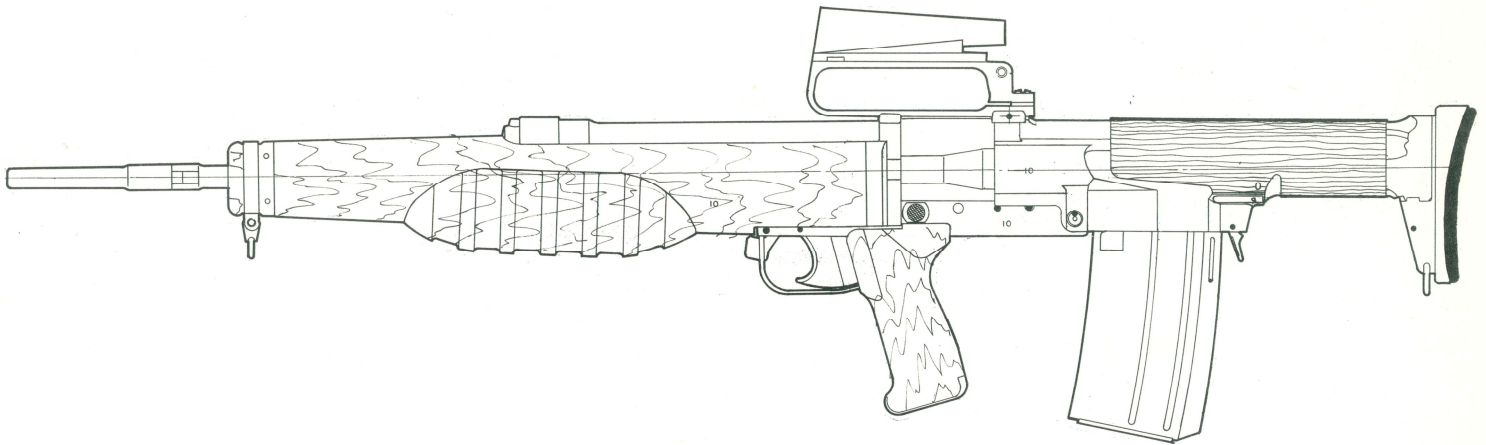


Britain's Forgotten Rifle

How Politics Stood in the Way of Progress

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17,552 Words

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List of Abbreviations

A/CEAD - Assistant Chief Engineer Armament Design
ADD - Armament Design Department
ADE - Armament Design Establishment (renamed from the ADD c.1950)

BAOR - British Army On the Rhine
BJSM - British Joint Services Mission
BSA - Birmingham Small Arms Ltd.

CEAD - Chief Engineer Armament Design
CIGS - Chief of the Imperial General Staff
CS(M) - Controller Supplies (Munitions)

DCIGS - Deputy Chief of the Imperial General Staff
DGofA - Director General of Artillery
DInf - Director of Infantry
DofA(SA) - Director of Artillery (Small Arms)

EM - Experimental Model, e.g EM1, EM2 and EM3

FAL - Fusil Automatique Liger (Light Automatic Rifle)
FN - Fabrique Nationale dArmes de Guerre

ICP - Ideal Calibre Panel
IPW - Infantry Personal Weapon

LMG - Light Machine Gun

MOD - Ministry of Defence

NATO - North Atlantic Treaty Organisation

RSAF - Royal Small Arms Factory

SAA - Small Arms Ammunition
SLEM - Self-Loading Experimental Model
SLR - Self-Loading Rifle

WO - War Office

Glossary

Action - The mechanism of firearms which loads, fires and ejects the spent round, these include the manually operated bolt action and the automatically operated self loading rifles and machine guns.

Assault Rifle - A small, lightweight rifle which fires an 'intermediate round' and can be fired both semi and fully automatically. Examples include the AK-47, M16 and EM2.

Battle Rifle - A subset of self-loading rifles that fire full-power ammunition, examples include the FN FAL, M14 and HK G3.

