

The Handy Man of the Division: Assessing the effectiveness of the pioneer battalion concept in the First Australian Imperial Force

WILLIAM WESTERMAN

UNSW Canberra

Email: william.westerman@awm.gov.au

ABSTRACT

Pioneer battalions were units of the British Army created during the First World War to operate as both infantry and engineers. This article examines whether the concept of the hybrid engineer/infantry unit was an effective addition to British and dominion divisions, specifically focusing on the Australian Army, which, unlike the British Army, continued pioneer battalions in the Second World War. Despite the valuable additional engineering capability they gave Australian divisions, they seldom operated as combat troops, and thus the concept of pioneer battalions was not effectively employed by Australian commanders. Throughout the war the AIF overused its pioneers as engineers, creating organisational, administrative and command and control problems, while neglecting their combat potential, denying their divisions' additional firepower. This stands in contrast to the British Army, which was able to find a better and more effective balance between the pioneer battalions' two functions.

Pioneer battalions were a part of British and Dominion divisions in the First World War. Structured like an infantry battalion, they were trained as both engineers and infantry and could fulfil either role when needed; one historian described them as 'the handy man of the division'.¹ Although the concept of a pioneer soldier was not new, the creation of entire battalions of pioneers was untested in the British Army. They were not combat engineers (to use contemporary nomenclature), providing close support to other combat units to enhance mobility and counter-mobility. Instead, they were employed either as infantry or as engineers, seldom integrating those two functions together. This article examines the effectiveness of this concept in the Australian Imperial Force (AIF) during First World War, particularly when placed within the context of the decreasing manpower in all British Empire armies by 1918. The reason for focusing on the Australian Corps is that unlike the British Army

¹ A.D. Ellis, *The Story of the Fifth Australian Division: being an Authoritative Account of the Division's Doings in Egypt, France and Belgium* (London: Hodder and Stoughton, 1920), p.6.

the Australian Army retained pioneer battalions in the Second World War. For this reason, one might assume that the Australian experience of pioneer battalions was sufficiently successful to justify their inclusion in Australian divisions in the Second World War.

A pioneer battalion mirrored an infantry battalion, with an establishment of just over 1,000 men, divided into four companies and a headquarters section, similar to an infantry battalion.² As pioneers were divisional troops they were allocated one per division, hence the AIF had five pioneer battalions. Like infantry battalions, a pioneer unit was commanded by a lieutenant-colonel responsible for the administration and discipline of the battalion. The Commander, Royal Engineers (CRE), directed or coordinated the battalion's engineering work and when it was required for a combat role it was the AIF divisional commander who usually controlled their deployment.

The study of these units has received minimal attention in the scholarship of the First World War. K.W. Mitchinson's *Pioneer Battalions in the Great War* (1997) is the most significant study of pioneer battalions in the British Army during the war, but he makes the point that in the wider literature of the First World War 'acknowledgement of the work performed by Pioneers has continued to be rather patchy'.³ Many, if not most, British pioneer battalions have a published unit history but there are few for the pioneer battalions of the Dominion expeditionary forces.⁴

² *ibid*, p.6.

³ K.W. Mitchinson, *Pioneer Battalions in the Great War: Organized and Intelligent Labour* (London: Leo Cooper, 1997), p.282.

⁴ C.H. Cooke, *Historical Records of the 19th Service Battalion Northumberland Fusiliers (Pioneers)* (Newcastle-on-Tyne: Council of the Newcastle and Gateshead Incorporated, Chamber of Commerce, 1920); Record of the 11th Battalion of the King's Liverpool Regiment, *The Record of the 11th Battalion of the King's (Liverpool) Regiment subsequently the 15th Battalion of the Loyal North Lancs Regiment Pioneers 14th Light Division, August 1914 – March 1919* (London: R.E. Thomas, 1920); John Shakespear, *Historical records of the 18th (Service) Battalion Northumberland Fusiliers (1st Tyneside Pioneers)* (Newcastle-on-Tyne: Council of the Newcastle and Gateshead Incorporated, Chamber of Commerce, 1920); Michael Gilvary, *History of the 7th Service Battalion the York and Lancaster Regiment (Pioneers) 1914-1919* (London: Talbot Press, 1921); R. Ede England, *A Brief History of the 12th Bn. King's Own Yorkshire Light Infantry (Pioneers) "the Miners' Battalion"* (Wakefield: John Lindley Ltd., 1923); Edwin Haward, *"Pioneers on four fronts" being a short record of the doings of the 107th Pioneers (now the 112nd Bombay Pioneer Regiment) in the Great War* (Lahore: Civil and Military Gazette, 1923); A.S. Turberville, *A short history of the 20th Battalion King's Royal Rifle Corps (B.E.L. Pioneers) 1915-1919* (Hull: Goddard, Walker and Brown, 1923); John Shakespear, *A Record of the 17th and 32nd Service Battalions Northumberland Fusiliers*

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The New Zealand (Māori) Pioneer Battalion has two written histories, because interest in that unit has been heightened by its distinct social composition.⁵ Only two Australian pioneer battalions, the 3rd and 5th, have a published history, with both written within several years of the Armistice.⁶ The Canadian Expeditionary Force had, throughout the war, at least eleven different units designated as pioneer battalions at one time or another (including the Canadian Cavalry Pioneer Battalion) yet only the 123rd Pioneer Battalion, Royal Grenadiers, has a published history.⁷

In ascertaining levels of military effectiveness numerous methods have been suggested; some scholars suggest purely quantitative measures, other qualitative, and other a mix of the two.⁸ Most, if not all, of these focus on how well nations, armies or units perform on the battlefield.⁹ However, limiting assessments of effectiveness to battlefield outcomes is restrictive, since many pioneer battalions did not engage in combat or did so only rarely. The question we need to pose is broader than just

(N.E.R.) *Pioneers 1914-1919* (Newcastle-on-Tyne: Northumberland Press, 1926); Geoffrey Moore, *Kitchener's Pioneers the Story of One Battalion Formed From Kitchener's First 100,000 – August 1914 5th Service Battalion the Northamptonshire Regiment (Pioneers)* (Buckden, Huntingdon: Geoffrey Moore, 1978).

