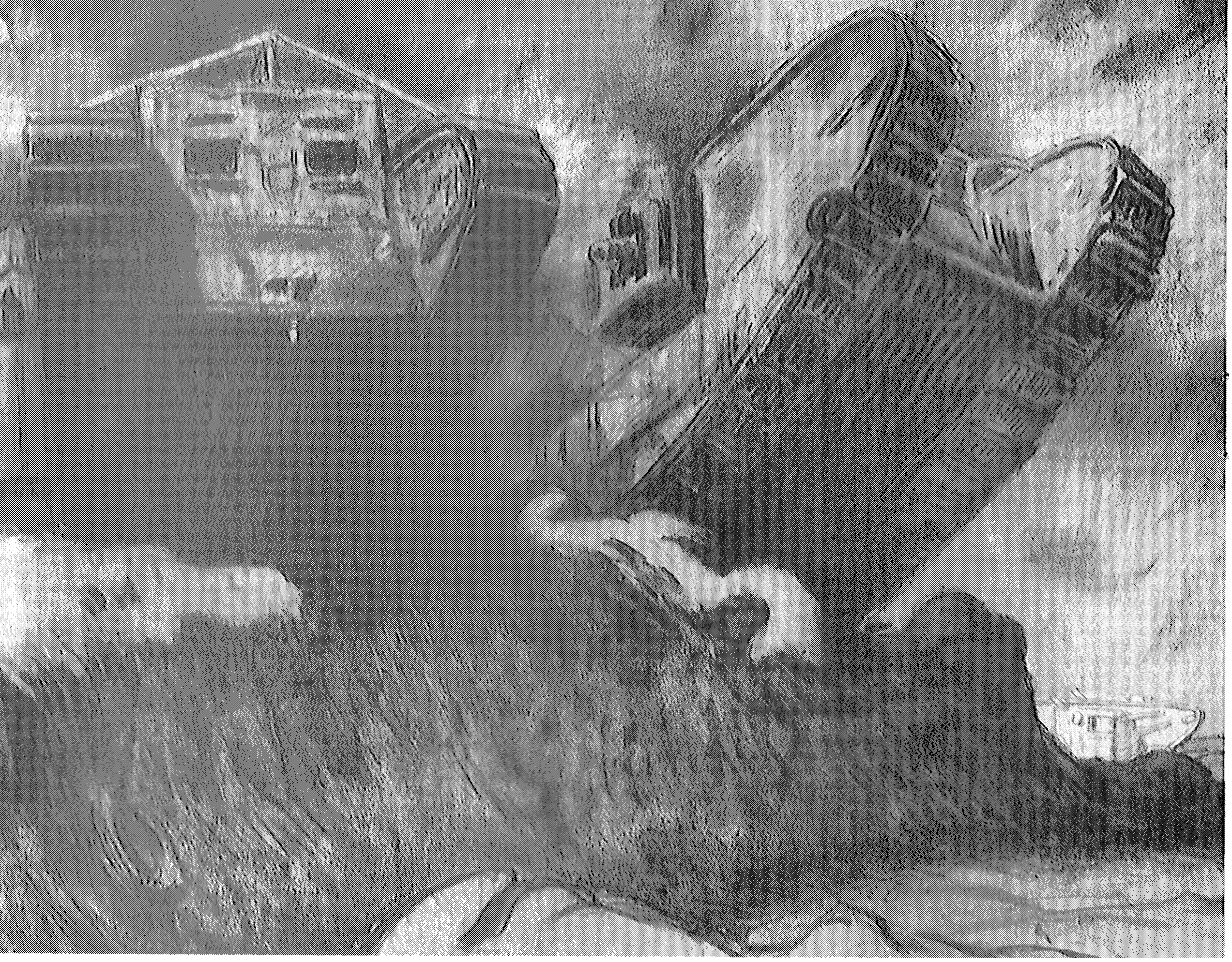
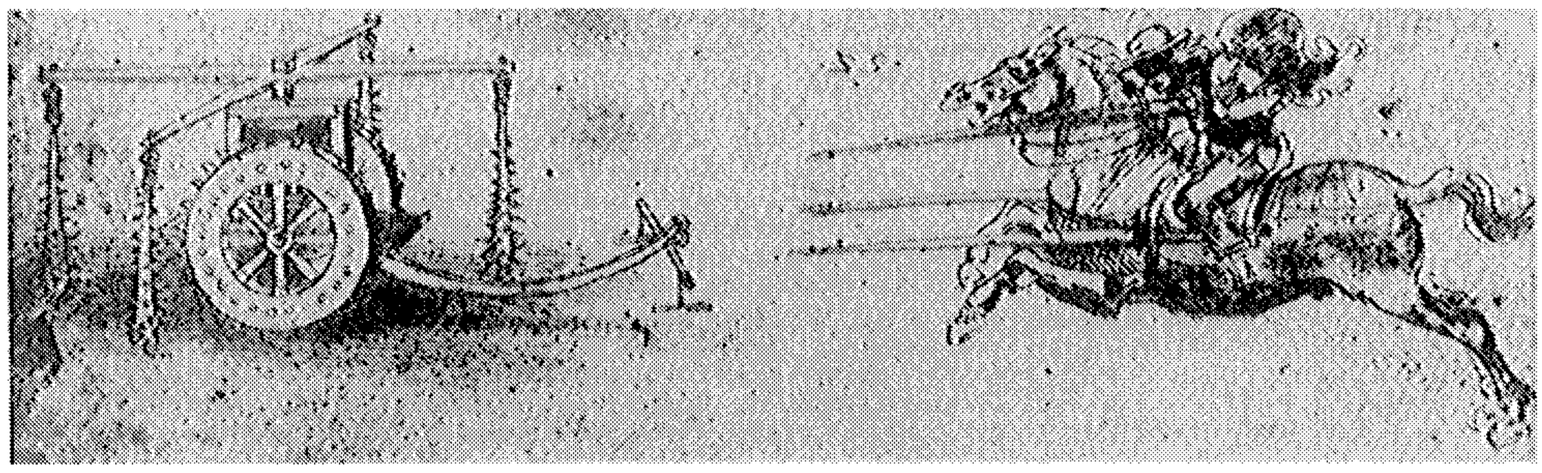


THE TANK

ON THE DULL AND MISTY MORNING of November 20th, 1917, 1,003 guns and howitzers and 378 tanks had been assembled to break through the immensely strong Hindenburg Line, seize Bourlon Wood, cross the St Quentin Canal and capture the town of Cambrai. An important feature of this operation, so neglected before the Battles of the Somme and Third Ypres (Passchendaele), was surprise. As the troops assembled on November 19th, an eye witness recalled that 'The night was pitch black, and smoking was absolutely forbidden. Officers had instructions to shoot any man caught smoking'. The men 'suffered like drug addicts'. Though the assembly was interrupted by German artillery fire, this turned out to be nothing more than the venting of early morning spleen. At zero hour – 0630 – the artillery opened fire. 'The synchronisation was excellent', recalled a battery commander, 'and it was a most impressive sight to see the hillside burst into a perfect sheet of flame'.

