

Ernest Swinton, the Sapper and the Advent of the Tank

MAJOR GENERAL R A M S MELVIN CB OBE FInstRE



Major General Mungo Melvin retired from the British Army in December 2011, following a career of 37 years in the Royal Engineers and on the General Staff. During the period 2007–12, he was Chairman of the RE Museum, Library and Archive Committee. From 2012 to 2017, he was President of the British Commission for Military History and a military advisor to the House of Commons Defence Committee. He has also been a Senior Associate Fellow of the Royal United Services Institute since 2012. He served as Chairman of the Royal Engineers Historical Society from 2016 to 2024, and has been an Honorary Vice President of the Western Front Association since 2018. His biography 'Manstein: Hitler's Greatest General' was published in 2010. As the British Army's senior advisor for the First World War centennial commemorations, he devised and edited the Army's 'Battlefield Guide to the Western Front of the First World War' (2nd edition, 2015), and designed and mentored the Army Operation Reflect international staff rides in 2014, 2016 and 2018. Mungo Melvin's next major work, 'Sevastopol's Wars: Crimea from Potemkin to Putin', was published in 2017. Alongside editing Volume XIII of the Corps History (2024), he co-authored the Corps' tribute to the late Queen Elizabeth II, designed to mark her Platinum Jubilee in 2022. In June 2024 he was awarded with the Gold Medal of the Institution of Royal Engineers. He continues to research and present on a wide variety of military topics.

This article has been developed from a presentation given by the author at the Joint Professional Meeting of the Institution of Civil Engineers and the Institution of Royal Engineers, held at the Institution of Civil Engineers, London, on 9 June 2025. Readers may also wish to note that it relates to the article 'The Royal Engineers and the Royal Tank Corps during the War of 1914–1918' published in the April 2025 edition of this Journal.

INTRODUCTION

To most Sappers, Swinton is associated with the eponymous barracks at Perham Down, Tidworth, shared by 22 and 26 Engineer Regiments. It is a fitting name for the current home of armoured engineering in the Corps of Royal Engineers (RE) as Major General Sir Ernest Swinton KBE CB DSO late RE was one of the principal pioneers of the tank. Notwithstanding this recognition, he remains a rather forgotten figure of the Corps in comparison with more illustrious 'Sapper heroes' such as Gordon or Kitchener. Yet it was none other than Swinton who, at an early stage of the First World War, urged the adoption of an armoured, motorized machine propelled on caterpillar tracks which could clear the path for assaulting infantry by crossing trenches, crushing wire entanglements and destroying enemy machine gun posts. He christened the resultant vehicle the 'tank', devised a concept of employment for the new weapon, and trained the first crews that went into action on 15 September 1916 at Flers-Courcelette on the Somme battlefield.

A record of Swinton's critical contribution to the tank documents not only the emergence of the most important military invention of the First World War, which was later to revolutionize land warfare in the Second, but also exemplifies how to overcome institutional resistance to novel ideas. By all respects, Swinton was a truly Great Sapper, who deserves more credit today for his achievements. Fortunately, he left

two remarkably informative and entertaining autobiographical works, which assist considerably in revealing his times, thoughts and actions: *Eyewitness* (1932) and *Over My Shoulder* (1951).¹ This article, which draws heavily on these two accounts, focuses on Swinton's story in relation to his military career and involvement with the tank until 1916. It is a remarkable tale of innovation, cooperation and enterprise, which remains surprisingly relevant.²

¹ Whereas Sir Ernest D Swinton, *Eyewitness: Being Personal Reminiscences of Certain Phases of the Great War, including the Genesis of the Tank* (London: Hodder and Stoughton, 1932) concentrates on his role in the development of the tank during the period 1914–1916, *Over My Shoulder: The Autobiography of Major-General Sir Ernest D Swinton KBE, CB, DSO* (Oxford: George Ronald, 1951) covers his whole life, albeit largely excluding his 'tank years'.

² As it focuses on Swinton's contribution, this article does not attempt to offer a comprehensive history of the introduction of the tank. The official military history of the Great War provides a useful summary, 'The Evolution of the Tank', in Captain Wilfrid Miles, *Military Operations, France and Belgium, 1916, 2nd July to the End of the Battles of the Somme* (London: MacMillan, 1938), pp. 245–249. For much more detailed accounts, see Brevet-Colonel J F C Fuller DSO, *Tanks in the Great War 1914–1918* (London: John Murray, 1920) and Captain B H Liddell Hart, *The Tanks: The History of the Royal Tank Regiment and its Predecessors, Heavy Branch Machine-Gun Corps, Tank Corps and Royal Tank Corps 1914–1945*, vol. 1, 1914–1939 (London: Cassell, 1959). For a view that challenges some of Swinton's claims as to his part in the genesis of the tank, see J P Harris, *Men, Ideas and Tanks: British Military Thought and Armoured Forces, 1903–1939* (Manchester: Manchester University Press, 1995).

SWINTON'S EARLY LIFE AND MILITARY CAREER TO 1914

ERNEST Dunlop Swinton was born on 21 October 1868 at Bangalore, India. He was the fourth of nine children of Robert Blair Swinton, a judge in the Madras civil service, and of Elizabeth Dorothy Rundall, the daughter of a British businessman in India. On his father's retirement in 1874, the family returned to the United Kingdom and Swinton was educated at a series of establishments, including University College School, London, Rugby School, and Cheltenham College. Rugby particularly suited him; accordingly he was 'greatly distressed' when his father took him away for 'financial reasons'.³ Despite the lack of continuity in his schooling, he enjoyed it, working hard in his lessons and at sport. A particular highlight of his youth was spending the summer holidays of 1884 with a family in Bonn. There he learned a 'lot of German', primarily from 'a terribly earnest, austere and hard-boiled spinster', who insisted that Swinton's father 'should have his money's worth in her tuition'.⁴ Yet it was not all work without play as he spent many happy hours swimming in the Rhine and mixing with his guest family.

In preparation for the competitive examination in the Royal Military Academy (RMA) at Woolwich, where potential officers of the Royal Artillery and Royal Engineers were trained, Swinton attended 'crammers' in Aldershot and Kensington and passed eighth on the entry list in 1886. Although he found the discipline 'salutary' at 'the Shop', he persevered with his military studies and fared well. In his memoirs, he noted proudly that competition for entry into the Sappers was 'severe' – as for his term of 60 cadets, 'only 15 commissions into the RE were offered'.⁵ Swinton passed out fourth, being gazetted into the Corps as a Second Lieutenant on 17 February 1888. He described his subsequent two-year course at the School of Military Engineering at Chatham as 'one of the happiest periods' of his life, recalling:

*At Chatham I had everything: I was receiving pay, supplemented by a small allowance from my father. We could enjoy all the ordinary games, as well as sailing on our own yachts and rowing on the Medway. We had a very fine Mess. For those who had horses, there was hunting close by. The duties for young officers were varied between military training and technical and engineering instruction, a large part of it out of doors and away from Chatham, interspersed with tours abroad. It must be remembered that the Sappers were fully trained as Infantry, as well as their specialist work as REs. The life was full, interesting and altogether ideal for a young man.*⁶

On completion of his foundation young officer course, he applied to be posted to India. Having passed a personal interview with the Deputy Adjutant General RE at the War Office, he embarked for the sub-continent in March 1890 via Malta, Port Said and Aden, disembarking at Bombay (now Mumbai). During the voyage, Swinton rubbed along with



Figure 1. Swinton with his horse Stockings, Lucknow, March, 1893

the troopship's officers and several fellow RE. Never afraid either to poke fun at himself or to criticise others he found wanting, he commented: 'Among so large a number of members of the "Scientific Corps", proverbially "mad, married or Methodist", we had some peculiar characters. One Sapper subaltern, a clever man, and a keen yachtsman, was at the same time a most almighty prig'. Swinton and a couple of his colleagues hoodwinked this unwitting individual as to the navigating officer on the bridge requiring 'some advice on how to enter Valetta Harbour'. Suffice it to say, this incident 'did not improve relations between the two Services'.⁷

In India, Swinton was employed as a junior military works officer based at a large garrison near Lucknow in northern India (now in the state of Uttar Pradesh), which housed one British cavalry and one Indian cavalry regiment, two batteries of artillery, two battalions of British, and two of Native [sic] Infantry. Apart from playing a lot of sport and shooting a good amount of game, he also performed a round of assorted peacetime RE duties, including working on a range of military infrastructure projects. He also had to respond to the pet schemes of senior officers – so nothing new here. In particular, Swinton cited one amusing incident involving the General Officer Commanding (GOC) of Oudh District, Major General Aeneas Perkins, a fellow Sapper but a 'fractious old man', who had 'spent most of his time building railways on the NW Frontier'. Specifically,

He was a fine figure of a man, tall, and broad, with a heavy moustache of which he was very proud. He was also extremely peppery – as generals often are in their own commands – and was reputed to be addicted to slinging the ink-stand at his Assistant Adjutant General, a very meek colonel. ... [The GOC desired] to have a block of flats built for the bachelor officers of the station and so relieve them from being at the mercy of the owners of rat-infested bungalows.