⁵ Christopher Pugsley, *Te Hokowhitu a Tu: The Māori Pioneer Battalion in the First World War* (Auckland: Reed, 1995); James Cowan, *The Maoris in the Great War: A History of the New Zealand Native Contingent and Pioneer Battalion: Gallipoli 1915, France and Flanders 1916-1918* (Auckland: Maori Regimental Committee, 1926);

⁶ M.B.B. Keatinge, *War Book of the Third Pioneer Battalion* (Melbourne: Specialty Press, 1922); F.H. Stevens, *The Story of the 5th Pioneer Battalion, A.I.F.* (Adelaide: Callotype Co., 1937).

⁷ Dan Mowat, *One-Two-Three: The Story of the 123rd Overseas Battalion, Royal Grenadiers, CEF* (Ottawa: The Author, 2015).

⁸ S.L.A. Marshall, *Men Against Fire: The Problem of Battle Command in Future War* (Washington: Combat Forces Press; William Morrow & Company: New York, 1947), p.60; T.N. Dupuy, *Understanding War: History and Theory of Combat*, p. 282; Edward J. Erickson, *Ottoman Army Effectiveness in World War I: A Comparative Study* (London; New York: Routledge, 2007), p.3; Niall Ferguson, *The Pity Of War 1914-1918* (London: Penguin, 1999), pp.294-303; Philip Hayward, 'The Measurement of Combat Effectiveness', *Operations Research*, Vol. 16, No. 2, March 1968, pp.314-23; Robert Engen, *Canadians Under Fire: Infantry Effectiveness in the Second World War* (Montreal: McGill-Queen's University Press, 2009), pp.3-4.

⁹ Engen, *Canadians Under Fire*, p.4; Philip Hayward, 'The Measurement of Combat Effectiveness', *Operations Research*, Vol. 16, No. 2, March 1968, pp.314-23; Edward J. Erickson, *Ottoman Army Effectiveness in World War I: A Comparative Study* (London; New York: Routledge, 2007), p.3.

assessing whether individual units were effective in combat – it is to ask whether the concept of pioneer battalions as it was applied within the British Army was an effective use of resources in order to achieve tactical and operational objectives. In this respect, effectiveness assessments such as determining an army’s “divisional slice”, or its “teeth-to-tail” ratio is closer to the methodology we need to employ to answer our questions.¹⁰

Allan Millett and Williamson Murray described military effectiveness as ‘the process by which armed forces convert resources into fighting power.’¹¹ For pioneers, the questions become: did the way pioneers operated in the First World War enhance the overall fighting power of the British Army; could they have operated differently to greater effect; were they more effective when they were fulfilling their combat role; or did the amount of time dedicated to infantry training negate their effectiveness in the engineer role when they were rarely called upon to function as infantry? To answer these questions we need to weigh up the input they gave in their engineering role against that which they offered as infantry to determine whether the balance of their time was spent in a manner that maximised their ability to assist the army in achieving tactical and operational objectives. The notion of military effectiveness tied to resource management is important, especially given the increasing recruitment constraints all British Empire armies were operating under as the war progressed.

By examining the conceptual origins of the pioneer battalion and then breaking down the activities of the five Australian pioneer battalions in 1918, the article will be able to address these questions. The reason for selecting 1918 for examination is twofold, with one element being practical and one contextual. Practically, battalion war diaries are the best source of information as to how battalions spent their time. Although they improved in quality and usefulness as the war went on, the early diaries could yield little information. All pioneer battalions’ diaries in 1916 were basic, often uninformative with frequent gaps in the record, whereas the 1918 diaries are far more detailed and give an accurate description of the activities pioneer battalions engaged in. A survey of the 1st Australian Pioneer Battalion, a unit with uncommonly detailed war diaries from their creation, demonstrates that there was greater variance in the types of roles pioneers were required to fill as the war went on. As with other pioneer battalions, although outside training there was very little infantry

¹⁰ Engen, *Canadians Under Fire*, pp.4-5.

¹¹ Allan R. Millett, Williamson Murray and Kenneth H. Watman, ‘The Effectiveness of Military Organizations’, in Allan R. Millett and Williamson Murray (eds.) *Military Effectiveness Volume 1: The First World War*, new edition (Cambridge: Cambridge University Press, 2010), p.2.

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work undertaken in 1918, this was still greater than the two previous years of the war.

Year	As Engineers		As Infantry						Other			
	Work Days		Training Days		Line Days		Standing To Days		Combat Days		Moving, Rest or Organising Days	
1916	787	66%	125	11%	0	0%	0	0%	0	0%	276	23%
1917	804	55%	430	29%	0	0%	2	<1%	0	0%	224	15%
1918	814	65%	216	17%	16	1%	4	<1%	0	0%	210	17%
Total	2405	62%	771	20%	16	<1%	6	<1%	0	0%	710	18%

Table 1 – 1st Australian Pioneer Battalion Activity

Contextually, 1918 offers the best chance to examine pioneer battalions engaging in both their technical and combat roles. Although battalions spent some of their time on infantry training, they rarely had the opportunity to function as infantry, holding the line or engaging in combat. The best time to gauge effectiveness should be when pioneer battalions were working at their best and in an environment where their flexible nature was potentially at its most beneficial. The manpower shortages faced by combatant nations in the last year of the war created an environment where the most effective use of troops was a vital resource management question.