Seventy years ago the massed tank battle of Cambrai ushered in the transformation of the mythology, imagery and practice of conventional land warfare.

Surprise was complete. The tanks lumbered forward and smashed down the thick entanglements of barbed wire. German defensive fire was weak; the enemy stunned. The enemy's first line fell; by 11.00 hours the Hindenburg Line had been pierced as far as the Cambrai-Bapaume Road and FOOs (Forward



An awesome beast . . . Sir William Orpen's evocation of the tank (left) as a monster churning up the Flanders mud fleshes out a vision of mechanical warfare originally sketched out (right) by Leonardo da Vinci for Renaissance rulers.

AND VISIONS OF FUTURE WAR

Brian Holden Reid

Observation Officers) had established themselves. An advance of eight miles on a frontage of 13,000 yards had been achieved; 8,000 prisoners and 100 guns had been captured. The speed and excitement of the advance was matched by a certain glamour so lacking in earlier battles. The commander of the Tank Corps, Brigadier General Hugh Elles, led the attack personally in his tank, 'Hilda', flying, like an admiral on his flagship, a brown, red and green tricolour, symbolising 'Through the Mud and Blood to the Green Fields Beyond'. On reaching the first objective Elles had assured his staff that he would return to headquarters. He jumped down from 'Hilda' somewhat testily, started walking back and before long he was importuned by crowds of German soldiers offering to surrender.

Although tanks had been used before, notably at the Battles of the Somme and Passchendaele without conspicuous success, Cambrai was the first battle in which tanks had revealed their true potential. It did not lose its lustre despite the fact that the crucial objectives of Bourlon Wood and Cambrai were not taken and that in front of Bourlon Wood tanks were picked off piecemeal by German artillery fire which rallied after the initial shock; and that a German counter-attack beginning on November 30th had within a week regained all the lost ground. The Battle of Cambrai is a landmark in the history of war. It was hailed as opening a new epoch by the school of tank enthusiasts that grew up in the Tank Corps led by the original author of the Cambrai plan, Colonel J.F.C. Fuller, the Tank Corps chief staff officer (GSO1).

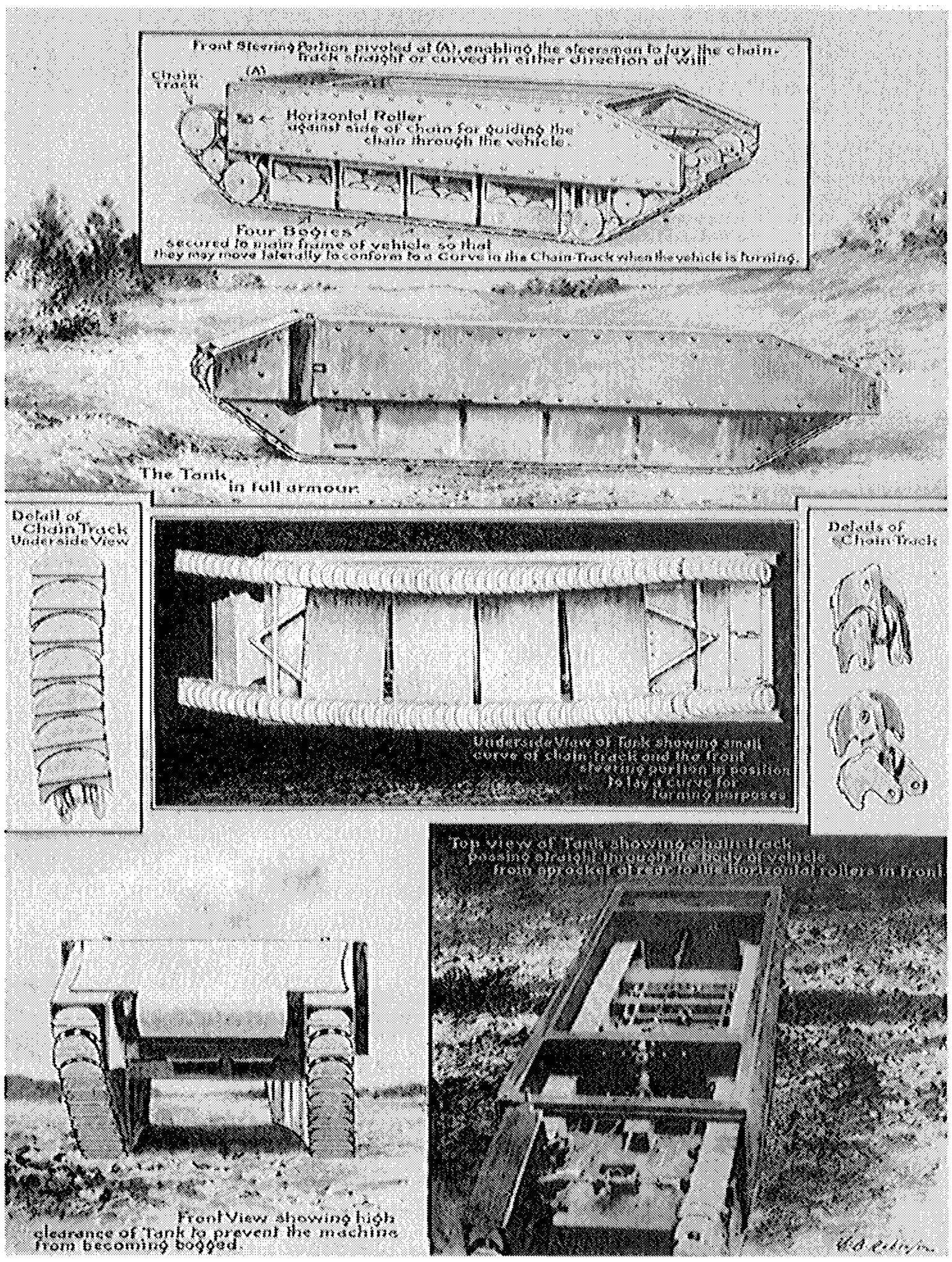
The idea underlying the tank was not in itself very new. The tank is fundamentally a weapon carrier rather than a weapon. It is a self-propelled fighting vehicle which is capable of moving across country without being restricted to roads. The tank's armour protects its weapons and enables weapon-power to be maximised at the enemy's weakest point. In lineage the tank is a direct descendant of the war chariots of the Ancient Egyptians, Assyrians and Britons, and the war elephants of Porus and Hannibal.