Bullpup - Firearms with a unique, unconventional layout which places the weapon's action behind its trigger group making it more compact. Examples include the EM2, FAMAS, Steyr AUG and SA80.

Bolt - A moving part of the action which helps load and lock a firearm as it operates.

Calibre - The internal diameter of a firearms barrel or a cartridge's projectile.

Cartridge - This describes the complete self-contained assembly of bullet, propellant, primer and the casing that holds it together.

Fully Automatic - Weapons which fire continuously with a single pull of the trigger until their ammunition is expended or the trigger is released. These weapons include machine guns such as the British Bren, German MG42 and submachine guns.

Intermediate Calibre - A type of ammunition which has a propellant charge and projectile which is roughly between that of a handgun and a full powered rifle. Examples include the German 7.92mm Kurz and the British .280.

Round - A synonym for cartridge or ammunition.

Semi-Automatic - Weapons that once fired load the automatically next round but do not fire unless the trigger is pulled. Examples include Self-Loading Rifles and semi-automatic handguns.

Submachine Gun - Small, light fully automatic weapons which fire pistol ammunition. Examples include the British STEN, German MP40 & Soviet PPSH-41.

Introduction

This dissertation will investigate the development, adoption and abandonment of the EM2, a revolutionary new type of rifle developed for the British Army in the early 1950s. The dissertation will examine the national and international political impact this rifle had on Britain and the Anglo-American relationship at the beginning of the Cold War. It will also investigate whether the Anglo-American debate over the rifle was caused by valid concerns regarding the design or whether political machinations were the primary reason behind the eventual abandonment of the rifle. If this was the case it can be argued that this stalled progress in the field of small arms development in the name of preserving a political relationship.

The Anglo-American rifle controversy is an aspect of the early Cold War which is almost wholly untouched by historians and certainly does not figure in the wider narrative of the Special Relationship. The historiography on the subject is minimal and predominantly dates from the early 1980s with most of this being written for a niche audience of firearms collectors, historians and enthusiasts. They include T. B. Dugelby's *EM2 Concept and Design: A Rifle Ahead of Its Time* which, published in 1980, remains the only book to directly tackle the rifle itself. Dugelby focussed primarily on the rifle's development and offered a chronological history of the rifle's adoption and abandonment. Edward Ezell's *The Great Rifle Controversy: Search for the Ultimate Infantry Weapon from World War II Through Vietnam and Beyond*, published in 1984, is broadly concerned with the United States' search for a suitable rifle between 1945 and 1970.¹ However, the EM2 and the debate on its selection are a key aspect of this and Ezell devoted several chapters to the military

¹ E.C. Ezell, *The Great Rifle Controversy: Search for the Ultimate Infantry Weapon from World War II Through Vietnam and Beyond*, (London: Arms & Armour Press, 1984).

and political implications of the Anglo-American rifle trials. Ezell identifies the United States' decision to reject the European rifles as prejudiced but does not provide evidence of this. R. Blake Stevens' books examining the history of the EM2's rival, the Belgian FAL, also touch upon the subject.² Stevens takes a broadly narrative approach examining the practicalities of the FAL's selection. These books are well researched, written and referenced however, the historiography on the subject can now be considered somewhat dated and a re-evaluation, with new primary source material now available, will highlight a rarely examined aspect of the Anglo-American relationship during the early years of the Cold War. The contextual historiography is significantly broader with various works by John Baylis examining the Anglo-American relationship as well as Keith Hartley's book *N.A.T.O. Arms Cooperation: A Study in Economics and Politics*.³ However, the rifle debate does not feature in any major examination of the early dynamics of the Special Relationship.