Origins

The origins of the pioneer battalion concept as it was applied in the British Expeditionary Force (BEF) had repercussions for its subsequent effectiveness when put into practice. As a military concept, pioneers had a long history in the British Army, during the eighteenth and nineteenth centuries, part of a British infantry regiment's headquarters personnel consisted of a pioneer corporal and ten pioneers. These men, distinct from the Royal Engineers, functioned as military navvies, called on for light engineering work.¹² Even in 1914 British infantry battalions retained a pioneer section (one sergeant and ten privates) as part of battalion headquarters.¹³

With the Western Front devolving into trench stalemate in late 1914, there were requirements for not only constructing and maintaining the trench network but also for logistics and support frameworks in the lines-of-communication. These tasks seemed to be beyond capacity of the small number of Royal Engineers in the BEF and would require (as later proved to be the case) significant numbers of combat troops to be tasked with light engineering work for maintenance.¹⁴ On arriving in Flanders in

¹² Richard Holmes, *Redcoat: The British Soldier in the Age of Horse and Musket* (London: Harper Perennial, 2002), p.124.

¹³ Bruce Gudmundsson, *The British Expeditionary Force 1914-15* (Oxford: Osprey, 2005), p.23.

¹⁴ Mitchinson, *Pioneer Battalions*, p. x

May 1915 a British pioneer recalled: 'the demand was great for manual labour of no very skilled variety, in order to keep the system open and to relieve the garrison of the trenches to some extent of that duty'.¹⁵

A potential solution to this problem was found in the Indian Army, which had included pioneer battalions since the nineteenth century. India, described by one British historian as 'a land of fortresses', was an operational environment where the need for engineering skill among combat troops was apparent.¹⁶ In late Victorian India the army often need to raise expeditionary columns, usually in punitive expeditions to local tribal areas.¹⁷ Much of the terrain in these areas, particularly in the North-West Frontier, necessitated the use of engineers for mobility. In these instances, where the number of troops available was limited by manpower, supply and sustainment issues, pioneers gave expeditionary columns increased engineering support without a loss of firepower. When 3,000 'fighting men' formed an expeditionary column that invaded Tibet in 1903, over two thirds of this force were engineers, sappers or pioneers, including the 23rd and 32nd Sikh Pioneers. The pioneers fought as infantry during the capture of Gyantse Jong on 6 July 1904 as well as supporting the engineers in crossing the Tsan-po River later that month.¹⁸ One historian has argued that by the late nineteenth century 'no campaign could be satisfactorily prosecuted without having Pioneers in its order-of-battle'.¹⁹

The decision to replicate the Indian Army's pioneer battalions in the BEF in response to the engineering demands of the Western Front has normally been attributed to Field Marshal Kitchener, the Secretary of State for War at the outbreak of the conflict, and who had previously been the Commander-in-Chief, India and, presumably, applied his India experience to the New Armies.²⁰ However, Major-General Sir George Scott-Moncrieff, the Director, Fortifications and Works, War Office during the war and a one-time staff officer in a brigade of pioneers in India, stated that he was the one who suggested to Kitchener to add a battalion of

¹⁵ "Jet", 'A Pioneer Battalion in the Great War', *Journal of the Royal United Service Institution*, Vol. 75, 1930, p.118.

¹⁶ Richard Holmes, *Sahib: The British Soldier in India 1759-1914* (London: Harper Press, 2006), p.374.

¹⁷ T.R. Moreman, *The Army in India and the Development of Frontier Warfare, 1849-1947* (New York: St. Martin's Press, 1998), pp.9-11

¹⁸ E.W.C. Sandes, *The Military Engineer in India: Volume I* (Chatham: The Institution of Royal Engineers, 1933), p.463.

¹⁹ John Gaylor, *Sons of John Company: The Indian and Pakistan Armies 1903-91* (Tunbridge Wells: Parapress, 1996), p.8.

²⁰ *ibid*, p. 8; Mitchinson, p.xii.

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pioneers to each division.²¹ Scott-Moncrieff believed that converting infantry battalions into pioneers with ‘some extra equipment and a little extra training’ could increase engineering output.²² Pioneer battalions, he argued, could carry out field engineering ‘on a larger scale than would be possible with the limited number of engineers available’.²³

The motivation for adopting pioneer battalions, therefore, was to augment a division’s engineering capacity. A post-war reflection from a British pioneer affirmed this view, stating that their role was ‘to supplement’ the Royal Engineers, attempting ‘to obtain the maximum output of skill and, if necessary, technical work over the maximum area with the minimum expenditure of man-power’.²⁴ These observations were replicated in Australian pioneer battalions, which were raised at the start of 1916.²⁵ Lieutenant-Colonel W.H. Sanday, CO of the 3rd Australian Pioneer Battalion, believed that pioneers were created to support engineer troops who had ‘insufficient in manpower ... to cope with the work that was necessary’.²⁶ Although this perception was prevalent throughout the AIF, one CO was struck by the ambiguity of the specifics of situation, recalling: ‘Apart from the fact of the large percentage of skilled tradesmen, there was no other indication or other information available as to exactly what was the role of the Pioneer Battalions’.²⁷ With the general intention being for pioneer battalions to supplement the work of field companies, Australian pioneers simply slotted into whatever role they needed to fill, and this was predominantly carrying out engineering tasks under direction of the CRE, as there were no guidelines or directives to specify their use otherwise.

²¹ Major-General Sir George Scott-Moncrieff, Discussion of R.N. Harvey, ‘The Effect of the War on Field Engineering’, *The Journal of the Royal United Service Institution*, Vol. LXVII, No. 466, May 1922, p.214.

²² *ibid*, p.214.

²³ *ibid*, p.214.

²⁴ “Jet”, ‘A Pioneer Battalion in the Great War’, p.122.

²⁵ Circular Memorandum No. 3, 14 February 1916, General Staff, Headquarters, 1st ANZAC Corps war diary, February 1916, AWM4, 1/29/1; Circular Memorandum No. 11, 22 February 1916, Administrative Staff, Headquarters 2nd ANZAC Corps war diary, February 1916, AWM4, 1/34/1.

²⁶ Engineer & Pioneer Personnel memorandum responses, 3rd Australian Pioneer Battalion war diary, January 1919, AWM4, 14/15/27.