Its basic elements – like those of most new inventions – had been in existence for a number of years. The most important feature, the caterpillar track, had first demonstrated its potential to the British Army in 1910. This was the Hornsby chain track consisting of chains mounted on wooden blocks of paving stone size fixed to powerful springs. An observer, Major General (later Field Marshal Sir) William Robertson, thought that such a device would have 'a great future as a tractor for dragging heavy guns and vehicles across broken ground'. But he pitied the crew who looked seasick. An advance on this machine was the Holt caterpillar tractor, weighing 15 tons with a speed of 15 mph, though reduced to 2 mph when hauling a gun. Indeed L.E. Mole submitted a design of a tank to the War Office in 1910 which was shelved.

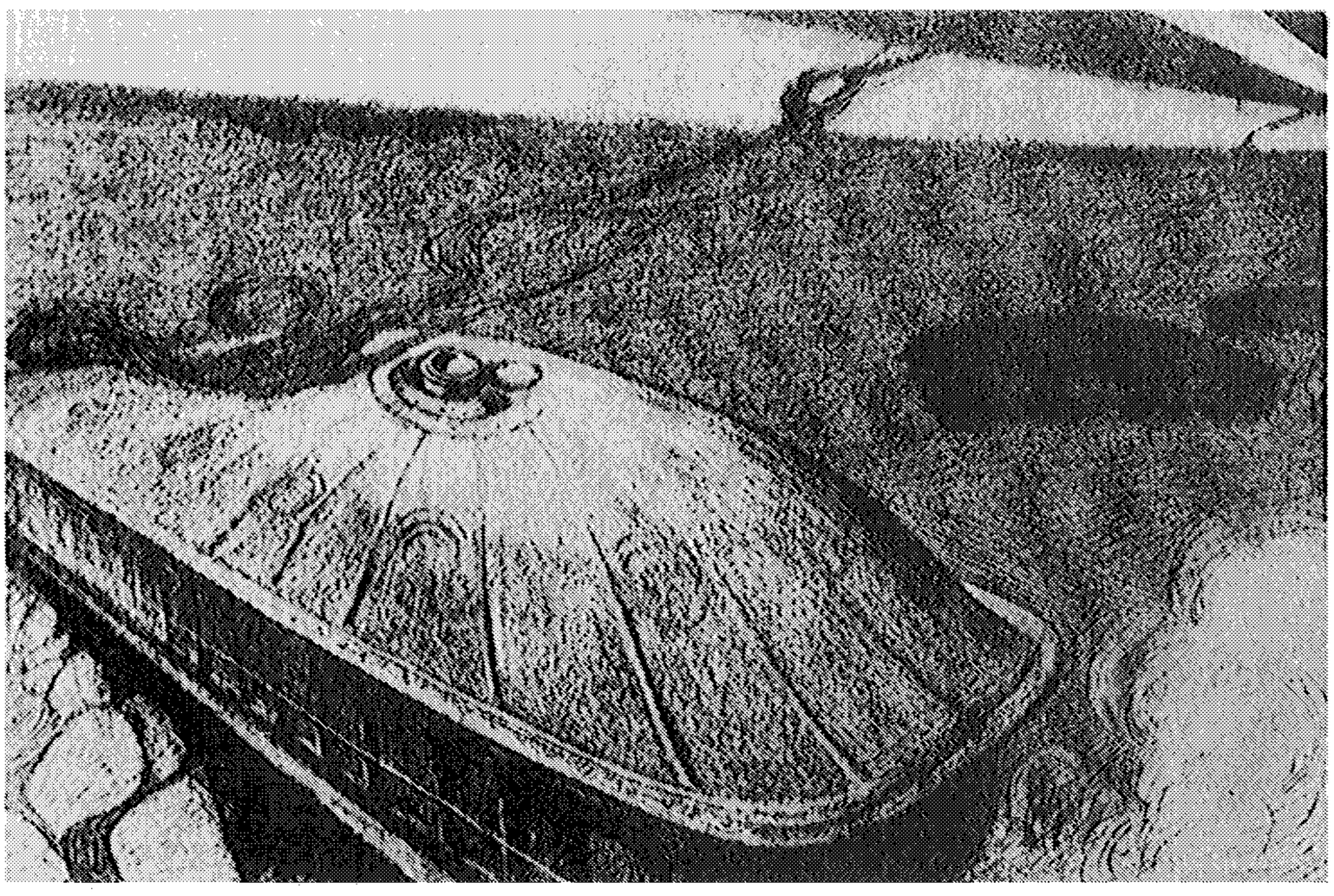
The tank had also made an early mark on the public consciousness in popular literature. The most notable contribution was made by H.G. Wells in his essay, 'The Land Ironclads' in the *Strand Magazine* (1903). Wells' ironclads resembled ships at sea, steam powered land vessels up to 80–100 feet long and 10 feet high with portholes. Their prime function was the transport of firepower, the traversing of battle zones and trenches and assaulting artillery emplacements – the enemy's gun line. Wells' ideas did not embrace the notion that the tank would become the main mobile weapon, thrusting into the enemy's rear independently. This would be developed fully by a later and greater school of military thinkers led by Fuller. Indeed Wells' vision of the development of the land ironclad emphasised size and destructiveness rather than mobility.

Another important feature of Wells' writings refers to the kind of men who would fight in tanks. In his *Anticipation of the Reaction of Mechanical and Scientific Progress Upon Human Life and Thought* (1901), Wells had argued that the mechanisation of modern life would usher in the 'ideal war' waged by a new kind of soldier, the 'engineering man'. Wells loathed the amateur ideal which prevailed in Britain before 1914 and saw an urgent need for rational professionalism to cope with the complexities of the technological age. 'Every new weapon, every new complication of the art of war . . . darkens the outlook of a nation of amateurs', he wrote. He preached the virtues of an 'inexorable tendency' that would transform a soldier into a 'skilled and educated man and link him . . . with the engineer and the doctor'; the key to victory, therefore, was scientific education and training. In 'The Land Ironclads', Wells contrasted the cool rationality and clinical efficiency of the tank crews with the emotional and hysterical enemy, and condemned 'the almost brutish want of imagination their methods of fighting displayed'. Wells disliked conscript armies because he claimed that smaller armies were more efficient than large armies. Conscript armies were 'made up, not of masses of military muscle, but of a large proportion of military fat'. In these striking and prescient writings, H.G. Wells foreshadowed most – though not all – of the arguments used to justify the introduction of the tank to the world's armies.