The primary sources available for examination are varied, ranging from government records to contemporary press reports. Government records include a variety of War Office and Ministry of Supply reports and minutes on the development and testing of the rifles, Cabinet meeting minutes and memoranda covering the rifle's selection and the Parliamentary debates which took place in the House of Commons between 1950 and 1955. Much of this material was previously considered sensitive and was protected under both the Official Secrets Act and the Public Record Act. As such many of the documents and records pertaining to the EM2 project were not in the public domain at the time the previous works on the

² R. Blake Stevens, *The FAL Rifle*, (Toronto: Collector Grade Publications, 1993).

³ Baylis' work includes: J. Baylis, *Anglo-American Relations Since 1939: The Enduring Alliance*, (Manchester: Manchester University Press, 1997) & J. Baylis, *Anglo-American Defence Relations, 1939-84: The Special Relationship* (Basingstoke: Palgrave Macmillan, 1984).

subject were written.⁴ As these sources are now available they shed new light on the subject. Material, including British and international trials reports from Canada, Australia and America, production materials analysis, operational manuals, correspondence between project leaders and technical papers concerning the rifle's design, give new insight into why the rifle project was abandoned.

In addition to official sources, a variety of contemporary press articles will be used ranging from British newspaper commentary on the development, adoption and the decision to abandon the rifle to articles appearing in American shooting magazines. This includes opinion pieces published by both experts and politicians.⁵ While the focus of this dissertation is primarily upon the British aspects of the debate in order to present a more concise and focused investigation, examination of available American resources will provide important context. Official documents and press material including pieces from shooting magazines such as *American Rifleman* and articles from American newspapers including *The New York Times* shed light on the American attitudes and reactions to the transatlantic rifle debate as it progressed.

The narrative of the EM2's development and downfall is fascinating but extremely complex, with various factors and individuals influencing its course. The implications of the controversy which surrounded the EM2 are equally interesting. The dynamics of both the domestic and international politics surrounding the rifle debate had a profound impact on Britain and America's relationship during the early Cold War. This is a facet of the Anglo-American relationship which is arguably little known and little written about. This dissertation

⁴ Documents related to defence are often protected under Section 2 of the Official Secrets Act. Documents from the 1950s became available in the 1980s under the former Thirty-Year-Rule which made government records public material.

⁵ These include W. Wyatt, 'How The Yanks Scotched Our Rifle', *Reynolds News and Sunday Citizen*, 24/01/54, reproduced in T.B. Dugelby, *'EM-2 Concept & Design'*, (Toronto: Collector Grade Publications, 1980), pp. 167-168, and J. Strachey letter to *The Times*, 5/02/54, p. 7.

will examine the possible reasons for the EM2's abandonment examining both the practical and political factors which shaped the rifle's fate to ascertain if politics stood in the way of military progress.

Chapter One:

Origins, Development & Doctrine

The complex story of the EM2 is full of intertwining projects, trials, tests and false starts which saw conflict and disagreement between numerous parties. Various different military and government departments argued over the correct approach to developing a new rifle. The EM2 later became the focal point of not only a national political debate but also an international schism between the Western Powers which lasted half a decade. When analysing the EM2 and the political controversies it was caught up in, it is important to understand the factors which first led to its creation and subsequently to its eventual abandonment.

As the British army entered the Cold War its senior commanders recognised the need for a new more modern rifle, one which would give British soldiers the edge during the anticipated conflict with the Soviet Union. The new rifle was designed by Britain's Armaments Design Department (later the Armaments Design Establishment) and when it was briefly adopted in 1951, it was one of the most advanced weapons of its time. The new rifle's development came at a critical juncture of the Anglo-American relationship and the formation of the North Atlantic Treaty Organisation (NATO). The British hoped that the rifle and its new ammunition would become the standard used by the Western Powers. However, fundamental differences in doctrine and approach to the use and design of a new light rifle saw Britain at odds with the USA which prevented NATO agreeing on a universally standard rifle.