In response, Swinton and his fellow RE subalterns proceeded to work up a perfectly adequate design, but Perkins bluntly rejected it, angrily forcing them to re-submit. They did so with an 'absurdly elaborate building', laying a joke within the design for the general, which to his credit he saw, 'flinging the paper back with a roar of laughter'. In

3 Swinton, *Over My Shoulder*, p. 25.

4 Ibid., p. 32.

5 Ibid., pp. 36–37.

6 Ibid., p. 37.

7 Ibid., p. 41.

consequence, 'no more of the super quarters for officers' was heard.⁸

During his long home leave of 1893, Swinton met Grace Louisa Clayton, whom he hoped to marry, and who was the daughter of his second cousin. They subsequently wed in 1897, bringing up two sons and one daughter. In 1896, Swinton returned to Chatham to take up the post of assistant instructor in fortification at the School of Military Engineering, making good use of his extensive experience of the subject gained in India. This teaching tour was followed, on the outbreak of the war in South Africa in 1899, by a posting in the rank of captain to the RE military railway staff in Cape Town. He then helped to recruit an irregular force of railway engineers, the 1st Battalion, Railway Pioneer Regiment, acting first as this unit's adjutant and, from 1900, its commanding officer, taking over from another Sapper, Major John Capper, with whom Swinton had many dealings throughout his career.

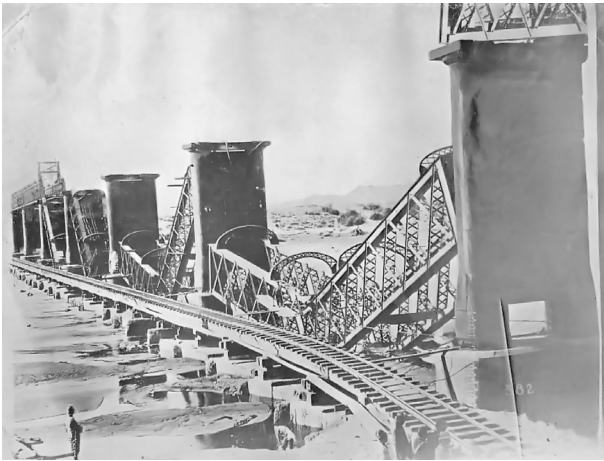


Figure 2. Bethulie Bridge and deviation, South Africa, 1900

In *Over My Shoulder* Swinton records his work in building 'deviations' (temporary railways diverting from the original line of the permanent way), reconstructing wrecked railway bridges and in establishing detached outposts to guard the railways, vital lines of communication for British forces. Despite the success of such work, and as the war dragged on, Swinton increasingly bristled at pervasive military officialdom, complaining:

We suffered a good deal at this period from unsympathetic queries from Army Headquarters, where we came under the aegis of the Assistant Adjutant General Colonial Forces, who happened to be a very conscientious and zealous officer of the old type, to whom our informal ways were anathema. His invariable comment on any new action on our part was – 'This is highly irregular'. ... It was really remarkable how, after nearly three years of war, and

*the creation of many irregular units, they should still have been a tendency to refer back to regulations formulated years before, which did not meet the current conditions.*⁹

There is no doubt that Swinton learned a lot both personally and professionally during his time in South Africa. On his return to Chatham in August 1902, awaited by his wife whom he had not seen for three years, he was home again, 'hale and hearty', and grateful for his 'good fortune'. He later concluded wryly: 'My moral gain from the campaign was some varied experience: my material loot was some ostrich feathers'.¹⁰ Yet Swinton had also made his name: for conspicuous duty during the Second Boer War, he was awarded the Distinguished Service Order in the September 1901 South African Honours List, a fact omitted from his memoirs.

Interestingly, the principal legacy of Swinton's period of active service was not some technical work on railway reconstruction or of one concerning the challenges involved in raising irregular forces, but rather an insightful book on small unit tactics, *The Defence of Duffer's Drift*, written under the cryptic pen-name 'Lieutenant Backsight-Forethought'. First published in the *United Service Magazine* in 1903, his little 'tactical brochure on defence', incorporating 'most of the elementary mistakes which were so often responsible for our regrettable incidents' remains a military classic.¹¹ The tactical situation posited by Swinton involves a British platoon of 50 men tasked with defending Duffer's Drift, a ford in a river, with a large opposing force of Boers moving towards their position. This scenario is played out six times in six 'dreams', with the platoon learning progressively from its early mistakes, including the failure to dig in, and consequent defeats so that by the final dream it can defend the position successfully until it is relieved. The book's chief merit lies in its promotion of critical thinking, lending it an enduring quality. Swinton's first published work has been republished many times since on both sides of the Atlantic and remains in print today, widely admired and read by British and US forces in particular.

Promoted to major in 1906, Swinton was appointed chief instructor in fortification and geometrical drawing at Woolwich. On return to the RMA, he found that the 'Shop' had 'changed not at all outwardly, except for its apparel [the adoption of khaki uniforms], and very little inwardly' despite the experiences of the South African War.¹² Apart from instructing, typically Swinton made good use of his time, not least to write on a wide range of technical and tactical subjects. Although a Sapper, Swinton applied his thinking to the requirements of other arms such as the artillery as well as his own. He advocated, for example, the adoption of quick-firing artillery such as the celebrated French '75'. Yet before he could submit his paper on the subject

9 Ibid., p. 134.

10 Ibid., p. 141.

11 *The Defence of Duffer's Drift* was first published in book form by W Clowes & Sons, London, in 1904. An electronic version is available at <https://www.armyupress.army.mil/Portals/7/combat-studies-institute/csi-books/swinton.pdf> accessed on 10 July 2025.

12 Swinton, *Over My Shoulder*, p. 145.

8 Ibid., pp. 56–57. Rather surprisingly, Swinton did not allude to the fact that Perkins was not only the senior RE commander serving with distinction under Major General Frederick (later Lord) Roberts during the Second Afghan War (1878–1880), but also went on to become a colonel commandant of the Corps on promotion to general on 1 April 1895.

for publication, the War Office decided to introduce such weapons, namely the 13- and 18-pounders that became the mainstay of British field artillery during the First World War. In a related initiative, Swinton met an American, Colonel Samuel Franklin Cody (not to be confused with his fellow countryman Colonel William Frederick Cody, also known as Buffalo Bill), who demonstrated to the British Army man-carrying 'war-kites'. Swinton immediately saw their potential for the observation of artillery fire from the air and wrote a piece for *Blackwood's Magazine* titled 'The Kite', published in 1906 under Swinton's pen-name, Ole Luk-Oie. This article with other military stories including 'The Joint in the Harness', which remarkably contains the first detailed description of bombing from the air, was re-published in 1909 by Blackwood & Sons as *The Green Curve*.¹³ Swinton's interest in aeronautics, however, remained purely theoretical. It was another Sapper, John Capper (by then a colonel), Swinton's superior in South Africa, who with Cody, undertook the first successful flight of a British airship in 1907. Capper oversaw the introduction of aeroplanes into the British Army; under his direction, Cody flew the very first British-built aircraft in 1908 with the RE leading the way.

