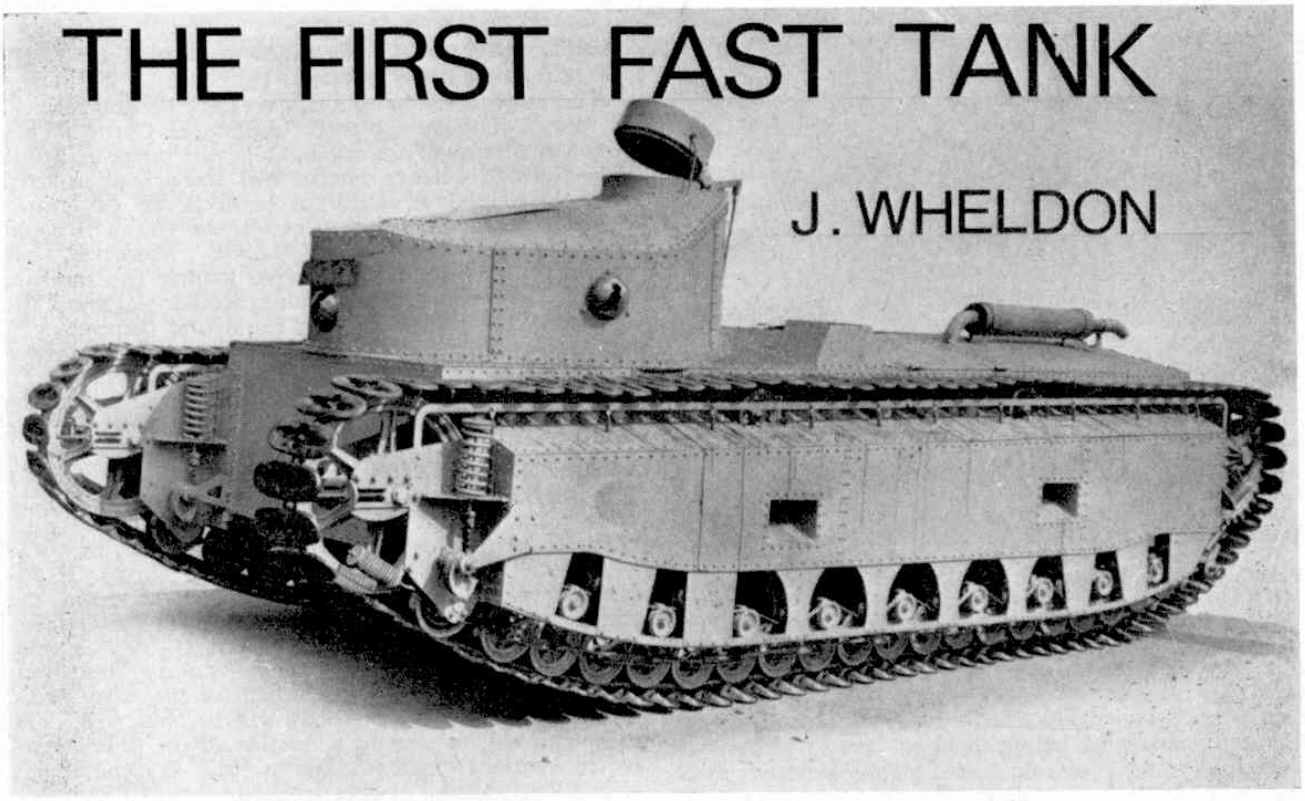
THE FIRST FAST TANK

J. WHELDON

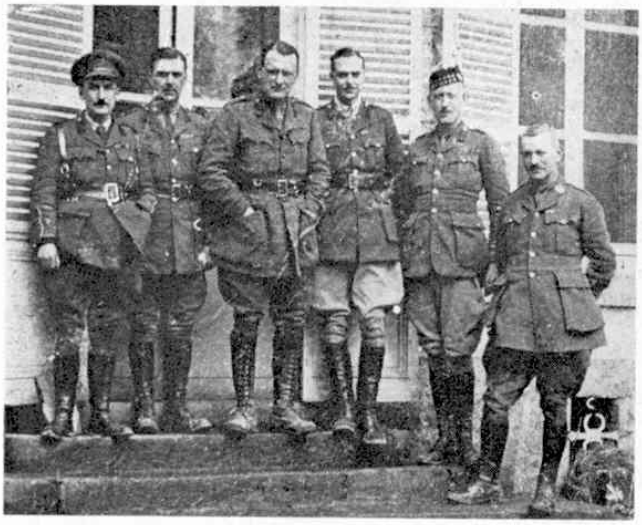


THE CHIEFTAIN is the main battle tank of the British Army today. It is a powerful machine, and if you sit inside it, you can sense this. The electronic communications and navigation equipment makes the turret interior resemble a space capsule, but there is also something no space vehicle can carry; a cannon which can score first-time hits on targets at the very limits of vision.

Colonel (later Major-General) J. F. C. Fuller.