The British army fought the Second World War with the same weapon it had fought the first. The venerable Lee-Enfield rifle, in various incarnations, had been in

service since December 1888.¹ When it was first adopted, the bolt-action, single shot, magazine-fed Lee-Enfield was a cutting-edge design. A modernised version of the rifle continued to serve the British during the Second World War and was still one of the best weapons fielded by the combatants at the outbreak of the war. However, by 1945 the progress of war had seen new technology develop and confirm the aging Lee-Enfield's obsolescence.



Figure 1. Comparison of a Lee-Enfield No.4 (top) and an EM2 (bottom)

America had been the only nation to enter the Second World War armed with a semi-automatic rifle, the M1 Garand, which had been adopted in 1936.² However, by 1946 the small arms capabilities of the major powers had rapidly evolved. The Soviet Union and Germany had both developed their own semi-automatic rifles during the war which increased the average infantryman's firepower dramatically.³

¹ M. Pegler, *The Lee-Enfield Rifle*, (Oxford: Osprey Publishing, 2012), p. 4.

- Thirteen varying models of the Lee-Enfield were adopted throughout the course of the rifle's service life.

² L. Thompson, *The M1 Garand*, (Oxford: Osprey Publishing, 2012), p. 24.

³ Semi-Automatic or Self-Loading Rifles are weapons that once fired load the next round ready for the trigger to be pulled without the operator having to manually cycle the action as with a bolt-action rifle like the Lee-Enfield. Examples include: US M1 Garand, German Gewehr 43 & Soviet SVT-40

Germany had developed a new kind of infantry weapon - the assault rifle. The assault rifle concept took the high rate of fire of the pistol calibre submachine guns and the range and accuracy of a standard infantry rifle and combined them to create a weapon which could be fired fully automatically like a submachine gun, but was accurate to ranges up to 400 metres.⁴ This new type of rifle ushered in a revolution in infantry small arms, profoundly affecting how future wars would be fought.⁵

On the Eastern Front the Soviets had adopted a doctrine of using submachine guns to give them superior firepower at close ranges during their massed infantry attacks.⁶ German soldiers often found themselves overwhelmed and incapable of matching the Soviet infantry's firepower with their slow-firing bolt-action rifles.⁷ The German Army recognised that the average infantryman's individual firepower had to be improved. As a result the German arms industry began developing weapons capable of faster semi-automatic and fully automatic fire.⁸ The Soviet submachine guns were devastating weapons at close ranges of up to 100 metres.⁹ To combat their high volume of fire and to also outrange them a new weapon was needed. This was accomplished with the creation of the assault rifle and a new type of ammunition, which became known as an 'intermediate cartridge'. This took the German Army's standard full-power rifle round (the 7.92×57mm) and shortened its case which held the propellant, to create the less powerful but more controllable 7.92x33mm round.¹⁰ In terms of power and ability this intermediate cartridge was half way between a full-power rifle round and a small calibre pistol round.

⁴ I.V. Hogg, *The Complete Machine Gun: 1885 to the Present*, (London: Phoebus Publishing, 1979), p. 124.

⁵ *Ibid*, pp. 124-125.

⁶ Submachine guns are typically small, light fully automatic weapons which fire pistol ammunition e.g. British STEN, German MP40 & Soviet PPSH-41

⁷ C. McNab, *Soviet Submachine Guns of World War II*, (Oxford: Osprey Publishing, 2014), p. 40.

⁸ Fully automatic weapons fire continuously with a single pull of the trigger until their ammunition is expended. These weapons include machine guns such as the British Bren and German MG42 and submachine guns.

⁹ McNab, *Soviet Submachine Guns*, p. 28.

¹⁰ D. Westwood, *Rifles: An Illustrated History of their Impact*, (Santa Barbara: ABC-CLIO, 2005), p. 119.

The intermediate 7.92x33mm 'kurz' or short round was less powerful and reduced the recoil felt when firing making the assault rifles which fired it more controllable in fully automatic fire. This new lighter round also enabled a soldier to carry more ammunition, while still being effective at average combat distances out to 400 metres.¹¹ This new ammunition was used in the new StG-44 assault rifle which sparked a revolution in infantry small arms and has been called the grandfather of the modern assault rifle.¹² Learning from German and Soviet experiences on the Eastern Front Britain recognised the importance of firepower on the modern battlefield and were determined to develop their own assault rifle.