During his long summer leave of 1910, Swinton travelled to Heidelberg to refresh his German. During his stay, he 'saw a little of the German troops, and was much impressed. They were smart, and appeared to be in hard condition.'¹⁴ This experience made him 'think' about a future opponent, as by then British-German military, and especially naval, rivalry was in the ascendant. Swinton also sat that year his practical 'tactical fitness' examination for promotion to lieutenant colonel, which required not only taking a written paper, but also passing a practical test on the ground to formulate an action with 'a mixed force of all arms'. His witty 'Sangfroid' cartoon of the event, undertaken in sleet storm on the Essex coast, appeared in *Punch* in 1910.

Swinton's career then took an unconventional turn. That same year he was appointed as the new secretary of the Historical Section of the Committee of Imperial Defence (CID), working in London. Despite his administrative title, he became a principal author of the official Naval and Military History of the Russo-Japanese War of 1904–05. For this work he was belatedly awarded the prestigious Chesney Gold Medal of the Royal United Services Institution in 1919. Significantly, during his time in the CID Historical Section, he 'clicked' with one of the Russian-language translators who worked for him, a young Captain Archibald Wavell of the Black Watch, a friendship which was to last for forty years.¹⁵ Incidentally, Field Marshal Earl Wavell was so

struck by *The Defence of Duffer's Drift* that, in 1950, he arranged for a new edition to be sent out to his regiment in Germany, The Black Watch, for the educational benefit of young officers.¹⁶

Notwithstanding his official duties in the CID, Swinton found the time to take part in an extraordinary event in July 1911, namely the British-German motor tour instigated by Prince Henry of Prussia. The drivers involved were car-owning members of the Royal Automobile Club in London and of the Imperial Motor Club in Berlin. Although designed as a 'friendly reliability trial' and not a race as such, it became a highly competitive one despite the presence of official 'observers' to act as umpires and to ensure fair play. Each British car had a German naval or military officer accompanying the driver, and likewise each German car had a British officer present – Swinton was one of these. Arthur Conan Doyle was one of the British drivers who undertook the 1,516-mile course, starting in Bad Homburg in Germany, a sea voyage from Bremerhaven to Southampton, and finishing in London via a long loop up to Edinburgh and back.¹⁷ As Swinton reflected in his memoirs, if 'initiated in an attempt to promote an entente between Germany and this country ... [the tour] failed of its object. Close association for about three weeks did not increase our liking for the Germans or theirs for ours'.¹⁸

In summary, by 1914, it is fair to conclude that Swinton had become an ardent advocate of the adoption of new technology in war. His study of the Russo-Japanese War in particular had prompted an understanding of the devastating power of the machine gun in modern conflict. He also had taken a strong interest in motor transport and in aircraft, the development of which was to be accelerated by the demands of the coming war.¹⁹ Furthermore, he had become well known as an accomplished military author, able to explore and explain the implications of modern technology to a wide audience in an engaging and visionary way.

SWINTON'S AND CHURCHILL'S EARLY ADVOCACY WITH REGARD TO THE TANK, 1914–1915

ON the outbreak of the First World War in August 1914, Swinton was appointed in the rank of temporary lieutenant colonel as Deputy Director of Railways of the British Expeditionary Force (BEF) in France and Belgium. He was to serve in this role, however, for only a month. Lord Kitchener, Secretary of State for War, concerned about inaccurate reporting of the fighting by the British press, and knowing of Swinton's literary aptitude, appointed him as an official war correspondent of the BEF. With only two officers to assist him, Swinton – under the penname of 'Eyewitness' – proceeded to write 103 articles for British newspapers about the war on the Western Front up to July 1915. Given pretty much a free rein to visit the frontlines, he

13 Ibid., p. 148. Swinton's memoir here, however, contains two inaccuracies: first, he confuses the two Codys, who were unrelated, as Buffalo Bill, the circus showman, had nothing to do with military kites; secondly, he gives the publication date of 'The Kite' as 1907 rather than 1906. The confusion probably resulted from the fact that 'The Joint in the Harness' was published by *Blackwood's Magazine* in 1907. Swinton's pen-name 'Ole Luk-Oie' was taken from Hans Christian Andersen's *Dream-God*.

14 Swinton, *Over My Shoulder*, p. 146.

15 Ibid., pp. 148–149. Interestingly, Wavell's biographer noted 'like Wavell a man of considerable literary talents, Swinton approved of his speed and accuracy and commended his style' – Victoria Schofield, *Wavell: Soldier & Statesman* (London: John Murray, 2006), p. 39.

16 Swinton, *Over My Shoulder*, p. 145.

17 For details of the 'Prince Henry Tour' of 1911, see https://www.arthurconan-doyle.com/index.php/The_Prince_Henry_Tour#Route

18 Swinton, *Over My Shoulder*, p. 152.

19 Significantly, following the First World War and his retirement from the Army in 1919, Swinton became closely involved in both the civilian aviation and motor industries.

observed with mounting concern the emergence of a stalemate posed by entrenchment, barbed wire and the machine gun. He applied his mind to overcoming this challenge in a number of ways, both directly and indirectly.

As described in his memoir *Eyewitness*, and highlighted in the memoir of Swinton published in *The Royal Engineers Journal*, was his pioneering work in psychological operations. In the words of his obituarist, 'As early as October, 1914, he had 25,000 copies of a leaflet' he had written 'dropped over the German front-line troops in France and Flanders'. Yet, 'the military authorities in France lacked the vision to see the value of this psychological weapon, Swinton's action was not approved, and he was not permitted to continue it'.²⁰ On 20 October 1914, Swinton discussed the idea of armoured tractors being employed to destroy enemy wire and machine gun emplacements with Colonel Maurice Hankey, his erstwhile chief at the CID and now secretary of the War Council. Although Hankey circulated a paper on 28 December 1914 based on Swinton's proposals, nothing emerged substantively until Winston Churchill, First Lord of the Admiralty, read it and became closely involved in the development of the tank.²¹

As a former soldier, Churchill retained a keen interest in land warfare as well as in naval matters. With an active, enquiring mind, he was keen to address how to break the deadlock on the Western Front. Historically, the controversy surrounding his failed strategic solution, the Gallipoli operation to force the Dardanelles, has masked his more positive technical input to the war effort in relation to the tank. As Churchill noted in his account of the First World War, *World Crisis*:

*The strongest army was arrested in its advance by the machine gun. On getting into certain positions necessary for offensive action, ... soldiers were cut down by streams of bullets. It was no use endeavouring to remedy this evil ... by squandering the lives and valour of endless masses of men. The mechanical danger must be overcome by a mechanical remedy.*²²

The quest to find a suitable machine able to address this problem had captured Churchill's imagination. Having read Hankey's paper, on 5 January 1915, he wrote to Herbert Asquith, the prime minister, stressing:

I entirely agree with Colonel Hankey's remarks on the subject of special mechanical devices for taking trenches. It is extraordinary that the Army in the Field and the War Office should have allowed nearly three months of trench warfare to progress without addressing their minds to its special problems. ... [Adoption of] the caterpillar system would enable trenches to be crossed quite easily, and the weight of the machine

*would destroy all wire entanglements. Forty or fifty of these engines prepared secretly and brought into position at nightfall could advance quite certainly into the enemy's trenches, smashing away all the obstructions and sweeping the trenches with their machine-gun fire and with grenades thrown out of the top.*²³

In turn, Asquith laid this letter before Lord Kitchener, urging him 'to prosecute research into all these matters'. According to Churchill, the Secretary of War was 'entirely favourable', who then proceeded to remit the subject to the Department of the Master General of the Ordnance.²⁴

In parallel, on 20 February 1915 Churchill established the Landships Committee under the chairmanship of Eustace Tennyson-d'Eyncourt, the Director of Naval Construction, which worked at a high pace to address the requirement. By late March 1915, Churchill had already ordered the first prototypes of trench-crossing machines, taking 'personal responsibility for the expenditure of the public money involved, about £70,000'. It was a bold step for a minister to take, for as he recorded later:

*I did not invite the Board of Admiralty to share this responsibility with me. I did not inform the War Office, for I knew they would raise objections to my interference in the sphere, and I knew by this time that the Department of the Master General of the Ordnance was not very receptive to such ideas. Neither did I inform the Treasury.*²⁵

Churchill's scepticism of the War Office was well-founded. Although, as we have seen, he had gained the support of the prime minister and nominally that of Kitchener, the War Office remained lukewarm, casting around for ideas, as evidenced by the following minute of 1 March 1915:

*Can you suggest the name of any person competent to design a land cruiser, not too heavy, that will cross any ordinary country and negotiate the usual fences? I do not know myself know of any, but perhaps the President of the Institution of Civil Engineers could advise.*²⁶

One can imagine that this rather embarrassing plea was penned by a rather hapless Sapper staff officer. Quite apart from the odd remark relating to 'the usual fences', sadly history does not record whether the president of that august institution occupying One Great George Street, London, was ever consulted.