²⁷ Keatinge, *Third Pioneer Battalion*, p. 11; Ellis, *Fifth Australian Division*, p. 30; C.E.W. Bean, *The Official History of Australia in the War of 1914-1918 Volume III The A.I.F. In France: 1916* [hereafter *AOH Vol III*], twelfth edition (Sydney: Angus & Robertson, 1941), p. 65n; Sydney University Engineering Club memorial lecture, p.2.

The early emphasis on pioneer battalions as an additional source of engineering troops neglected their potential as infantry. Indian Army pioneer battalions were not merely an additional source of engineers, but were flexible combat troops in their own right.²⁸ This was articulated in British Army doctrine, with *Field Service Regulations Part I Operations 1909* including a footnote that in the Indian Army a pioneer battalion was trained and equipped to supplement engineer field companies in their duties but in battle, 'being primarily fighting troops [emphasis added], will normally be used as such.'²⁹ Any intention to use pioneers in this role was not as prominent in the discussion of the British Army's pioneer battalions when they were being raised. Scott-Moncrieff had stated that he did not envisage pioneers being used as the divisional reserve, although that was clearly a viable option for their use.³⁰

This begs an important question: if the BEF was not going to use its pioneers in the same manner as the Indian Army, why replicate pioneer battalions at all? If the BEF required additional engineers why not simply enlarge the establishment for existing field companies? One suspects that pioneer battalions were simply transplanted from the Indian Army to the British Army without much thought as to whether the structure was actually the most appropriate for the context. Similarly, the AIF adopted the pioneer battalions primarily to adhere to war establishments, not because after serious and thoughtful consideration they decided that these new units would fit perfectly for their divisions. The Indian Army experience demonstrated that pioneer battalions operated best in detached sub-units as part of a modest, mobile combined arms formation, such as an expeditionary column, possibly no bigger than a brigade, being used as a means to maximise output and flexibility with limited logistic and supply capacity. Yet the BEF faced no such supply constraints and so the impetus for a rationalisation of manpower, at least in the early years of the war, did not exist.

In hindsight, this looks like poor planning, but in 1914 there was no way of knowing that warfare was going to be so static for so long and the potential flexibility offered by pioneer battalions was probably enticing. However, even at this early, conceptual level, the justification for adopting the pioneer battalion model was questionable. As the war progressed the massive engineering demands of the trench system moved pioneer battalions away from the more mobile use to which they were suited and thus weakened the effectiveness of the concept.

²⁸ For an Indian Army officer, a posting to a pioneer battalion was rather popular given that pioneers tended to see more active service than did many of the more conventional infantry. Gaylor, *Sons of John Company*, p.8.

²⁹ General Staff, War Office, *Field Service Regulations Part I Operations 1909 (Reprinted, with Amendments, 1912)* (London: HMSO, 1914), p.18.

³⁰ Scott-Moncrieff, Discussion of R.N. Harvey, 'The Effect of the War on Field Engineering', p.214.

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Pioneers as Engineers

Scott-Moncrieff's desire to use pioneers to increase a division's engineering output was certainly achieved in the AIF, as table 2 shows that in 1918 Australian pioneers spent most of their time on technical work. As far back as January 1915, before the AIF had even raised its pioneer battalions, an Army Council Instruction set down that pioneers were to work on straightforward tasks such as road making, demolition and entrenching, as well more complex tasks such as technical work on railway embankments, constructing wire obstacles, bridging and felling trees.³¹ Expressed another way, their function was to facilitate movement, conceptually not dissimilar to Napoleonic-era pioneers, but working behind advancing armies, rather than at the front of them.³² During operations they often worked on communications trenches and roads, enabling the movement of men and *matériel* forward to support assault troops. Not only did their work benefit the army, but it also freed up infantrymen who would otherwise have been engaged in fatigue work so they could add to an infantry battalion's fighting strength.³³

Bn	Engineers		Infantry						Other			
	Work Days		Training Days		Line Days		Standing To Days		Combat Days		Moving and Rest Days	
1st	813	65%	216	17%	16	1%	5	<1%	0	0%	210	17%
2nd	821	65%	184	15%	4	<1%	17	1%	4	<1%	230	18%
3rd	788	63%	246	20%	49	4%	13	1%	12	1%	152	12%
4th	779	62%	228	18%	0	0%	11	1%	0	0%	242	19%
5th	671	53%	249	20%	0	0%	22	1%	4	<1%	314	25%
Total	3872	61%	1123	18%	69	1%	68	1%	20	<1%	1148	18%

Table 2 – Number of days pioneer companies spent per activity (January 1 to November 11 1918)

On one level, the preference for using pioneers as additional engineers was sound, given the importance of engineering to British operations on the Western Front. As Rob Thompson highlighted, one of the most important lessons learned from Third Ypres across different formations and national contingents was that effective logistic and engineering practices facilitated the forward movement of artillery, which in turn

³¹ Mitchinson, *Pioneer Battalions*, p.xi.

³² Sydney University Engineering Club memorial lecture by Lt Col H G Carter on war experience, 1914-18 War (Nov 1929), p.4, AWM27, 320/1.

