

Andrew McNaughton and his Contribution to the Artillery

by

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A professor at McGill University once stated that, "If war had not broken out in 1914, Andy McNaughton, instead of becoming a general, would have become the most eminent engineer in Canada."¹ McNaughton's engineering background later served as a key role in his successes as an artillery officer during the first and second world war. This paper will outline the tremendous contributions McNaughton made to the world of the artillery.

Andrew McNaughton was born in February 1887 in Moosomin, Saskatchewan.² He attended McGill University and graduated in 1910 with a Bachelor of Science with honors in electrical engineering, then completed his Masters of Science in 1912.³ McNaughton remained as a lecturer at McGill in electrical subjects. He was asked to help with high-voltage research in which he obtained, for testing, the first oscillograph of its type to be sent to Canada. He was the pioneer and there was no person he could call on for advice. The skill he acquired in using it was of inestimable value when he later encouraged its use for artillery sound ranging.⁴

In 1909, McNaughton joined the Canadian militia and first met his future wife, Mabel Weir, at a dinner when he was twenty-two and she was fifteen. They did not meet again until three years later, and became engaged the following year in 1913.⁵ They had still not been married on 4 August, 1914, when Britain declared

¹ John Swettenham, *McNaughton Vol 1* (Toronto: The Ryerson Press, 1968), 15.

² *Andrew McNaughton*. http://en.wikipedia.org/wiki/Andrew_McNaughton.

³ Swettenham, *McNaughton Vol 1*, 19.

⁴ *Ibid*.

⁵ *Ibid*, 27-28.

war on Germany, and on 6 August McNaughton's battery was placed on active service.⁶ While training in Valcartier with his battery, McNaughton got word that Mabel was close by. He went to visit her and they decided they did not want to wait any longer, so a priest married them over the phone on 17 September 1914.⁷ Less than a month later, on 3 October 1914, ships left Canada and arrived in Britain on the 14th.⁸ In the coming few years, McNaughton would prove to be an indispensable asset to the artillery and to many of Canada's success during the war.

“...Many of our battery officers and higher commanders were inexperienced. Our artillery intelligence was in its infancy; the methods of co-operation between aircraft and the military command were rudimentary, the type of shell was in many instances unsuitable for the task to be performed.”⁹ These were the conditions that Canada was facing entering the First World War. Everything was seemingly unprepared, and no one knew what to expect, let alone knowing what was expected of them. For many, including McNaughton, these were learning lessons. The trench mortars had a maximum range of about four hundred yards but they were rudimentary. McNaughton said, “You couldn't put these in behind the troops and fire them because you didn't know whether one of the things was going to fall short or not.”¹⁰ This was an issue that needed to be resolved, there had to be better ways to fire without fear of endangering friendly troops. Major-General Morrison, senior

⁶ Swettenham, *McNaughton Vol 1*, 30.

⁷ Ibid, 32.

⁸ Ibid, 34.

⁹ Ibid, 61.

¹⁰ Swettenham, *McNaughton Vol 1*, 66.

gunner in 1916 said that he knew that McNaughton was closely in touch with all the possibilities of improvements of the accuracy of fire and the importance of this fire over the heads of the troops.¹¹ It is believed that this was very helpful in McNaughton's appointment to Counter-Battery Staff Officer in February 1917.¹² In this new position, McNaughton noted that there were two main considerations in a counter-battery operation, whatever its nature: the collecting and compiling of accurate artillery intelligence and making arrangements for it to reach the proper quarters in time to be effective; and the arranging of the right amount of fire on enemy targets.¹³ The success of counter batter operations depended upon obtaining accurate information about not only the exact location of enemy batteries, but the number of their emplacements and how these were protected, the caliber of the guns, and their potential targets or arcs of fire.¹⁴ Aerial reconnaissance was particularly useful in detecting new battery positions, fresh telltale tracks, and the results of shellfire upon enemy targets. Such information would be conveyed either by a written message dropped at Corps Heavy Artillery Headquarters, or by verbal report telephoned when the aircraft landed. Aerial photographs were also extremely useful although were dependent upon favorable weather conditions.¹⁵

¹¹ Ibid, 67.