Meanwhile, Swinton, quite unaware of Churchill's involvement at this stage, had also attempted to engage the War Office with his ideas for a caterpillar machine gun destroyer. On 4 January 1915, he called on Major General Scott-Moncrieff, the Director of Fortifications and Works, and by appointment, the senior serving officer of the RE at the time. Although the general was 'sympathetic', as he understood that German defences were getting stronger by the day, he

20 Swinton, *Eyewitness*, pp. 68–69; Memoir, 'Major-General Sir Ernest Swinton KBE CB DSO', *The Royal Engineers Journal*, vol. LXV no. 2, June 1951, p. 219.

21 For details of what was known as Hankey's 'Boxing Day Memo' (the day of its typing up, although it was dated 28 December 1914), see Stephen Roskill, *Hankey: Man of Secrets*, vol. I, 1877–1918 (London: Collins, 1970), pp. 147–150.

22 Winston S Churchill, *The World Crisis 1915* (London: Thornton Butterworth, 1923), p. 22.

23 Ibid., p. 74.

24 Ibid., p. 75.

25 Ibid., p. 78.

26 Ibid., p. 76.

pointed out to Swinton that ‘the policy of the War Office was not to originate, or make suggestions to the Army in the Field, but only to investigate what was specifically asked for by GHQ’. Moreover, although Swinton had come from the Western Front, he had no official backing. Yet Swinton felt that he had not entirely wasted his time in London. During his visit he had met another Sapper officer, Colonel Louis Jackson, a staff officer who was responsible for trench warfare, who promised ‘to deal with’ the matter.²⁷ Unfortunately, nothing of consequence resulted.

For the next six months Swinton continued with his work as ‘Eyewitness’ in France and Flanders. Of the British offensive at Neuve Chapelle (10–13 March 1915), which had achieved some early success but ultimately failed to make any significant gains, Swinton later reflected that the battle had ‘definitely established the reign of the machine gun in combination with wire in defence’.²⁸ Likewise, the subsequent British attempts to penetrate the German line at Aubers Ridge and Festubert (9 and 15–25 May 1915 respectively) had miscarried badly with disproportionate losses.²⁹ Frustrated by the lack of progress in finding a remedy, Swinton might have been excused for abandoning his ideas concerning a mobile armoured machine gun destroyer. By chance, however, he learned from a liaison officer between the Director of Military Operations at the War Office and the General Staff in France that the Admiralty was now involved in conducting trials along the lines he was advocating. ‘Though astounded’, he admitted, he ‘was intensely relieved’. Informed by his observations of trench warfare and invigorated by the fact that others were also seeking a solution, Swinton wrote a detailed memorandum titled ‘The Necessity for Machine Gun Destroyers’ for submission to the Commander-in-Chief of the BEF, Field Marshal Sir John French.

Swinton’s memorandum of 5 June 1915 is a seminal document in that it described not only the operational requirement to be met, but also detailed the principles of employment and technical specifications of the new machines. He advised that these should be ‘petrol tractors on the caterpillar principle, of a type which can travel up to 4 miles an hour on the flat, can cross a ditch up to 4 feet in width without climbing, can climb in and out of a broader cavity and can scramble over a breastwork’. Furthermore, they should ‘be armoured with hardened steel plate ... and armed with – say – two Maxims and a Maxim 2-pounder gun’. Crucially, Swinton suggested that the machines ‘should be employed as a surprise in an assault on the German position to be carried out on a large scale’, and hence that ‘there should be no preliminary efforts made with a few machines, the result of which would give the scheme away’.³⁰ In so doing, he had initiated the first concept for a tank, but not yet a practical design for one. On 15 June 1915, Swinton followed up this proposal with further

details of technical requirements, including speed, steering, climbing and bridging capabilities. At GHQ, Swinton’s submission was passed by the Experiments Committee (indicating, incidentally, that the BEF was open to new ideas). On 22 June 1915, Field Marshal French forwarded Swinton’s memorandum to the War Office under a covering letter which stated that there appeared to be ‘considerable tactical value in the proposal’ and, ‘should it be considered advisable’, offered to send Swinton to England ‘to give personal explanations, in order that a closer investigation of the matter can take place.’ French also noted that ‘some experiments in these machines have already been conducted by the Admiralty, with whom it might be advisable to consult’.³¹

As highlighted by Carl von Clausewitz, chance can intervene beneficially in war – as can misfortune negatively.³² The former helped Swinton’s cause considerably when he was tasked to accompany Mr Asquith (whom he knew from pre-war days on account to his work in the CID) and Lord Kitchener during their tour of the Western Front on 6–7 July 1915. Although their discussions were not recorded, it is highly likely that the idea of a machine gun destroyer came up in conversation. In any case, Swinton had already sensed that his time as ‘Eyewitness’ was soon coming to an end. Yet the cessation of his activities as an official war correspondent ‘came suddenly on 18 July’, when he was ordered home by none other than the prime minister. On arrival in London he learned from Hankey that he been recalled to deputize for him as secretary of the Dardanelles Committee, while he himself paid a visit to the theatre of operations. A further reason for Swinton’s return home was to give him ‘the opportunity of pressing the machine gun destroyer from a central position, with some weight’. Unsurprisingly, Swinton’s ‘spirits soared’. His new appointment placed him back at the heart of the government machine; he soon established that his official position held an “‘Open Sesame” – a key to every door’, of which he did not hesitate to take full advantage.³³

Swinton wasted no time in establishing what the Admiralty was up to. Accordingly, on 30 July 1915 he called on d’Eyncourt, who confirmed that a ‘fresh design for a landship was being prepared in accordance with a specification recently received from the War Office’.³⁴ The chairman of the Landships Committee was unaware, however, that this operational requirement had emanated from Swinton. D’Eyncourt then referred him to the secretary of the Committee, Lieutenant Albert Stern RNVR of the Royal Naval Air Service, a banker by profession, who had gained an interest in armoured cars. As one expert writer on the early development of the tank has remarked, Stern was ‘a strong character who was not afraid to make responsible decisions, [and] had little time for military protocol’. Great credit must be attributed to Stern, for it was he who gripped

27 Swinton, *Eyewitness*, p. 100.

28 *Ibid.*, p. 108.

29 For a concise description of these and other battles fought in France and Flanders, see Major General (Retd) Mungo Melvin (ed.), *The First World War Battlefield Guide*, vol. 1, *The Western Front*, 2nd. ed., (Andover: Army Headquarters, 2015).

30 Swinton, *Eyewitness*, p. 131.

31 *Ibid.*, pp. 148–149.

32 Carl von Clausewitz, *On War*, ed. & trans. Michael Howard and Peter Paret (Princeton, NJ: Princeton University Press, 1984), p. 85: ‘No other human activity is so continuously or universally bound up with chance. And through the element of chance, guesswork and luck come to play a great part in war’.

33 Swinton, *Eyewitness*, pp. 155–159.

34 *Ibid.*, p. 161.

26 - 8 - 15

Prime Minister,

Armoured motor cars propelled on the 'Caterpillar' principle, i.e. for climbing over obstacles, are now in course of provision for the army.