³³ Stevens, *5th Pioneer Battalion*, p.11.

supported the forward movement of infantry.³⁴ The importance of the engineers' role in maintaining operational tempo was acknowledged in the unit history of one British pioneer battalion, which stated: 'To maintain the momentum ... it was necessary to maintain good communications and effective supply – the soldiers employed on pioneering and engineering works were every bit as important to the successes as the infantrymen or the artillerymen.'³⁵ After the war, one Australian engineering officer believed pioneers had 'undoubtedly' done 'a very great deal of most useful work', an example of which was to support the 2nd Australian Division's advance towards the Somme at the end of August 1918.³⁶ Under time constraints and frequent shell-fire, pioneers and engineers constructed bridges across the Somme River for the infantry to use in preparation to assault Mont St. Quentin. The acting CRE, 2nd Division praised their work, which 'was successful in opening up communication and coping with the traffic.'³⁷

However, the ability of pioneers to increase a division's engineering output does not necessarily justify the pioneer battalion concept, as enlarged field companies could have conceivably completed that work just as successfully. Possibly the best way to assess a pioneer battalion's effectiveness in its technical role is to assess how well it worked within the existing divisional structure. Although pioneers did important work in brigade and divisional sectors they often disrupted regular engineering work carried out by field companies. Lieutenant-Colonel H. Bachtold, CRE 3rd Australian Division described the organisation of divisional engineers as 'very unsatisfactory' because the role of the pioneer battalion was not 'definitely laid down' meaning the division's engineering work was not carried out 'in the most efficient and economical way'.³⁸ Generally, local engineering work was organised on the brigade level, with the brigadier responsible for work carried out in his sector of the lines. The CRE would usually allocate one field company per brigade and the OC field company would liaise

³⁴ Rob Thompson, 'Mud, Blood, and Wood: BEF Operational and Combat Logistico-Engineering during the Battle of Third Ypres, 1917', in Peter Doyle and Matthew R. Bennett (eds.) *Fields of Battle: Terrain in Military History* (Dordrecht; London: Kluwer Academic, 2002), pp.248-53.

³⁵ Les Hughes and John Dixon, "Surrender Be Damned" *A History of the 111st Battalion the Monmouthshire Regiment, 1914-18* (Caerphilly: Cwm Press, 1995), p.152.

³⁶ R.B. Carr, Response to memorandum circulated by Chief Engineer, Australian Corps, 13 December 1918, Headquarters 4th Australian Divisional Engineers, 1 – 3 December 1918, AWM4, 14/10/35 Part I.

³⁷ Report on operations 25 August to 4 September 1918, 9 September 1918, Headquarters 2nd Australian Divisional Engineers war diary, August 1918, AWM4, 14/8/23 Part I.

³⁸ H. Bachtold to CE, Australian Corps, 31 December 1918, Headquarters 3rd Australian Divisional Engineers, December 1918, AWM4, 14/9/18.

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with the brigadier about what work was to be done and then assign elements of his command to work on them. Within this arrangement the CRE or OC, Corps Troops could allot the pioneers to tasks within the divisional or corps sector, often working on communication trenches or roads.³⁹

Having pioneers working in the same brigade sector as a field company created problems. The OC field company, directly responsible to the brigadier for the work being done in the sector, could be ignorant of what work the pioneers were doing, as they had been assigned directly by the CRE, or even the OC, Corps Troops or the divisional commander. Best practice was to make sure in orders and conferences that every engineering element within a division knew what work was being carried out and by whom, but this was not always practiced. One Australian OC field company sometimes found that he could not definitely answer brigadiers who wanted to know what work was being done in their sector because pioneers had been given work by other commanders independently of the OC field company.⁴⁰

When asked after the Armistice for their opinion about how military engineering had been conducted during the war, several Australian engineering officers gave frank replies. Lieutenant-Colonel Bachtold believed that having pioneers and field companies work independently was 'never satisfactory' unless it was on road work. Having both troops working separately caused 'endless friction' and was an 'uneconomical employment of men'.⁴¹ Major H. Greenway, acting CRE 5th Australian Division, believed that the arrangement 'could never be satisfactory'.⁴² Major H.G. Tolley, acting CRE 4th Australian Division, complained of 'overlapping of work' and 'congestion of traffic'.⁴³ Major R.B. Carr, OC 13th Field Company, also pointed out

³⁹ For example, see: Divisional Engineer Order No. 31, 1 March 1918, Headquarters 2nd Australian Divisional Engineers war diary, March 1918, AWM4, 14/8/18; 8 March 1918, Headquarters 2nd Australian Divisional Engineers war diary, March 1918, AWM4, 14/8/18; Report on Condition of Trench System Taken Over From the 11th Field Company Australian Engineers, 5th Field Company, Australian Engineers war diary, March 1918, AWM4, 14/24/24.

⁴⁰ R.B. Carr, Response to memorandum.

⁴¹ H. Bachtold to CE, Australian Corps, 31 December 1918, Headquarters 3rd Australian Divisional Engineers, December 1918, AWM4, 14/9/18.

⁴² Response to memorandum circulated by Chief Engineer, Australian Corps, 13 December 1918, Headquarters 5th Australian Divisional Engineers, December 1918, AWM4, 14/11/31.

⁴³ H.G. Tolley, Response to memorandum; H. Bachtold to CE, Australian Corps, 31 December 1918, Headquarters 3rd Australian Divisional Engineers, December 1918, AWM4, 14/9/18.

the 'overlapping' that often occurred, and that having two separate organisations was 'most undesirable considering the similarity of work done'.⁴⁴

Given how infrequently Australian pioneers functioned as infantry, it is not surprising that many engineer officers in the Australian Corps questioned the value of even having pioneer battalions at all. Many of the problems faced in co-ordinating engineers and pioneers resulted from a structure that was not intended to accommodate pioneers engaged in prolonged engineering work. Most occasions when the pioneer battalion was engaged in technical work it did so as detached companies and platoons.⁴⁵ Whether this was the best use of the full administrative resources needed to maintain the battalion (headquarters staff, transport section etc.) is questionable.⁴⁶ One battalion even managed to function well without a strong CO and headquarters staff, its companies running 'pretty efficiently without help from Battalion headquarters.'⁴⁷ There were also issues of command, authority and responsibility. The CRE, the divisional commander, a brigadier, the pioneer CO or even an OC field company all had legitimate claims to direct the work of the battalion. Several of the officers mentioned above labelled this system 'unsatisfactory'.⁴⁸

These issues could be tolerated if pioneers regularly and usefully performed their combat role and needed to maintain an infantry battalion structure, but since they did not it was difficult to justify having an independent unit overlapping with the work of field companies. The most commonly suggested solution to this problem was to have the CRE responsible for four stronger field companies, amalgamating the pioneers into these and removing them as an independent unit. Major S.B. Cox, OC 12th Field Company, wrote: 'I am of the opinion that if Field Companies are increased in strength as indicated, they would be of ample strength to carry out all the work required under normal conditions and the separate organisation of Pioneers could be dispensed with.'⁴⁹ Major Carr argued that with four field companies and no pioneers: 'a higher standard could be maintained in the matter of tradesmen in the Field

⁴⁴ R.B. Carr, Response to memorandum.