¹² *Canada and the First World War*. Canadian War Museum.
<http://www.warmuseum.ca/cwm/exhibitions/guerre/agi-mcnaughton-e.aspx>

¹³ Swettenham, *McNaughton Vol 1*, 78-79.

¹⁴ G.W.L. Nicholson, *The Gunners of Canada: The History of the Royal Regiment of Canadian Artillery Vol 1* (Toronto: McClelland and Stewart Limited, 1967), 312.

¹⁵ Nicholson, *Gunners of Canada*, 313.

Great strides forward had been taken in aerial reconnaissance, flash spotting and sound ranging and by using these methods the location of the enemy's guns could be determined with great exactness. McNaughton's interest was immediately aroused.¹⁶ He wanted to contribute more and did so by bringing an oscillograph into the reserve line to record the actual waves coming from the guns.¹⁷ This was a breakthrough in many ways for determining enemy gun positions. Another moment when McNaughton's education proved imperative was when they were facing battle in and around No Man's Land. This was one of the first times that crests proved to be a new obstacle for the artillery to effectively be able to engage the enemy. McNaughton however had studied crest clearance problems and knew that if the guns were going to support a line of infantry down the steep reverse slope, the guns would have to be pulled back a couple of thousand yards in order for the shells to have a steeper angle of descent.¹⁸ This scientific and mathematical knowledge of artillery is still in use today, and is what helped the Canadians win in controlling No Man's Land. Another aspect of the artillery that McNaughton was able to help create and strongly influence was airburst ranging. During the summer of 1918 McNaughton experimented with airburst ranging, a method of engaging targets invisible on the grounds but accurately located on the map; it was a method he was to strongly advocate for in the Second World War. For this, however, an accurate time fuse was required so that the shell would burst in the space being observed by

¹⁶ Swettenham, *McNaughton Vol 1*, 70.

¹⁷ *Ibid*, 77.

¹⁸ *Ibid*, 88.

survey instruments.¹⁹ Time fuses and locating targets that are invisible are still in high use in the artillery presently.

The battle at Vimy Ridge is possibly one of the most well known battles of the First World War, due in part to Canada's tremendous victories that ensued. The great tactical victory won by Canadians at Vimy had been due in very large measure to the artillery's effective contribution. The Vimy operation remains a classic example of the deliberate break-in against strong prepared positions, and the ability of the assaulting force to consolidate and hold what they had gained.²⁰ Vimy was the first time it has been shown that the German artillery could be mastered, and from then onwards McNaughton had the upper hand all the time.²¹ At Vimy Ridge, McNaughton achieved a spectacular success, the counter-battery fire accounted for 83% of the 212 German guns identified.²² McNaughton was a driving force behind the ideas and techniques that enabled successes such as that of Vimy Ridge. Recent studies characterize the development of counter battery techniques as central to the successes of the British and Dominion forces during the last two years of the war.²³ McNaughton's involvement was crucial in these successes for without his knowledge and expertise, many of these advancements would not have been realized.

¹⁹ Swettenham, *McNaughton Vol 1*, 131.

²⁰ *Ibid*, 91.

²¹ *Ibid*, 90.

²² Andrew Godefroy, *Great War Commands: Historical Perspectives on Canadian Army Leadership 1914-1918* (Kingston: Canadian Defence Academy Press, 2010), 157.

²³ Godefroy, *Great War Commands*, 146.

In the Second World War, as a higher commander, there was debate about whether McNaughton's leadership was effective, however despite possible questions concerning this, there was never any doubt about his genius. Sir Basil Liddell Hart said, "Whether McNaughton would have proved an effective commander in the field may be questionable, and is a matter that can never be settled, but he was certainly a soldier of outstanding vision and ability who grasped the conditions of modern war earlier and more fully than most others."²⁴ Without the input that McNaughton was able to offer, the artillery would have been much farther behind during the World Wars.

It was, in part, McNaughton's success and the consequent credibility that victories like Vimy bestowed on scientific gunnery, flash and sound ranging, meteorological reports, and surveying, that convinced even the most reluctant to adopt these methods across the British army.²⁵ McNaughton's advancements in the world of artillery are in many cases still used today, and without him it is hard to say what the artillery would have been.

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²⁴ John Swettenham, *McNaughton Vol 2* (Toronto: The Ryerson Press, 1969), 335.

²⁵ Godefroy, *Great War Commands*, 146.

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