The question has been dealt with in the past by the Admiralty, the War Office and more recently by the Munitions Department. It is now handled by the two last.

After consultation with members of the departments concerned I find that matters would probably be assisted if a small interdepartmental Conference were convened here to consider future action.

If you approve will you please initial this and return it, and I will carry on.

H.H.A. H. Swinton

NOTE WRITTEN BY COLONEL SWINTON ON 26TH AUGUST, 1915, REQUESTING THE AUTHORITY OF THE PRIME MINISTER TO CALL AN INTER-DEPARTMENTAL CONFERENCE FOR THE CO-ORDINATION OF ACTIVITIES IN REGARD TO WHAT WERE KNOWN AS "LANDSHIPS" OR "LAND CRUISERS."

THIS IS INITIALED BY MR. ASQUITH

Figure 3. Swinton's note to the Prime Minister of 26 August 1915

and effectively ran the project, treading hard on many toes in the process, and took the critical decision to engage William Tritton of William Foster & Co. Ltd., a Lincoln-based firm of agricultural engineers. Together with Lieutenant Walter Wilson RN, an outstanding mechanical engineer, Tritton designed and manufactured the first working prototype of a tank.³⁵

Meanwhile, Swinton remained active in advancing his ideas. Although he was 'content to leave matters of mechanical design in the hands of experts', who were working on what he regarded as the right lines, he remained concerned about the overall responsibility for, and direction of, the project.³⁶ On 26 August 1915, he sent a short hand-written note to the prime minister requesting his authority to call an inter-departmental conference in order to address the matter. In a remarkably elegant, simple and unbureaucratic approach, Swinton concluded this missive with 'If you approve will you please initial this and return it, and I will carry on'. The prime minister penned H.H.A., and Swinton duly did.³⁷

While Swinton chaired his first interdepartmental conference on 28 August 1915, much was also happening on the technical front. Tritton's and Wilson's first machine appeared for a demonstration at Lincoln on 19 September 1915, which members of the Landships Committee and Swinton attended. Dubbed 'Little Willie', unfortunately

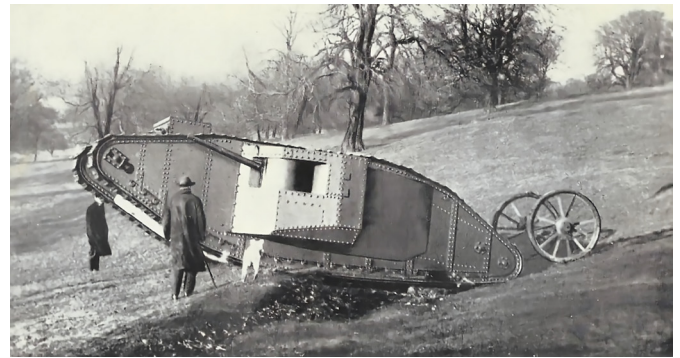


Figure 4. Photograph Of The Original Tank – Centipede, 'Mother', 'Big Willie', afterwards known as the Mark I Tank

the very first tank failed to perform satisfactorily, resulting chiefly from problems with its tracks. To be fair, it had not been designed to meet the latest War Office specifications, which required that the new machine be able to climb a 4 ft 6 in (1.37 m) parapet and cross an 8 ft (2.5 m) ditch.³⁸

Undeterred, Tritton and Wilson soon came up with an irregular rhomboidal design that incorporated tracks that wrapped around the tank frame. Lacking a turret, its two 6-pounder naval guns were mounted one on each side of the tank in sponsons, with additional machine guns adding to its firepower. This new model of a tank, the experimental basis of the 'Mk I' machines that subsequently took the field in France, was named HMS *Centipede*, and later 'Mother' or 'Big Willie'. Ready for trials and demonstration by the end of January 1916, its development had taken just over five months, a remarkable achievement.

Before the new prototype could be put to the test, however, important steps had been taken in London. At the inter-departmental meeting of 24 December 1915 (no early break for Christmas during wartime), it was recommended that an initial order for 50 as yet unseen machines be made with the Ministry of Munitions, and that the War Office should raise a force of 75 officers and 750 other ranks 'if and when it demanded the machines'. Swinton was also mandated for reasons of security to find a suitably non-descriptive name for the new machine to take the place of 'landship' and 'land cruiser'. That evening, in discussion with his colleague, Lieutenant Colonel Dally Jones, he came up with the 'tank', and incorporated this term for the first time in the draft report of the conference. On reading this document, Kitchener minuted on 29 December 1915:

*As soon as a machine can be produced, the first thing the Secretary of State for War considers necessary would be to test its practical utility under field conditions: without such a test, we may be wasting material and men uselessly.*³⁹

1916: THE FIRST YEAR OF THE TANKS

KITCHENER's direction regarding the testing of the machine, the future tank, came to fruition within a month. On 20

35 David Fletcher, *Landships and War Cars* (Bovington: The Tank Museum, 2021), p. 20.

36 Swinton, *Eyewitness*, p. 161.

37 Ibid., p. 169.

38 Fletcher, pp. 21–22; Swinton, *Eyewitness*, p. 171.

39 Swinton, *Eyewitness*, p. 187 (with a facsimile of Kitchener's minute on the facing page).

January 1916, 'Mother' was declared ready by its manufacturer, having conducted its preliminary driving and firing trials satisfactorily. It was then taken on 28–29 January by train under the greatest precautions of secrecy to Lord Salisbury's estate at Hatfield Park for a demonstration away from prying eyes. With his colleague Thomas Hetherington,⁴⁰ Swinton had designed a 'steeplechase course', with 'jumps' of the same dimensions as the latest type of German defences in France. Various volunteer units worked on the test track's construction, including Sappers who blew a series of craters to simulate shell holes in a mock No-Man's Land. As Swinton described it, 'Mother' 'took a preliminary canter over the course' on 29 January. But its big moment came on 2 February 1916, the great day of official trial, attended by Lord Kitchener, Mr Lloyd George (Minister of Munitions), General Sir William Robertson (Chief of the Imperial General Staff) and others, including representatives from GHQ in France.

The formal demonstration of 'Mother' was a conspicuous success: the machine crossed a 9ft (2.7m) trench easily and impressed, if not excited, all the onlookers with the notable exception of Kitchener, who dismissed the invention as a 'pretty mechanical toy'. Swinton was intensely disappointed by this negative reaction, as Lord 'K' was the one man he had most wished to convince. Yet Kitchener, to his credit, did not veto the project and was wise not to. First, the representatives of GHQ were convinced enough to recommend that the Commander-in-Chief of the BEF (now General Sir Douglas Haig) request a number of machines. Secondly, King George V became involved, asking to see 'Mother' in motion. A private trial for the monarch was arranged at Hatfield on 8 February 1916. As Swinton recorded, 'the King followed every manoeuvre with great attention, expressed his satisfaction and congratulated the driver'.⁴¹

While 'Mother' with its royal seal of approval was sent back to Lincoln, the War Office awaited news from GHQ in France regarding their requirements for the new tank. It soon came: on 11 February 1916, an order for 40 machines was received, which Swinton advised should be raised to 100. Subsequently, the order was increased to 150 in April 1916. Manufacture was shared between Fosters at Lincoln and the Metropolitan Carriage, Wagon and Finance Co. Ltd. of Birmingham. The resultant tanks, based on 'Mother' were of two types: those armed with 6-pounder guns were styled by Swinton as 'male' machines, while those with machine guns were termed 'females'.