⁴⁵ Stevens, *5th Pioneer Battalion*, p. 12; "Jet", 'Pioneer Battalion', p. 119; Mitchinson, *Pioneer Battalions*, p.15.

⁴⁶ Mitchinson, *Pioneer Battalions*, p.163.

⁴⁷ W.J. Rose letters, 30 June and 30 August 1918, AWM, 2DRL/1010.

⁴⁸ H.G. Tolley, Response to memorandum; Engineer & Pioneer Personnel memorandum responses, 3rd Australian Pioneer Battalion war diary, January 1919, AWM4, 14/15/27.

⁴⁹ S.B. Cox, Response to memorandum circulated by Chief Engineer, Australian Corps, 13 December 1918, Headquarters 4th Australian Divisional Engineers, 1 – 3 December 1918, AWM4, 14/10/35 Part I.

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Companies. If the four Field Companies were found insufficient, a Labour Company per Brigade or a Labour Battalion per Division could quickly be formed from Infantry reinforcements.⁵⁰ Major Tolley suggested that such a reorganisation could include tunnellers as well.⁵¹

These problems, however, need to be kept in perspective; across the BEF pioneers were still able to carry out important technical work during the war and having field companies and pioneers conduct engineering work together never resulted in complete paralysis or breakdown. The problems that were created, while important, were not insurmountable. As Mitchinson argued, the way pioneers were arranged within a division generally 'worked satisfactorily or better'.⁵² If one considers pioneers solely as field engineers then having a pioneer battalion in the divisional war establishment was a benefit because the benefit to the BEF of greater engineering output increased *its* operational effectiveness, even if the structure within which they worked produced inefficiencies. Yet, pioneers were not just engineers, and their dual nature needs to be taken into account. Time was invested training pioneers to fight as infantry, and when that investment was not returned the effectiveness of the pioneer battalion concept suffered.

Pioneers as Infantry

Having pioneers predominantly operate as technical troops increased a division's engineering output but undermined pioneers' ability to carry out their infantry role when required. Pioneers offered the division an additional battalion worth of infantry, making them a potentially valuable asset as manpower diminished throughout the war. Both the BEF and the AIF disbanded infantry battalions through 1918 in response to severe manpower shortages.⁵³ In the face of these problems, pioneer battalions offered an additional number of trained infantry at a time when they were arguably needed the most.

If pioneers had been called on to operate as infantry, they could fulfil the usual infantry task of garrisoning part of the trench system. Although this was a potentially useful way of relieving the burden on regular infantry battalions, Table 2 shows how infrequently all five Australian pioneer battalions were tasked with this duty. More

⁵⁰ R.B. Carr, Response to memorandum.

⁵¹ H.G. Tolley, Response to memorandum.

⁵² Mitchinson, *Pioneer Battalions*, p.266.

⁵³ Chris McCarthy, 'Queen of the Battlefield: The Development of Command, Organisation and Tactics in the British Infantry Battalion during the Great War', in Gary Sheffield and Dan Todman (eds.) *Command and Control on the Western Front: The British Army's Experience 1914-18* (Staplehurst: Spellmount, 2007), p.185.

significantly, they could be used in regular offensive or defensive operations, but this only occurred once, with the 2nd Australian Pioneer Battalion at Montbrehain in October 1918. On that occasion the battalion formed the divisional reserve and with the infantry battalions being worn down the divisional commander put the pioneers into the firing line with the intention of using them to capture the village of Montbrehain.⁵⁴ The pioneers executed a night time relief of an entire infantry brigade and held the line until the 21st and 24th Australian Infantry Battalions advanced through them the next day. The pioneers then ‘mopped-up’ behind the two infantry battalions and formed a defensive flank to their right, fighting, as Australian official historian Charles Bean later described it, ‘like skilled infantry’.⁵⁵ This was the most successful use of Australian pioneers in a combat capacity in the entire war.

Despite rarely being called on to operate as infantry, pioneers could find themselves in combat even when they were working as engineers. A standard engineer task that often fell to the pioneers was to follow behind advancing infantry and work on roads, communication trenches or other tasks to enable the forward advance.⁵⁶ This role often required pioneers to work closely with the infantry and ‘more than once’ men of the 3rd Australian Pioneer Battalion ‘became mixed up with the usual work of the other arm’.⁵⁷ The 5th Australian Pioneer Battalion was forced to ‘down tools’ and fight at Bellicourt in September 1918.⁵⁸ The advancing infantry had not completely ‘mopped-up’ their captured area and the pioneers met with pockets of resistance. The pioneers apparently ‘threw away their shovels and set lustily to work with rifle and bayonet – an employment not less congenial, and equally well understood’.⁵⁹ They assaulted a German anti-tank crew, seized a machine-gun post with about 50 prisoners and the machine-gun itself and formed a defensive flank north of Bellicourt village.⁶⁰

⁵⁴ Bean, *AOH Vol VI*, pp.1033, 1043.

⁵⁵ *ibid*, p. 1035; Report On Operations of 6th Aust. Inf. Brigade For Period 2 October To 6 October, 1918, 12 October 1918, 6th Infantry Brigade war diary, October 1918, AWM4, 23/6/38 Part I.

⁵⁶ See: 1st Australian Pioneer Battalion Order No. 1, 21 August 1918, 1st Australian Pioneer Battalion war diary, August 1918, AWM4, 14/13/30.

⁵⁷ Keatinge, *Third Pioneer Battalion*, pp.9-10.