The appearance of the tank on the battlefield of Cambrai and its later success at the Battle of Amiens on August 8th, 1918, 'the black day' in the history of the German Army, in the opinion of General Ludendorff, con-



The Mole tank design which was ignored by the War Office, though its development had been foreshadowed by H.G. Wells in his 1903 short story, 'The Land Ironclads' (original illustration from 'The Strand Magazine' below) — '. . . it had the effect of a large and clumsy black insect'.



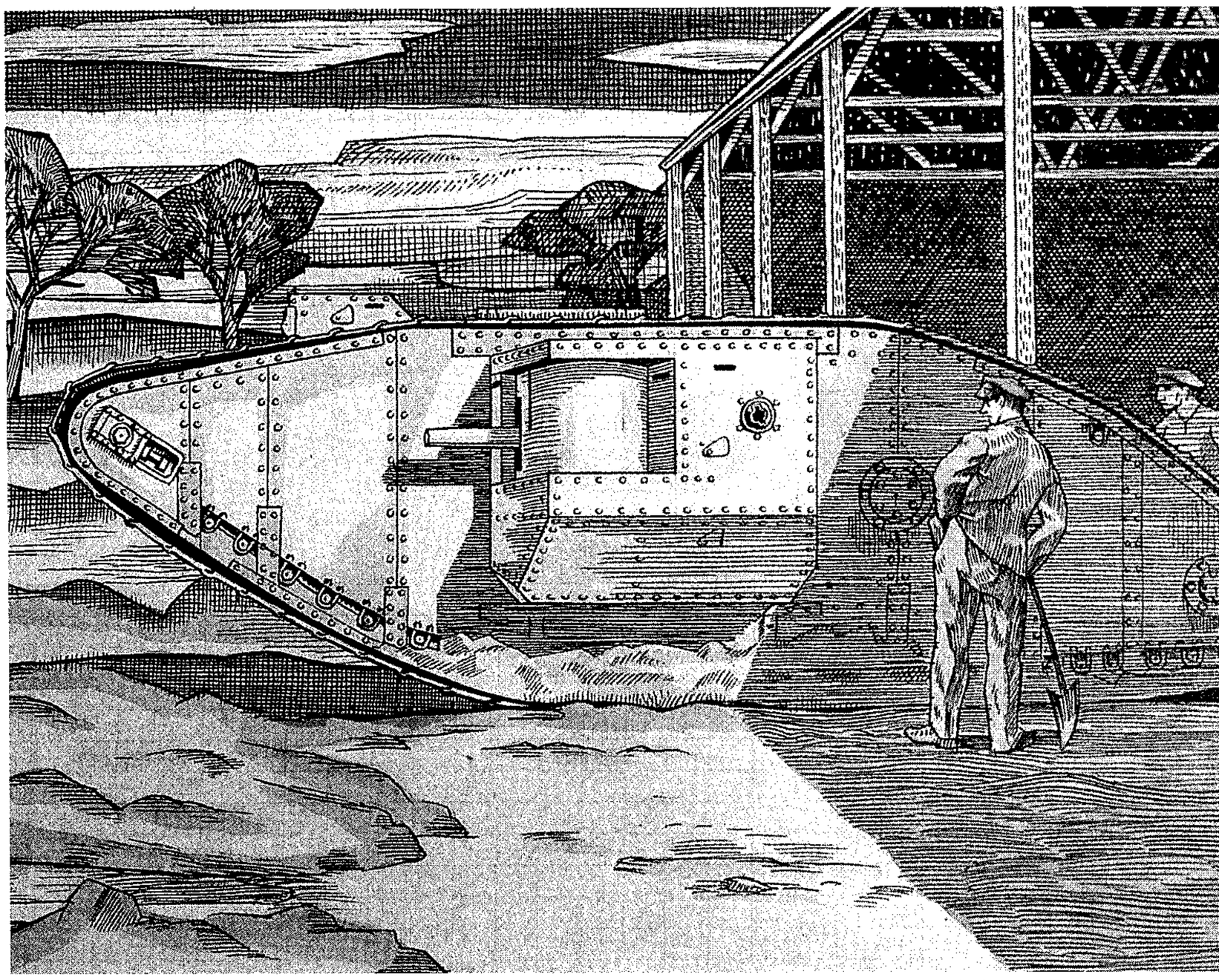
firmed the dreams of some far-sighted officers, especially Colonel Fuller, that the tank could not only effect a fundamental change in the means of fighting battles, but transform the very nature of war itself. Before 1914 a number of perceptive but gloomy prognostications had come from the pen of a Polish banker, I.S. Bloch. He had claimed that the increased industrialisation of war would result in the mobilisation of entire populations; warfare could only degenerate into a great siege, with massive trench systems, battles of attrition, famine and revolution. Bloch's ideas were ignored by the military, but after 1918 Fuller argued with increasing confidence that Bloch's reasoning, though valid, could now be modified and perhaps ultimately overturned. He believed that the Industrial Revolution was entering a new phase in which the internal combustion engine would dominate and thus restore *mobility* to the battlefield. The utility of the decisive battle in war would be restored. This development would also require a change in the relationship between firepower and mobility. It was the immobility of the First World War that had contributed so signally to its lack of decisiveness. Commanders had relied excessively on firepower, which was so immense that it destroyed the communications over which armies intended to move. At Passchendaele alone, 4,283,550 shells were fired in the preliminary bombardment.