Despite the successful demonstrations of 'Mother', Swinton did not rest in his quest to ensure that the ensuing production machines would be used effectively in battle. Immediately following the Hatfield trials he compiled a set of 'Notes on the Employment of "Tanks"'. This comprehensive, groundbreaking 45-paragraph document, which when reproduced in *Eyewitness* spanned over 16 close-typed pages, was designed

'as a basis for early discussion of the possibilities and requirements of an entirely new weapon, so that by the time that it is ready for employment everything possible may have been done to ensure its success'.⁴² Specifically, Swinton's memorandum, which today would be described as an amalgam of a concept of employment and a tactical doctrine note, first described the tank and its limitations, including its vulnerability to artillery fire. It then detailed the assembly, timing and advance of the tanks in an offensive, highlighting the imperative of synchronizing of the tanks with an infantry assault, and hence the 'coordinated action of all arms'. In this regard, Swinton stressed:

*The Tanks cannot win battles by themselves. They are purely auxiliary to the infantry, and are intended to sweep away the obstructions, which have hitherto stopped the advance of our infantry beyond the German first line, and cannot with certainty be disposed of by shellfire. It follows, therefore, that the progress of the attack, which depends on the advance of the infantry, depends on the activity and preservation in action of the tanks.*⁴³

Significantly, Swinton recognized not only the importance of this mutual support between armour and infantry, but also the requirement for supporting artillery and aircraft dropping bombs to reduce the activity of the enemy's guns, the main threat to the tank. As a result, his thinking was well within the realm of combined arms and joint action in today's terminology. Interestingly, one military historian has sought to downplay Swinton's contribution to military thought here as 'minor tactical rather than grand tactical (in modern military parlance) "operational" ... [for he] failed to indicate how ... a breakthrough could be exploited'.⁴⁴ That, however, is to miss the point. As his 'Notes' made explicitly clear, Swinton never made any suggestion that the employment of the tank would in itself be decisive. The operational use of armour in combined arms groupings was first to emerge in the German Blitzkrieg campaigns in the early years of the Second World War.

When Swinton was writing his memorandum, important changes were taking place in the overall direction and organization of the tank effort. Stern was appointed chairman of the Tank Supply Committee, which was subordinated to the Ministry of Munitions. In its charter, signed by Lloyd George, the Committee was authorized to arrange the manufacture of the machines, 'placing orders with contractors as necessary and corresponding directly with any government department concerned, also to incur any necessary expenditure in connection with engagement and remuneration of inspecting or other staff, experimental work, travelling and other incidental expenses'. Furthermore, the Committee was given 'the final decision in all matters connected with the manufacture and inspection of these machines'.⁴⁵ In this manner, the machinery for the production of tanks was set in motion in a simple and straightforward manner. The next task, which fell to Swinton personally, was to

40 Thomas Gerard Hetherington (1886–1951), who served successively in the Army, RN and the RAF, was another important pioneer of the tank and an original member of the Admiralty's Landships Committee. He provided the crew for 'Mother' from No. 20 Squadron, Royal Naval Armoured Car Division, and worked closely with Swinton.

41 Swinton, *Eyewitness*, p. 197.

42 Ibid. p. 198.

43 Ibid. p. 211.

44 Harris, p. 60.

45 Swinton, *Eyewitness*, p. 216.

create an organization to man and fight them.

Swinton's story as to how he raised and trained the first tank unit is as remarkable as his efforts, along with many others, it must be stressed, to initiate and develop the new weapon. When offered the appointment to command the 'Tank Detachment', he accepted, subject to the permission of the prime minister, making two requests, which were to prove crucial to the success of the fielding of the capability. First, he asked that he should be allowed a 'reasonably free hand' as his duties would call for considerable improvisation, and secondly, that he should be given 'sufficient temporary rank to help overcome the inertia' he was likely to meet. In the event, Swinton was promoted to Temporary Colonel on 19 March 1916. His next eight months 'back to soldiering' proved to be the 'most strenuous, stimulating, and trying period' he had ever experienced.⁴⁶ He would need to exercise every aspect of the freedom of thought and action he had insisted on, exploiting what we now term Mission Command to the full. Swinton's short tenure in command of the world's first tank unit revealed him at his very practical best.

The Tank Detachment was soon retitled the 'Heavy Section' of the Machine Gun Corps. Its first base was at Siberia Camp, Bisley, owing to the fact it was already the depot and central training school of the Motor Machine Gun Service, a wartime unit set up towards the end of 1914. As this organization was in the process of drawing down, its commanding officer, Lieutenant Colonel R W Bradley DSO with about 700 partially trained men were transferred directly into the new tank unit. Fortuitously, this contingent was of 'remarkably high class ... [and] of superior education, having motor or mechanical engineering experience'. Swinton organized the Heavy Section, a near two-battalion equivalent, into six companies lettered 'A' to 'F', to be equipped with 25 tanks apiece, each crewed by an officer and seven other ranks.⁴⁷ In addition, there was also a Headquarters and a Park Company.⁴⁸ The initial establishment amounted to 184 officers and 1,610 other ranks.

Appointing Bradley as his second-in-command to start the training of the new unit in Bisley, Swinton returned to London as he found it essential to be in close touch with the War Office, the Ministry of Munitions, the Tank Supply Committee and many other bodies. He also arranged for Stern and Wilson to be transferred to the Army, each given the rank of major in the Heavy Section. By this time, the ever-resourceful Stern had appropriated offices for the management of the Tank Supply Committee in the former Hotel Metropole in Whitehall. On vacating his former desk in the War Committee Secretariat, and having failed to secure one in the War Office, Swinton gratefully accepted an offer of a room from Stern. This arrangement brought the two main driving forces behind the introduction of the tank into service working closely together.

Meanwhile, a dedicated and secluded training area for the

Heavy Section had to be found. Thanks to the quick work of a resourceful Sapper military survey officer, Major Maurice Tandy, and equally due to the excellent support received from the Lands Branch of the War Office, a suitable thinly-populated location was identified and procured at Elveden, Suffolk. It offered sufficient space for a training area and accommodation and, crucially, heavy rail access via the construction of a new siding. The first production tanks were expected to arrive in mid June 1916. In the interim, three battalions of Pioneers of the Home Defence Force constructed a model battlefield under Swinton's direction, over one and a half miles in width, comprising 'breastworks, wire entanglements, abatis, shell-craters, communication trenches, dug-outs and machine gun emplacements'.⁴⁹ Once the tanks arrived, apart from training the crews by day and night, experimental work at Elveden involved trying out various methods of communication, including wire, radio and hand-signalling, and attempts to camouflage the new machines.

While the manufacture of the first 150 tanks proceeded, the summer of 1916 wore on with Swinton becoming increasingly aware of calls from France to employ the new weapon. The major Allied offensive at the Somme, launched on 1 July 1916, was still underway and making grindingly slow progress at very great cost. Unsurprisingly, Haig was keen to get the tank into action as soon as possible to augment renewed assaults on the German lines. Both Hankey and Swinton, however, had warned against any premature committal of the tanks so as to maintain surprise for as long as possible and to employ them in sufficient numbers to make a significant tactical impact. In mid April, when told by Swinton that 150 tanks would be provided by 31 July, the Commander-in-Chief of the BEF responded by stating that this date was too late, as '50 were urgently required for 1 June'.⁵⁰ Yet provision of even this limited number of machines was delayed for various reasons by another three months. As Haig recorded on 20 August 1916 following a visit by Swinton to GHQ, only two companies of tanks could be expected in France by 5 September.⁵¹ They would soon be employed.

By 6 September 1916, this small force of tanks had assembled at Yrench, near Abbeville, and a small training centre was also established there. While Swinton was ordered to remain in charge of the Heavy Section in the United Kingdom, command of the tank detachment in France was given to Lieutenant Colonel Bradley. The first tanks soon went into action on 15 September 1916 at the battle of Flers-Courcelette, the largest-scale operation of the BEF since 1 July. As Swinton had feared, it was more a dribble than a storm. The time for preparation was too short, not least to allow for the adequate training of infantry working together with the tanks for the very first time.⁵² Of the 49 Mk 1 tanks which were made ready, only 32 were able to go into

46 Ibid., p. 218.

47 In addition to the 150 tanks there were 11 motor cars, 27 motor cycles and 99 bicycles.

48 Presumably Swinton adopted the Sapper terminology of a 'Park Company' to the sub-unit which provided the necessary stores and supplies to the tank companies.

49 Swinton, *Eyewitness*, p. 244.

50 Gary Sheffield and John Bourne (eds.), *Douglas Haig War Diaries and Letters 1914-1918* (London: Weidenfeld & Nicolson, 2005), p. 184 - Diary Entry for Friday, 14 April 1916.