⁵⁸ Sydney University Engineering Club memorial lecture, pp. 2-3; CO’s Report, 5th Australian Pioneer Battalion war diary, September 1918, AWM4, 14/17/31.

⁵⁹ Ellis, *Fifth Australian Division*, p.375.

⁶⁰ Report on Operations 29/30 September 1918, 2 October 1918, 5th Australian Pioneer Battalion war diary, September 1918, AWM4, 14/17/31; Bean, *AOH Vol VI*, p.969.

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Despite the success of these actions, combat occupied very little of the pioneers' time.⁶¹ Table 2 demonstrates that less than one per cent of pioneers' time in 1918 was spent fighting, an exceptionally meagre return for a unit that was, in theory, intended to perform a fighting role. Compared with the amount of fighting that the pioneers had seen in 1916 and 1917, however, the final year of the war was combat-intensive. When the 3rd Pioneer Battalion went into action on 22 August both the CO and the unit diarist noted that it was the first time in the war that the battalion had been engaged as infantry.⁶²

The very limited time spent in combat is even more notable given that so much time was devoted to infantry training (see Table 2). This training mirrored infantry battalions; training syllabi were structured in weeklong blocks, six days of training with Sunday for church parades and rest. Although this was the most common arrangement for battalion training, the detached nature of pioneers' work often gave them opportunities for some companies to train while others worked. In February 1918, for instance, "A" and "B" Companies of the 1st Australian Pioneer Battalion worked while "C" and "D" Companies trained.⁶³ The 5th Australian Division historian suggested that once the 5th Australian Pioneer Battalion had seen combat the CO and his adjutant 'must have felt amply recompensed for all the plans they had taken to maintain the Battalion as an efficient fighting unit'.⁶⁴ Although this might have been true for this battalion, it is hard to make the same case for the 1st and 4th Australian Pioneer Battalions, which never went into combat at all.

It is therefore difficult to argue that the combat potential of Australian pioneer battalions was ever fully or even partially exploited. This is striking, because British pioneer battalions were frequently employed in their combat role, particularly in 1918.⁶⁵ Of the 49 British pioneer battalions in France at the start of March 1918, Mitchinson cites 24 battalions that saw action between March and May 1918, either in defence or counter-attack, and the actual number of such units may well have

⁶¹ C.R. Duke letter, 28 March 1916, AWM, 2DRL/0562; H.G. Tolley, Response to memorandum.

⁶² 22 August 1918, 3rd Australian Pioneer Battalion war diary, August 1918, AWM4, 14/15/22; W.H. Sanday to HQ, 3rd Australian Division, 29 August 1918, 3rd Australian Pioneer Battalion war diary, August 1918, AWM4, 14/15/22.

⁶³ 1 – 27 February 1918, 1st Australian Pioneer Battalion war diary, February 1918, AWM4, 14/13/24.

⁶⁴ Ellis, *Fifth Australian Division*, p.375.

⁶⁵ Mitchinson, *Pioneer Battalions*, pp.219-63.

been greater.⁶⁶ The 8/Royal Scots, the 51st (Highland) Division's pioneer battalion, defended Morchies on 23 March, two days after the start of the German Spring Offensive, and put up such a good display of musketry that 'even veterans of the old regular army would have found it difficult to better the fire control shown by the Pioneers'.⁶⁷ On 23 July the same battalion took part in fighting along the Ardre valley near Reims when the 51st (Highland) Division supported the Fifth French Army during the Second Battle of the Aisne. "B" Company advanced with infantry battalions on its right and left flank, but was the only element of its brigade to reach its objective.⁶⁸

While not every British pioneer battalion was as heavily engaged in combat in 1918, there were sufficient examples to illustrate a difference between the BEF and the Australian Corps. In accounting for this discrepancy, it needs to be remembered that many British pioneer battalions were recently converted infantry battalions, which probably made their use in a combat role more appealing. The 19/Lancashire Fusiliers were converted from an infantry to a pioneer battalion during the Battle of the Somme, but the philosophy within the unit was that they considered themselves as much fighting troops as any other infantrymen.⁶⁹ The 7/Northumberland Fusiliers had been converted from infantry to pioneers in February 1918 and when the 42nd (East Lancashire) Division was fighting at Foncquevillers at the start of the German Spring Offensive the pioneers became front line troops again – even undertaking a trench raid once the German attack had been checked.⁷⁰

Even accounting for the more combat focused nature of some British pioneer battalions, the number of pioneer units engaged in combat, particularly in March and April, seems to indicate a general willingness on the part of divisional commanders to use any pioneer battalion in an infantry role. The BEF reaped the benefit of these decisions, increasing their combat strength at a time when it was needed most. Australian divisional commanders eschewed this option, even though the 2nd Australian Pioneer Battalion's action at Montbrehain demonstrated that the AIF's

⁶⁶ 10/DCLI, 7/DLI, 9/DLI, 22/DLI, 13/Gloucester, 11/Hants, 12/KOYLI, 11/Leicester, 5/Northants, 7/NF, 17/NF, 18/NF, 19/NF, 12/Notts & Derby, 8/Royal Scots, 8/Sussex, 4/RWF, 11/South Lancs, 5/SWM, 6/SWB, 21/West Yorks, 14/Worcester, 12/Yorks, 7/Yorks & Lancs. Mitchinson, *Pioneer Battalions*, pp.219-36.

⁶⁷ Quoted in Mitchinson, *Pioneer Battalions*, p.222.

⁶⁸ *ibid*, p. 247; Report on Operations commencing July, 21 1918, 7 August 1918, 1/8th Bn The Royal Scots (Pioneers) war diary, July 1918, TNA, WO 95/2857/1

⁶⁹ Mitchinson, *Pioneer Battalions*, pp.227-8.

⁷⁰ *ibid*, p.234.