In a quite remarkable document written in the spring and early summer of 1918, known as 'Plan 1919', Fuller laid down the fundamental axioms of armoured warfare as it developed between the World Wars. He himself was to develop these views in a brilliant series of books and articles in the early 1920s, and though some were discarded, they remained, as they still remain, a basic point of departure. 'Plan 1919' was based on the expectation of the deployment of a new kind of tank, the Medium D, which, with a speed of 20 mph, was a considerable advance on earlier models fielded at Cambrai and Amiens, the Marks IV and V, whose average speed was 2–5 mph. Its main thrust was that the tank accentuated mobility. This meant that armies could achieve more in a shorter period of time. As the Allies could move whereas the enemy could not, the enemy's strength could be avoided in battle and his weaknesses could be exploited. The most vulnerable point of any army was its rear; here lay its command centres. By striking at these

vitals, swift moving armoured forces could destroy the command functions of the German Army and reduce it to a demoralised panic-stricken mob. An attack on the military organisation of the enemy rather than his main body now became a feasible proposition and could be achieved by technological means. As Socrates once observed, 'a disorderly mob is no more an army than a heap of building material is a house'.

The grand sweep of 'Plan 1919', its prophetic insight and skilful presentation of a patchy case (after all the Medium D had yet to be built), confirmed Fuller as the leading exponent of the tank. He was to receive a number of awards and decorations from foreign armies in the years ahead. Fuller was an unusual figure, rather unprepossessing in appearance: bald, very short but with penetrating eyes. He always remained calm and never shouted; what men feared was not his wrath but a savage wit which was usually directed toward GHQ. He was a compulsive writer and always scribbling something, whether it be tactical manuals, an article for publication, or some mystic reflections on the meaning of life. A visionary rather than a technocrat, a romantic idealist rather than an architect of neat blueprints, Fuller was the most complete intellect produced by the British Army. Though personally aloof and solitary, he was an intellectually towering figure who stimulated a school of thought. Liddell Hart did not exaggerate when he claimed that Fuller 'was the first who ever made the heads of Continental armies look to England for professional guidance'.

In the 1920s Fuller and his followers were forced to rely on the performance of the tank in 1917–18 for evidence of its future potential. This was a shaky foundation upon which to rest ambitious theories. In Fuller's opinion, the Battle of Amiens was the strategical Waterloo of the Great War, 'the rest was minor tactics'. Victory in 1918 was, he argued in *Tanks in the Great War* (1920), mainly due to the tank. Such a claim is to some extent justified, but it downplays the contribution of other arms. The failure of the massive bombardments before the Somme and Third Ypres aroused the scorn not only of Fuller but another convert to the tank's cause, Captain B.H. Liddell Hart. Both of these military writers downplayed the importance of artillery in future war. The bombardment before Passchendaele had cost £22,000,000; Cambrai, Fuller remarked sacastically, had been



'A Mark IV tank on the Experimental Grounds at Dollis Hill' — a coloured sketch by W.D. Adeney — one of the models used in battles at Cambrai and Amiens.

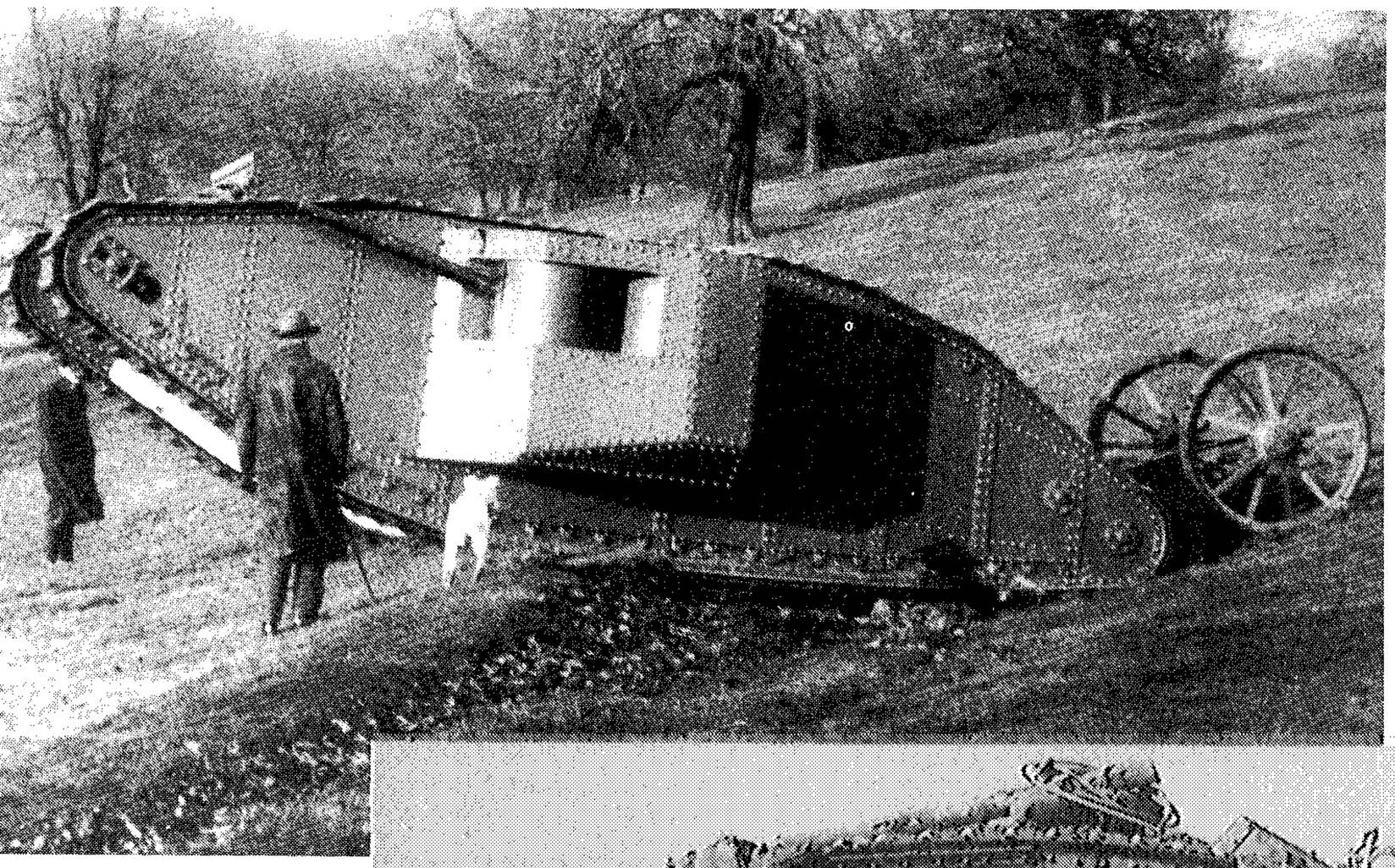
achieved at the expense of 'a few gallons of petrol'. They overlooked the contribution made by the artillery bombardment to the victory at Cambrai. Moreover, armoured vehicles in 1918 lacked the endurance to win the victory by themselves. At the Battle of Amiens on August 8th, 1918, for instance, 414 tanks moved into action. The following day only 145 were available and this number had fallen to 85 on August 10th. By August 11th only 38 were operational; 'of the 38 tanks which went into action on the 11th', wrote C. and A. Williams-Ellis in *The Tank Corps* (1919), 'there was not one that did not badly need overhauling. The crews were completely exhausted'.