51 Ibid, p. 220 - Diary Entry for Sunday, 20 August 1916.

52 Miles, p. 244.



Figure 5. Tank D17 moving up the High Street at Flers, 15 September 1916

action, of which 14 either broke down or got stuck.⁵³ Yet the remainder provided valuable support to the attacking infantry. The most spectacular success of the new weapon was in facilitating the capture of the village of Flers spearheaded by Tank D17, 'Dinnaken', an action much publicized (and exaggerated) in the British press: 'A tank is walking up the High Street of Flers with the British Army cheering behind it'.⁵⁴ Although the offensive of 15 September had only made limited gains, Haig noted 'certainly some of the tanks have done marvels and have enabled our attack to progress at a surprisingly fast pace'.⁵⁵

As a result of the tanks' first action, Haig was very quick to realize their future potential. On 17 September he discussed the matter with Swinton and, having congratulated him on the Heavy Section's recent success, went on to determine a future tank policy. Haig requested that the remainder of the 150 tanks be sent out as soon as possible, and desired that their armour be improved.⁵⁶ His Chief of the General Staff, Lieutenant General Launcelot Kiggell, was equally enthusiastic, writing to Robertson in London: 'Consider that the utility of the tanks has been proved'.⁵⁷ At a meeting in the War Office on 19–20 September 1916, it was agreed to complete the existing order, and to place a further order of a thousand tanks at Haig's demand.

After the war, both Churchill and Swinton were to criticise strongly the baptism of the tank in battle on 15 September 1916 as inadequate and premature. The former wrote scathingly:

*The immense advantage of novelty and surprise, was thus squandered while the number of the tanks was small, while their condition was experimental, and the crews almost untrained. This priceless conception, containing if used in its integrity, and on a sufficient scale, the certainty of the great and brilliant victory, was revealed to the Germans for the minor petty purpose of taking a few ruined villages.*⁵⁸

For Swinton, it appeared the 'decision to give away the secret which had been so carefully kept for months and to squander the opportunity of a surprise' was brought about by 'disappointment at the lack of decisive results and the losses of the first days of the Somme offensive, and a desire to encourage our somewhat disheartened troops'.⁵⁹ Nonetheless, it must be recorded that the German Army did not profit markedly from the disclosure of the tank on 15 September 1916 as it was so slow to adopt such a weapon in the form of its own design, the *Sturmpanzerwagen* [Assault Armoured Vehicle] A7V. Meanwhile, the British Army recognized the potential of the tank and set about to procure the new weapon at a large scale to provide sufficient mass.

Returning to the autumn of 1916, Swinton's involvement with the tank was soon coming to a close. During his last visit to GHQ that year, he was told that command of the Heavy Section in France would be held henceforth by 'an officer who had been for some time on the Western Front, and was familiar with the nature of the fighting and existing organization and methods etc'. On being consulted as to a suitable future commander, Swinton suggested a brother RE officer, Lieutenant Colonel Hugh Elles, who was then acting as an informal liaison officer between the Heavy Section and the BEF. In his view, not only was Elles a 'first class officer', but also, and most importantly, he was '*persona gratissima*

53 David Fletcher, 'Tanks in the First World War' in Mungo Melvin (ed.), *The First World War Battlefield Guide*, vol. 1, *The Western Front*, p. 201.

54 Liddell Hart, p. 74.

55 Sheffield and Bourne, p. 230 – Diary Entry for Friday, 15 September 1916.

56 Ibid., p. 231 – Diary Entry for Sunday, 17 September 1916.

57 Quoted by Harris, p. 67.

58 Churchill, pp. 89–90.

59 Swinton, *Eyewitness*, p. 294.

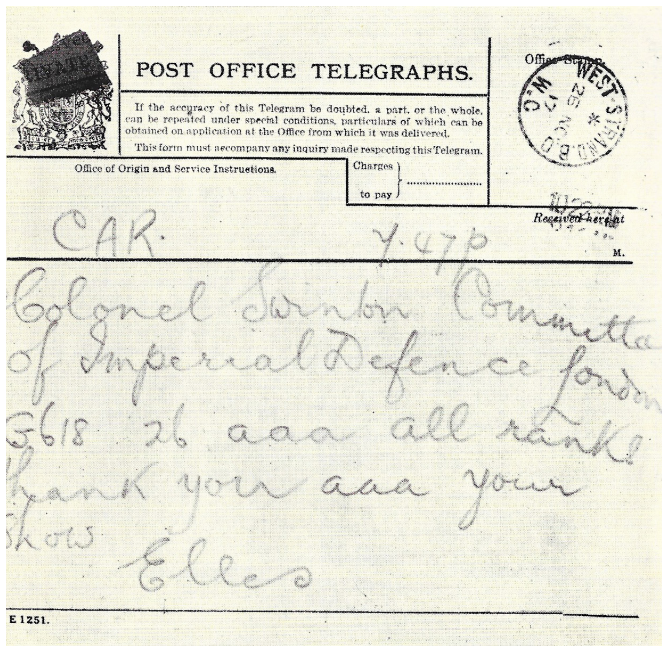


Figure 6. Telegram sent to Colonel Swinton after the Battle of Cambrai on 20 November 1917 by Brigadier-General H J Elles, Commanding the Tank Corps in that attack

at GHQ'.⁶⁰ Such were Elles's eminent qualifications, however, Swinton felt he would have been selected for the post in any case.

In early October 1916 Swinton heard from Hankey that he was due to leave the Heavy Section as he was required to resume his important duties in the War Cabinet Secretariat. On questioning the rationale for this recall, Swinton established that he was considered not the man to supervise the great expansion of the Heavy Section required to field the much larger force of tanks envisaged. One of Swinton's last acts was to initiate the move of the tank unit from Elveden in Suffolk to Bovington in Dorset, the future home of what became the Tank Corps, and, later, of the Royal Armoured Corps. On 9 November 1916, he handed over his responsibilities for the Heavy Section to Brigadier-General F Gore Anley, who had previously commanded an infantry brigade. Swinton was not to renew his association with the tanks until September 1918, when he was appointed a member of the Tank Board in London.

EPILOGUE: THE VINDICATION OF THE TANK IN 1917 AND 1918

ALTHOUGH Swinton was no longer involved with the tanks, their great value in offensive action for which he had predicted and pleaded for, was to be vindicated in two great battles, at Cambrai on 20 November 1917 and at Amiens on 8 August 1918. Prior to the former, on 28 July 1917 the Heavy Branch, Machine Gun Corps, became officially titled the Tank Corps. At Cambrai, on a 10km frontage, six divisions of assaulting British infantry were supported by nine tank battalions, including 378 'fighting' Mk IVs (a considerably improved design over the Mk I), personally led by Brigadier-General Elles in a frontline tank. Over 1,000 guns and 24 Royal Flying Corps squadrons supported the

attack, which at its highpoint achieved a penetration of eight kilometres, an unprecedented achievement for the BEF. Unfortunately, the celebratory church bells were rung at home prematurely – before the Germans proceeded to mount a skilfully mounted powerful counterattack that nullified the earlier British gains. Yet the tank had shown its potential in overcoming the stalemate of trench warfare in perhaps the first fully combined arms battle mounted by the BEF. When Swinton congratulated Elles for the startling success of the first large-scale tank action, he replied kindly by cabling: 'All ranks thank you. Your show'.⁶¹

At Amiens, 8 August 1918 turned out to be the 'Black Day of the German Army' on the Western Front, the start of the '100 Days' series of offensives leading up to the Armistice on 11 November 1918 and the end of the war. During the course of that year, the Tank Corps had received an improved heavy tank, the Mk V and its elongated version, the Mk V Star, together with the lighter Medium A, the Whippet. With near double the speed (8mph) over the derivatives of the original



Figure 7. Major General Sir Ernest Swinton KBE CB DSO

'Mother', the latter was designed for exploitation tasks as opposed to break-through operations. For the Amiens offensive, the BEF assembled no fewer than 604 tanks, including 324 fighting Mk Vs or Mk V Stars and 96 Whippets, with the remainder of the tanks carrying infantry or guns, or kept in mechanical reserve. This force represented the whole available strength of the Tank Corps at the time. Applied in mass, the tanks were again very well supported by artillery. Notably, squadrons of the RAF (founded on 1 April 1918) performed a variety of tasks including bombing German airfields, providing artillery co-operation and reconnaissance, giving direct support to advancing tanks, ground strafing and ammunition resupply. The ground attack, mounted mainly by the Australian and the Canadian Corps, achieved a penetration of 13km, breaking not only through a series of German defensive lines but also shattering German morale in the

⁶⁰ Ibid., p. 288.