But when the 50 tons of Chieftain are set in motion, the tank seems very sedate by modern standards; rather less than 30 m.p.h. on level going is all that it can manage. So although the Chieftain shows immense progress over the primitive machines of World War One in protection, communications and gunnery, it shows none at all in the sphere of basic power of movement.

How is this? Surely, the tanks of World War One were really very slow? Well, of those actually in combat service, the fastest was the British 'Whippet', which could do all of 8 m.p.h. on smooth level going, but it is a little known fact that the British Tank Corps was doing secret research on a high-speed tank as early as 1917, and by 1918 they had ordered its construction with a view to using it in a highly secret special operation in 1919, aimed at ending the war with one stroke. This tank, the 'Medium D', was to have a maximum speed of 20 m.p.h. plus a circuit of action of more than 200 miles—an immense step forward from the types of tank then in use. The step was possible because the Tank Corps fighting in France had set up a research department, in touch with all new developments, and quick to provide practical answer to the tank troops' problems. This was "No. 3 Advanced Workshops" under Major Philip Johnson, who combined engineering skill with tank combat experience. His department soon produced devices for "unditching" tanks, and for helping them across extra-wide trenches. By early 1917 Major Johnson was undertaking research in spring-suspension design, with a view to speeding the tanks up. This work started as a protective measure, the slow unsprung tanks were easy targets, and their parts wore out quickly, but the possibility of higher speeds and extended circuit of action was in full accord with Tank Corps policy, which, under General Hugh Elles and Colonel J. F. C. Fuller (his chief 'planner') aimed at thorough penetration of the German defence system with a view to operating against it from the rear—and



Principal figures (left to right): Col. Fuller (Chief of Planning), Major Uzzielli (Q), General Elles (Head of Tank Corps, France).

so speeding its collapse. The possibility of realising this aim with the original type of tank seemed to be receding. A new type was wanted—for the decisive battles of 1919 ! Tank Corps H.Q. could not rely on Germany collapsing before then.

By early 1918 Johnson had designed a new type of spring suspension, suitable for a tank of about 15 tons, and a new type of track which would run swiftly over the ground without collecting mud and without wearing out quickly. He wrote about this in a memo to his superiors dated 29th March, 1918, mentioning speeds of about 15 m.p.h. His proposals were discussed with Fuller, and a Tank Corps Staff conference was called for a month ahead. In the interval, Johnson was to perfect his engineering proposals, and Fuller was to devise an offensive scheme which would utilise a really fast tank to the best advantage.

Colonel Philip Johnson (ret), designer of the world's first high-speed fighting tank.

The importance of this can scarcely be exaggerated. It was as if today the Royal Armoured Corps should seriously discuss a 100 m.p.h., 200 mile range machine. The German defence system was some 7 miles deep in early 1918, and could not be decisively penetrated by slow tanks and infantry before the Germans could reinforce the point under attack. Moreover, the German anti-tank defences were getting the measure of the slow tank. If fast tanks could penetrate the system with air support, they could find themselves in virtually undefended territory—for there was no answer to an armoured fire-platform moving freely at 20 m.p.h. across country. Before resistance could be organised, the fast tank would have destroyed the organisation. Fuller saw this clearly, and wrote a scheme, which he later called " Plan 1919 ", whereby the British Army could paralyse the Germans with one stroke instead of fighting prolonged " killing " battles. As the territory behind the defence lines was (on both sides) considered safe, so Army Headquarters were sited only about 20 miles from the trenches. A force of fast tanks could visit the German Army Headquarters before breakfast—the German rearward organisation would be utterly destroyed. Fuller said " The H.Q. is the will of the army body. Destroy the will and the body will be paralysed. The campaign will be won in a fraction of the time needed by conventional methods and we can say the enemy will collapse almost at once from Strategical Paralysis."

This idea, based on Johnson's concrete proposals, was upheld at the Tank Corps H.Q. Conference on 29th May 1918. War Office approval of Johnson's tank specification was secretly obtained, and the engineer went to England to get a prototype built. For security reasons the title " High Speed Destroyer Tank " was dropped, and it became known simply as the " Medium D ".

But Germany collapsed through physical exhaustion before Johnson's tank was completed, and the daring principle of Plan 1919 remained as yet untested.

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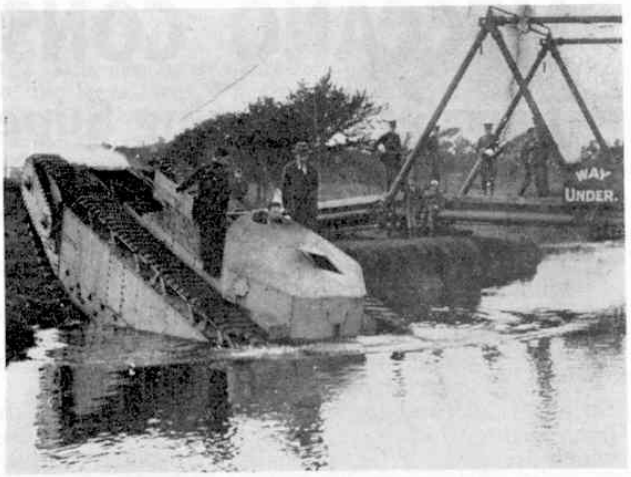
The war over, Johnson's secret work became the " Department of Tank Design and Experiment ", under the Master General of Ordnance. The tempo of work slowed down, and the first of 3 prototype ' D's ' was not demonstrated until 29th May 1919—a year and a day after the decisive Tank Corps conference.