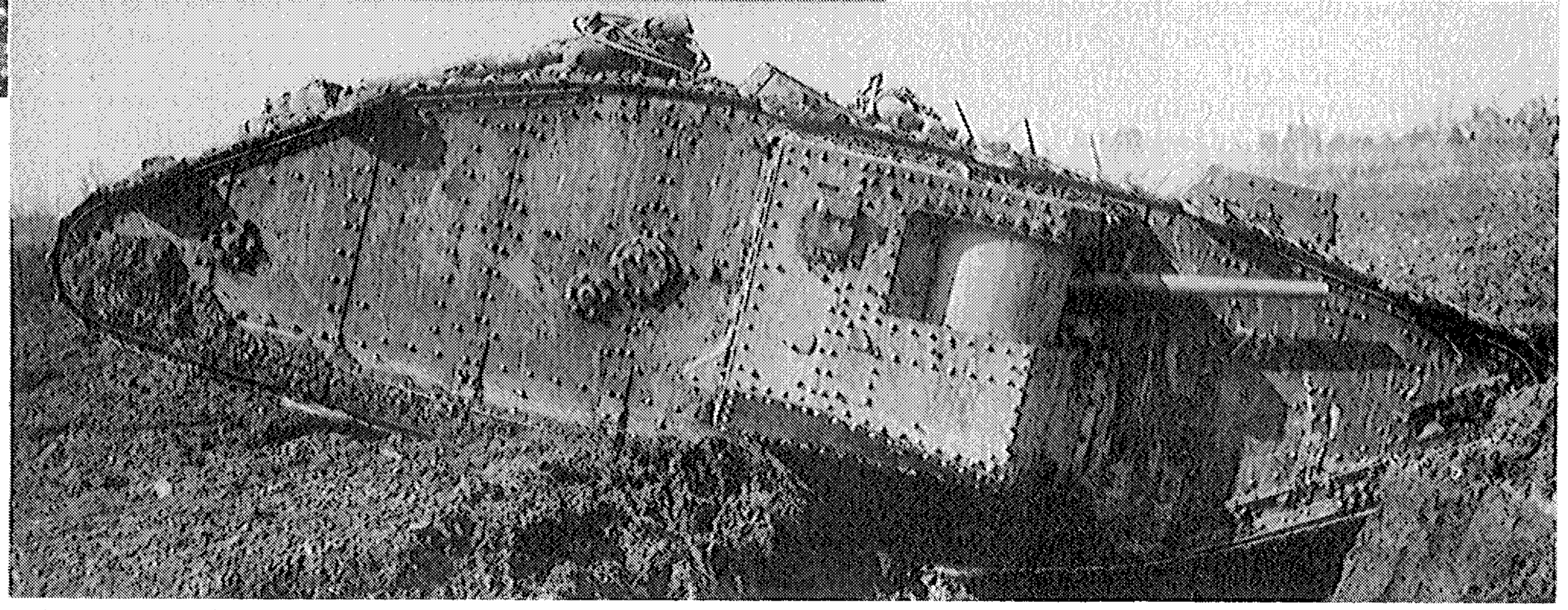
Yet despite the weaknesses of the early tanks, Fuller and his followers, who soon included not only Liddell Hart but Major (later General Sir) Frederick 'Tim' Pile, Captain (later General Sir) Giffard Martel and Major (later Major General Sir) Percy Hobart, among others. These soldiers sought to determine 'the shape of things to come' in war by gauging the impact of new weapons technology on the battlefield. They sought above all to establish methods for the future and were confident that accurate prediction about future war was possible. Despite some gloomy asides, the prophets of mechanisation were initially optimistic. They refused to be persuaded by the pessimistic climate of opinion that prevailed after 1918. As I.F. Clarke comments:

> The slaughter of the trenches, the fall of ancient monarchies, the establishment of a powerful communist state, the March on Rome, the Slump, the rise of the Nazis – these were changes of such magnitude and they raised such serious questions about coming things that they shattered the pre-war expectation of an uncomplicated passage from present to future.

The increased technological sophistication of weapons, with its promise of even greater death and destruction brought by aircraft and gas, lent weight to the view that mankind was heading towards a cataclysm. Christopher Isherwood's novel, *Prater Violet* (1946) captures this sense of foreboding. Actually set in 1933, it dwells on violent and sudden attacks on Europe's great cities 'by thousands of planes, dropping bombs filled with deadly bacilli', and Isherwood shuddered at the thought of war's outbreak, which 'like the moment of death, crossed my perspective of the future like a wall: it marked the instant total end of my imagined world'.

But it was precisely a reaction against this fatalistic dread of inevitable cycles of slaughter and destruciton – and especially that of 1914–18 – that inspired the armoured enthusiasts to proselytise their ideas. Fuller in *The Reformation of War* (1923) and Liddell Hart in *Paris, or the Future of War* (1925), argued that opportunities were now present actually to





The neat and incongrous image of the tank in peacetime testing (the Mark I model — 'Mother' — with wheels, observed here by a man and his dog in Lincoln's Burton Park in 1916) contrasted sharply with the bogged-down reality of Cambrai (right).

reduce the destructive scope of war. This could be achieved by exploiting technological change rather than by resisting it. It is a striking feature of criticisms of the arms race that technological improvement is represented as an immensely destructive tool which threatens to unleash forces beyond man's control. Thus mankind will eventually destroy itself. Such predictions have been commonplace in the twentieth century, and examples include Edward Shanks, *People of Ruin* (1920). The soldier-prophets of future armoured warfare considered this a gross over-simplification that pandered to sensationalism. In *On Future Warfare* (1928), Fuller contended that the tank offered a chance to reverse this destructive spiral:

> It will not abolish war, but it will refine its grossness. It will once again make the offensive stronger than the defensive, it will reinstate war as an art . . . If wars are to continue, seeing what the last war has to teach us, surely it is wiser to fight behind armour than in woollen jackets.