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underused pioneers could fight effectively when needed.⁷¹ The 5th Australian Pioneer Battalion historian highlighted the obvious point, in that despite maintaining a 'high standard of training' in all infantry tactics, 'it will always remain a mystery, why, in the later stages of the War, when Infantry Brigades were short of men, the Pioneers were not made more use of as support to the hard-pressed men holding the Line.'⁷² This is compounded by the suggestion, made by one Australian engineering officer after the war, that in open warfare there was 'not sufficient work for both Engineers and Pioneers.'⁷³

The question of why pioneers were not used more frequently as infantry is even more interesting given that pioneers often wanted to work as infantry. In July 1918 the 3rd Australian Pioneer Battalion 'much appreciated' a period in the line as infantry, with companies spending seven days in the front line and seven in support.⁷⁴ Men of the 5th Australian Pioneers often complained that their lives were 'all take and no give' and were more than happy to exact retribution upon the Germans and be used as combat troops.⁷⁵ In preparation for a move southwards in March 1918, the CO ordered his men to sharpen their bayonets, and he observed: 'It would have afforded a good deal of thought to a philosopher to have seen the enthusiasm and meticulous care with which that order was carried out.'⁷⁶ The unit historian considered that their fighting at Bellicourt in September 1918 was one of the battalion's 'happiest recollections'.⁷⁷ The desire for soldiers predominantly engaged in manual work to engage in combat was seen in other parts of the army. The men of the British West Indies Regiment, a 'native' labour battalion, sought to shed both the stigma of being a 'native' contingent as well as their status as a labour unit, instead wanting to be seen as soldiers, no different than any other unit in the British Army.⁷⁸

⁷¹ See the remarks of the brigadier under whose command the battalion fought: Report On Operations of 6th Aust. Inf. Brigade For Period 2nd October To 6th October, 1918, 12 October 1918, 6th Infantry Brigade war diary, October 1918, AWM4, 23/6/38 Part I.

⁷² Stevens, *5th Pioneer Battalion*, p.15.

⁷³ R.B. Carr, Response to memorandum.

⁷⁴ 31 July 1918, 3rd Australian Pioneer Battalion war diary, July 1918, AWM4, 14/15/21.

⁷⁵ Sydney University Engineering Club memorial lecture, p.2.

⁷⁶ *ibid*, p.3.

⁷⁷ Stevens, *5th Pioneer Battalion*, p.13.

⁷⁸ Richard Smith, *Jamaican Volunteers in the First World War: Race, Masculinity and the Development of National Consciousness* (Manchester: Manchester University Press, 2004), pp.85-89.

Incidentally, when the regiment was deployed in the front line it performed as well as other units in the BEF.⁷⁹

Attempting to explain why Australian commanders were more reluctant to use their pioneers as infantry is difficult, they have long since died, and their personal papers reveal none of their thoughts on the matter. Although one could posit that the enormous volume of engineering tasks required on the Western Front made troops with engineering skills very valuable (particularly in maintaining operational tempo, as noted above), whereas infantrymen were comparatively more numerous, this was also the case for the British Army. Similarly, the problem of re-tasking pioneers in the middle of a battle, particularly in an environment where communication was slow and difficult, where geography and broken terrain could inhibit pioneers from being brought to the point of action quickly, applied to both the BEF and the AIF.

What remains is that Australian commanders simply chose not to use pioneers as infantry unless, as with the 2nd Australian Division during their last engagement of the war it was absolutely necessary. Whether this is because they felt pioneers were more valuable in their engineering role, or because they were not predisposed to think of pioneers as viable infantry or they doubted the ability of pioneers to fight as well as regular infantry or any number of other reasons, is now impossible to tell. Regardless, the amount of time the AIF invested in infantry training for its pioneers was rarely returned in combat power. The British ability to switch pioneer battalions between combat and engineering roles allowed for a unit of cross-trained infantry/engineers to be used effectively to increase divisional fighting power and justified their decision to create pioneer battalions. The AIF could make no such claims.

Conclusion

From the start of the war, pioneer battalions were intended as a supplement for engineers, with their role as the division's reserve of infantry a secondary function. Created as a versatile unit, it became apparent that pioneers would spend the majority of the time on technical work because the enormous engineering requirements of trench warfare simply consumed their time. This did not necessarily make them ineffective troops – indeed, the greatest strength of the pioneer battalion was to provide the division hundreds of additional trained engineers to undertake whatever tasks needed to be accomplished – but it does cast doubt on the validity of the pioneer battalion concept. This was further compounded in the Australian experience by the relegation of the battalions' combat potential to an afterthought despite the insistence that they maintain their infantry training. By removing pioneers to train as infantry the amount of engineering work they could undertake diminished,

⁷⁹ *ibid*, p.89.

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and by rarely putting infantry training into practice, their value was minimal compared with what they could have offered as 'full time' engineers. This was a particularly Australian problem.

The BEF never forgot about the pioneers' combat role and when needed, British divisional commanders were able to deploy their pioneer battalions as infantry; while only one Australian division did so and that was in the Australian Corps' last engagement of the war. Thus, in 1918 the British Army managed to get a greater return on their investment in pioneers than did the Australian Corps, making the pioneer battalion concept far more effective in the BEF than it ever was in the AIF.

The decision to reproduce pioneer battalions in the Second AIF is curious, given that the experience of the First AIF does not suggest they justified a second chance. The 2/2nd Australian Pioneer Battalion, for instance, saw action in the Middle East during the Syrian Campaign of 1941 and in New Guinea in 1943/44. During the 1943 Markham Valley campaign they constructed an airstrip at Nadzab before being required to fight alongside a US parachute infantry regiment and an Australian infantry battalion, demonstrating the potential of the concept that had been introduced in the Australian Army back in 1916.⁸⁰ The Australian pioneer battalions of the Second World War were allowed to perform their hybrid role much more effectively than did their First World War predecessors.

⁸⁰ 'Pioneer Battalions', in Peter Dennis, Jeffrey Grey, Ewan Morris and Robin Prior (eds.), *The Oxford Companion To Australian Military History* (South Melbourne: Oxford University Press, 2008), p.421.