⁶¹ Ibid., p. 313 (with a facsimile of Elles's telegram on the facing page).

process. Although tanks were never again employed in such numbers during the final months of the war, they nonetheless provided useful service in subsequent offensive operations.

Regarding the action at Amiens, Swinton left only one brief specific comment in his memoirs, noting that the tanks had been 'assigned a properly orchestrated part in the tactical plan'. More fundamentally, he quoted from a note of 2 October 1918 (by which time the Western Allies had mounted further successful attacks) sent by the Supreme Command of the German Army to the party leaders in the Reichstag in Berlin: '... there is, in all human probability, no longer any prospect of forcing the enemy to accept peace. Decisive for this conclusion are two factors: the tanks [and the arrival of US forces]'.⁶² In his observation of the battle of Amiens, Liddell Hart echoed this view: 'the massed tank assault which formed the spearhead not only exceeded that of Cambrai in scale, but far surpassed it in effect ... and thereby proved the supreme fulfilment of the tanks and the Tank Corps in the war'.⁶³

EVOKING THE 'SPIRIT OF SWINTON' TODAY

RECALLING Swinton today should not serve some abstract biographical exercise; rather, we should attempt to learn profitably from his actions and experience. He may not have been the inventor of the tank in terms of its mechanical design, and many made that claim, but Swinton deserves to be known as its 'father' conceptually and its principal champion. As Liddell Hart observed, the tank was the 'culmination of combined imaginative and technical efforts ... [and] a remarkable number of individual minds contributed to the product, in greater or lesser degree'.⁶⁴ The Royal Commission on Awards to Inventors, set up in 1919, felt likewise. While awards of £1000 were given to both Swinton and d'Eyncourt, Tritton and Wilson shared £15,000 between them.⁶⁵ One can argue whether this was a fair distribution of funds, but Swinton's name will forever be associated with the tank, and the RE should remain immensely proud of that fact. As stressed in the latest (2024) volume of the Corps History, 'Sappers should seek inspiration ... from individuals such as Major General Sir Ernest Swinton late RE, who played a pivotal role in the evolution of the tank and the inauguration of a new form of mechanized warfare'.⁶⁶

In his efforts to get the idea of what later became known as the tank accepted and in bringing the new weapon into service, Swinton had to overcome a multitude of challenges notwithstanding the privileged access he enjoyed with both the prime minister and the commander-in-chief of the BEF in 1915–1916. But certain parts of the Army were obstructive. It is instructive to quote Swinton's observations on the matter at some length, for his words have an enduring quality:

*It is always easier to take the line of least resistance, which means the saying of 'no' rather than 'yes' to a new proposal, especially when the pressure of current events is so great as to prejudice calm investigation and consideration. And the very nature of the profession of arms, with its long periods of make-believe training, based on the experience of a more or less remote past and unrelieved by the continual application of corrective factors, derived from the progress of knowledge, leads to mental crystallization and blind adherence to tradition. There is, moreover, an inevitable tendency in every profession towards a belief in the infallibility of rank, and seniority, which, again, amounts to reliance on possibly more or less stale experience. One manifestation of this in the Fighting Services is a deeply rooted bias against novel ideas, especially when the emanate from below. To some military minds, indeed, suggestions from juniors smack of presumption, if not of insubordination. To others, they are – if encouraged – potential threats to their own positions.*⁶⁷

While Swinton footnoted the above passage by stating that there was 'great progress in all directions between 1902 and 1914' within the British Army, there would appear little doubt that he felt that the tank could, and should, have been introduced into service earlier, and in far larger numbers, than on 15 September 1916, and that it took far too long for its first mass employment to be attempted at Cambrai on 20 November 1917. Yet it is perhaps the nature of new inventions to have a long and complicated gestation, and particularly so in times of peace and of financial constraints. As in the case of the tank, however, war can provide that vital catalyst of invention and associated accelerant to progress.

For all Swinton's crucial ideas and input, the technical development and introduction of the tank into service during the period 1914–1916 was very much a collective enterprise resting on the close cooperation achieved between government, the military and industry. Fittingly, Swinton acknowledged this fact in the dedications contained in his work *Eyewitness*, commending the infantry, 'who bore the heaviest burden', the 'new arm', which 'first took the field as the Heavy Section, Machine Gun Corps', and, as importantly, 'the workers in shop and factory', who 'by their skill and labour forged the new weapon and kept its secret'. It remains to be seen whether our country today could emulate such an innovation so expeditiously in meeting the demands of a future existential conflict.

In the meantime, what should we learn from the likes of Swinton, the Sapper? The present author would argue that our Corps needs men and women with similar character and conviction to make a substantive difference within their profession of arms, with sufficient foresight and fearlessness to argue for change, applying their skills, experience and, above all, imagination in the pursuit of innovation. Whether corporals, captains or colonels, such individuals need not only dedication and perseverance, but also active support from the chain of command. Novel ideas should have no rank

⁶² Ibid., p. 314.

⁶³ Liddell Hart, p. 177.

⁶⁴ Ibid, p. 17.

⁶⁵ Taylor Downing, *Secret Warriors, Key Scientists, Code Breakers and Propagandists of the Great War* (London: Little, Brown, 2014), pp. 209–210.

⁶⁶ Major General Mungo Melvin (ed.), *The History of the Corps of Royal Engineers*, vol. XIII, *The Years of Intervention and the Return to Contingency Operations 2000–2019* (Chatham: Institution of Royal Engineers, 2024), pp. 650–651.

⁶⁷ Swinton, *Eyewitness*, pp. 96–97.

associated with them. The RE have always been blessed by a scattering of ‘mavericks’ or ‘non-conformists’ serving in every generation, and the Corps should not shy away from them now. It should look to identify and advance unconventional Sappers – who may prove uncongenial to some – acknowledging their potential benefit may as yet remain undetected or immature. Such a policy, of course, would generate some jeopardy in ‘human resources’ terms – but it is a risk worth taking for the greater, long-term, good.

Furthermore, many Sappers regardless of rank at some time or another have had the urge to ‘try something different’; we should tap their enthusiasm and resourcefulness accordingly for collective benefit. While it appears increasingly clear that Artificial Intelligence can perform many routine functions of administration, and of battlefield intelligence, management and even combat, there is still the place for that vital spark of human ingenuity and intervention to bring about transformative changes to equipment, tactical and technical methods, and organizations. The current conflict in Ukraine has demonstrated this point in many ways, not least in the highly contested realm of drone and counter-drone warfare. Hence

we should not be afraid to profit from the experience of others – the very essence of vicarious learning.⁶⁸ Let the ‘Spirit of Swinton’ inform and inspire a future band of enterprising military engineers ready and willing to address the challenges of modern war. Your Corps, Army and nation needs them urgently for it is coming ever closer to our shores!

Finally, it is remiss of the RE not to exhibit a portrait of Major General Ernest Swinton in our Headquarters Mess at Chatham. He richly warrants such recognition – and for that matter, the portrait of Lieutenant General Sir Hugh Elles, the other great Sapper tankman of the First World War, should be returned to view.

The author would like to express his thanks to Mr Simon Blundell, librarian of the Reform Club, London, for his assistance in securing a number of references.

⁶⁸ Tom Ball, ‘Why Ukraine’s newest weapons offer a glimpse of the future of war’, *The Times*, 9 July 2025. The arrival of semi-autonomous drones that harness AI demonstrates the point that new technologies will always have the ability to shape the battlefield.



Figure 8. Major General Sir Ernest Swinton KBE CB DSO as a Professor of Military History at Oxford in later life (Portrait by Dorothy Wilder)