Another striking feature of predictive war literature, is that it tended to ignore ground operations and concentrated instead on the aerial and chemical threat. This pattern had been set by H.G. Wells in his fascinating series of novels, *The War of the Worlds* (1898), *When the Sleeper Awakes* (1899) and *The War in the Air* (1908). Wells focused on the global scope of aerial power. It was a device that could influence the density of the entire world. Tanks were less glamorous, merely tactical devices. In the 1920s Fuller and Liddell Hart tried to reverse this view and argued that the potential of the tank was so great that it would do nothing less than revolutionise the art of war.

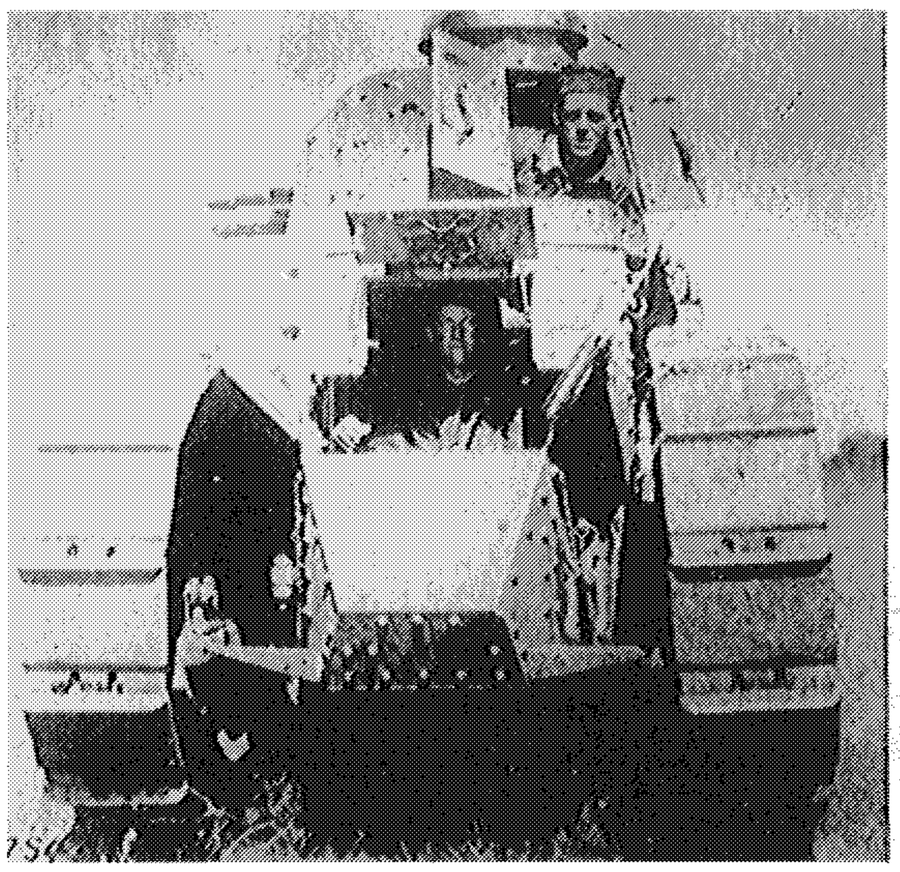
The tank would inaugurate a new age of machine warfare. 'The whole evolution of machine tools', wrote Fuller, 'is that of the elimination of the workman and the replacement of muscular energy by steam, electricity, or some other form of power'. And so it would be in war. As weapon-power would be concentrated increasingly on capital intensive, mobile and protected platforms, so fighting power would be invested in machines and not masses of men. Indeed large conscript armies would become a liability because of their immobile bulk, slow communications and long supply lines. Unprotected infantry would disappear and be replaced by a lighter, more mobile kind of foot soldier. The tank pioneers differed over the degree of change affecting the infantry: Martel thought it might survive; Fuller that it would ultimately be abolished; Liddell Hart's views were somewhere in-between. Nevertheless they all agreed that the introduction of the tank would result in a drastic reduction in the size of armies.

If armies became smaller they would become easier to command. The art of generalship would again come into its own. Increasingly, the armoured pioneers poured scorn on the generalship of the First World War. This process of increasing disillusion can be traced in Liddell Hart's two books, *Reputations* (1930) and *Through the Fog of War* (1938). Fuller described the armies of 1914–18 as 'pot bellied and pea brained' and Sir Douglas Haig as a 'Stone Age general', judgements hardly likely to make friends in high places. The past inspiration for their vision of future generalship sprang from antiquity and the knights of medieval times. (Indeed Fuller dedicated *Tanks in the Great War* to the 'modern knights in armour'.) The ideal of the warrior king, Alexander the Great, was immensely attractive. Both Hobart and Guderian, the German pioneer of mechanisation, believed that armoured warfare would usher in the epoch of a 'new Alexander', and Fuller had studied his campaigns intensively since 1917. Personal command would be revived; 'in mechanised warfare', agreed General Wavell, who was otherwise sceptical about many of the claims made for the tank, 'we may again see the general leading his troops almost in the front of the fighting, or possibly reconnoitring and commanding from the air'. Here Cambrai furnished an unimpeachable model.

The revival in the art of command was the product of a restoration of mobility. The most revolutionary aspect of the tank was that it could

cross country. It was a mobile fortress that defied the machine gun, 'in every respect the "lands ship" it was first called', averred Fuller. Thus, equipped with caterpillar tracks, tanks could move over country and strike at objectives in a far shorter period of time than was possible with road-bound forces. 'In the mechanical wars of the future', wrote Fuller, who developed this theme more fully than other writers, 'we must . . . recognise the fact that the earth is a solid sea as easily traversible in all directions by a tractor as a sheet of ice is by a skater; the battle in these wars will more and more approximate to naval actions'. Like ships at sea, armoured 'fleets' would carry their supplies with them and reduce dependence on lines of communication. Battles would revolve around areas and not long entrenched lines as in 1914–18.

