only 45 tons, and the T34 28 tons—only 2 tons more than the British Matilda, which had only a 2-pounder solid-shot cannon, thinner armour, could do only 15 m.p.h., and was more costly to produce.

The Americans and Japanese were next with this sort of development. The U.S. Ordnance Dept. toughened up a light tank until it became the light-medium M3—known to the British as the " Stuart ", or " Honey ". It was a very reliable machine, but not as generally useful as the Russian machines. They then toughened up their M2 Medium, which became first the M3 " Grant ", and then the M4 " Sherman ".

A Russian T34/85 of 1943. This tank was ahead of its contemporaries in having a larger cannon; a diesel engine; very simple construction layout and a very low ground pressure.

Although these are thought of as wartime tanks, their development started shortly before World War Two broke out. The Japanese did not give tank design so high a priority as, say Germany or Russia, and so their general-purpose medium tanks remained somewhat inferior. They had no influence on the course of international tank development.

7. Amphibians and airbornes

At first it seems unlikely that tanks could swim or fly, but when one thinks of the importance of water obstacles to an advancing army, one sees that tanks must be made to cross them somehow. The British were first in the field with the ' D ' fast tank; its designer, Colonel Johnson, made it very long so that it could cross trenches, then decided that the resulting empty spaces could be used to make the tank float.

But the ' D ' was not a true amphibian. The American designer Christie was the first to build one of these in the early 'twenties—it could swim in rough seas, without sinking, and it had screw propulsion. However, its boat-like body was unsuited to tank warfare, and so its combat roles were limited. The Japanese took it up in preparation for their invasion of South-East Asia.

The T3 fast medium was the last Christie designed for Warfare. This one was built in 1931, and is seen below running without tracks.