It was a peculiar machine. It was long, so that it could cross trench systems. It was low in front, to give the crew vision, but high at the rear so that it could climb obstacles in reverse. The turret did not revolve, and as the main armament was in front, the driver was perched in a cupola at the turret rear ! The 240 b.h.p. aero engine gave an ample reserve of power and was in a separate compartment behind the fighting chamber. 28 m.p.h. was attained on a slight downgrade, and 17 m.p.h. was held on a long climb that would have brought the earlier tanks down to 2 m.p.h. It had a range of action of 200 miles. The tracks were of an open type, did not collect mud, did not wear out quickly, and could adapt laterally to irregularities, and thanks to its spring suspension, the tank could pass at full speed over a railway sleeper without any shock being felt inside. The epicyclic transmission gears gave agile and reliable steering, and servo assistance reduced driver fatigue. It was in most respects an exceedingly advanced machine for its period, and it was soon made mechanically reliable. But it had two serious defects, and these proved fatal.

The first was the spring gear. This was very simple. A wire cable was stretched along each side of the tank, being anchored to a powerful coil spring at one end, and rigidly at the other. Each bogie unit had a pulley on top, which bore up against the cable. Between the bogies, pulleys were fixed to the hull, preventing the cable from rising freely. When the tank passed over an obstacle, each bogie in turn pushed the cable up between the fixed pulleys, thus tensioning the spring. This system gave a soft, undulating ride and a man could rock the tank by heaving down on its nose. But the cable's life was very short—and as soon as it broke, the suspension collapsed and the tank was immobilised! It would have served Plan 1919 adequately, but it was no use for general service. The second defect was the fixed turret, which caused duplication of weapons and crew and delayed target engagement. Again, this was acceptable for Plan 1919 —but not for post-war development.

These defects were of course curable, but Johnson was a stubborn man. His relations with the Master General of Ordnance's office became very poor, and he got a little out of touch with the Tank Corps. He was devoted to Fuller, and attempted to serve the latter's ultra-modern theories of mechanised warfare by designing a whole range of cross-country fighting and transport vehicles, and making them, as well as the 'D' tanks, float. We are familiar with amphibious vehicles and Armoured Personnel Carriers and Self Propelled Guns today, but in the early 'twenties they were wildly new, and alas, Fuller and Johnson came to be regarded as cranks. Especially as Johnson stuck to his cable springing, which kept on breaking. The inevitable happened. Opposition to the 'D' grew, General Elles turned against it, and would not have it rated as a service machine. The building contract was cut to 20, and all these were designated "experimental". Meanwhile, General Birch, the Master General of Ordnance, secretly had a much less imaginative tank designed, which nominally was capable of the D's speed and range, and this he contracted with Messrs. Vickers to have built. Then came the showdown. With the Tank Corps getting rid of its obsolete old wartime tanks, and with only 20 'D's', all branded experimental, what was the Army to fight with? It was useless for Johnson to indicate the foundations he was building for a fully mechanised army, way ahead of any other nation's. General Birch pointed out that general mechanisation was not wanted by the General Staff; meanwhile the Vickers tank had a revolving turret and a reliable spring suspension. General Elles approved it, and in slightly modified form it went into production. Very soon, Johnson's experiments were declared redundant, and his department was closed in 1923. All work on the D machines stopped the next year.



Medium D (Third Prototype) on flotation tests at Christchurch.

The Tank Corps had the Vickers Medium from 1921 until World War Two. It was fairly reliable, but it was underpowered, bumpy, fatiguing to the crew, of inferior layout (the petrol tank was beside the main exit) and incapable of being developed. It was soon overtaken by foreign designs, and by World War Two Britain was a back number in armoured vehicle development. Had the 'D', with its many advanced features been supported by Elles and the M.G.O., one feels that its defects would have proved quite curable; and Britain could have possessed an unrivalled range of cross country combat vehicles. Perhaps personal quarrels and ambitions did our nation a great disservice in this respect, in the early 'twenties.

For Fuller's theories of armoured warfare, and Johnson's vision of a full-range of cross-country AFVs, were taken up and elaborated in Germany, and fully vindicated in the early years of World War Two. Had Britain possessed an adequate armoured force, the German Blitzkrieg might have been stopped in early flow, or better still—Britain might have been first to use the Blitzkrieg.

The 'Chieftan' tank. Note the superficial similarities to the Medium 'D'.