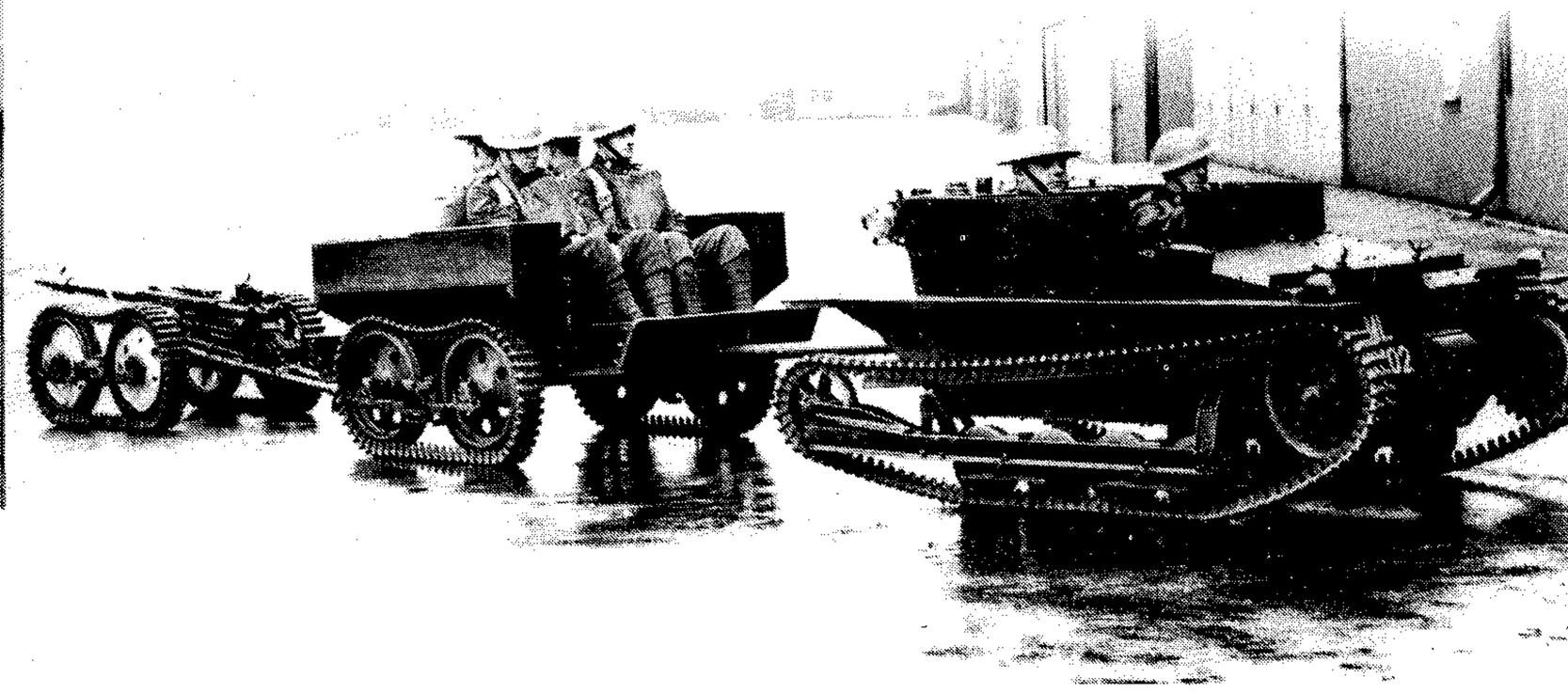
The analogy between armoured warfare and naval actions was perhaps the most controversial aspect of these predictions. Nonetheless it was central to their vision of war. The armoured pioneers envisaged the 'fleet' moving forward under the eye of the commanding general. Battles would become more decisive, perhaps lasting no longer than a day. The idea that tank warfare approximated to naval warfare originated with Martel, who first used it in a paper called 'A Tank Army' in 1916. It was extended by Fuller and Liddell Hart and became a central factor in their thesis that technological change could guarantee such an advance to one side that the enemy could be annihilated without the loss of a single casualty. The Battle of Coronel in 1914 served as a striking example.



This was a radical vision of the future and excited a great deal of criticism. Though the battles in North Africa and some of the actions on the rolling steppes of Soviet Russia in 1941, confirmed the view that armoured warfare could take the form of naval engagements, the hopes entertained for the naval analogy have not been completely realised. This was due to the simple fact that, as some conservative critics perceived, mechanisation did not reduce the size of armies. Fuller and Liddell Hart claimed that the massive expense of mechanisation would prevent the development of mechanised armies on a great scale. This greatly underestimated the industrial capacity of the world's powers. It also ignored the important point that technology is a function of numbers, not of quality. Therefore their argument that future wars would exalt quality and not quantity and that they would be shorter and more decisive was based on a fallacy. This error undercut another feature of their writing that had been anticipated by H.G. Wells. Fuller and Liddell Hart believed that future armies would consist of highly trained and proficient engineers, professional soldiers who could think for themselves. A professional spirit between 'fellow soldiers' would develop in war that would stimulate a return of chivalry and a rational desire to limit destruction. But mechanisation demanded numbers on a scale even greater than in 1914–18: conscription returned and so did hordes of amateur soldiers. The hopes placed in the transformation of the ethical spirit of war, though true in parts, was generally ill-founded. A return to the 'limited wars' of the eighteenth century – unfortunately for the world – turned out to be a pipe dream.

J.F.C. Fuller, architect of the Cambrai plan and the tank's leading British exponent.

The writings about the tank that appeared after the end of the First World War represent one of those bursts of activity which is inspired by the trauma of a great conflict. The armoured pioneers can be compared with that group of reformers, including Scharnhorst, Gneisenau and Clausewitz, that came to the fore after Napoleon's humiliation of Prussia at Jena in 1806. The armoured enthusiasts probably built their ideas too hurriedly and optimistically on the technology available in the 1920s. The transformation of war following the introduction of the tank has been much less drastic than they expected. Still, they made a striking and original contribution to military thought. The highest compliment that can be paid to them is that the full implications of their ideas have yet to be fully worked out.



(Left) A 1918 tank model on manoeuvres in France (showing the relative positions of driver and gunner and (above) the 'tankette' — Carden-Loyd's Mark VI trailer towing anti-tank gun and crew car, whose name reflects the confusion of nomenclature over tracked vehicles and tanks during and after the First World War.

FOR FURTHER READING:

Brian Holden Reid, *J.F.C. Fuller: Military Thinker* (Macmillan, 1987); J.F.C. Fuller, *Memoirs of an Unconventional Soldier* (Ivor Nicholson, 1936): Sir Basil Liddell Hart, *The Tanks* (Cassell, 1959) vol. I; Robert Woolcombe, *The First Tank Battle: Cambrai 1917* (Arthur Barker, 1967); John Terraine, *To Win A War* (1978, Papermac, 1986); I.F. Clarke, *The Pattern of Expectation, 1644-2001* (Jonathan Cape, 1979).