At the end of the war the Allies began to consider replacing their war-battered equipment. The Soviets developed two new rifles while the USA continued some preliminary experiments to improve their M1 Garand. The British began planning for the future replacement of the Lee-Enfield as early as March 1943.¹³ It was the lessons learned during the war which influenced Britain and other Western powers in their decision to adopt automatic rifles. Additionally it was Soviet manpower and their tactics of fire and attack that the Western Powers had in mind when they came to develop their new infantry rifles, believing that they would have to fight a campaign very similar to that which Germany had faced on the Eastern Front in 1944-45. As a result the Western Powers embraced the concept of automatic infantry rifles to increase their firepower at shorter ranges.¹⁴ In July 1945, the technical staff of the British 21st Army Group reported on the effectiveness of infantry small arms during the European campaign. The report recommended that:

The reduction in weight that could be affected in the re-design of infantry weapons, together with the simplification of ammunition

¹¹ C. McNab, *German Automatic Rifles 1941-45*, (Oxford: Osprey Publishing, 2013), p. 55.

¹² *Ibid*, p. 69.

¹³ National Archives, WO 32/10515 - 21A, 'General Staff Policy on S.A.A', 20/03/43.

¹⁴ D. French, *Army, Empire, and Cold War: The British Army and Military Policy 1945-1971*, (Oxford: Oxford University Press, 2012), p. 90.

carriage and supply would over-ride the advantage of being able to engage the enemy at longer ranges on the relatively few occasions when such opportunities arise.¹⁵

In March 1947, the British Army's Standing Committee for Infantry Weapon Development stated that 'the last war emphasised the need to reduce the weight of the rifle and to increase its rate of fire. Accuracy beyond 300 yards was not required.'¹⁶ This conclusion was supported by a number of American reports. In 1952 a report on the operational requirements for an infantry rifle suitable for the modern battlefield reiterated the need for a new rifle to 'increase in both number and rate the hits which may be inflicted on the enemy...'¹⁷ It was recognised that soldiers, often fighting in confined urban or jungle areas, would be 'limited in range by terrain obstructions to the line of sight as to exceed 300 yards.'¹⁸ Another report which analysed how American troops used their weapons in Korea, which had relatively open terrain, found that 'the average effective infantry fire... was consistently less than 200 yards.'¹⁹ More often than not infantry found themselves engaging the enemy at very close range. Experience during the Korea War indicated that there was a need for a greater number of fully automatic weapons, confirming the belief that they were the future of infantry weapons.²⁰ These reports show that the need for a new lightweight automatic rifle was appreciated on both sides of the Atlantic. However, it was at this point American and British ideas on the role and characteristics of a light rifle

¹⁵ Royal Armouries Library (Former MOD Pattern Room Library), 121 Design of Weapons, Box 3, 'Final Report of Small Arms Effectiveness for Western Campaign WW2 from D-Day to VE Day', Small Arms Section of the Weapons Technical Staff, 21st Army Group, 15/07/45.

¹⁶ Royal Armouries Library (Former MOD Pattern Room Library), 120 Meetings/Conference Box. 1, 29A, 'Paper for discussion at the Thirteenth Meeting of the Standing Committee on Infantry Weapon Development', 31/03/47.

¹⁷ N. A. Hitchman, *Operational Requirements for an Infantry Hand Weapon*, Operations Research Office Technical Memorandum ORO-T-160, (Chevy Chase: Johns Hopkins University 19/06/52) [Online]. Available: <http://www.dtic.mil/dtic/tr/fulltext/u2/000346.pdf>, p. 1.

¹⁸ *Ibid*, p. 2.

¹⁹ Gen. S.L.A. Marshall, *Commentary on Infantry Operations and Weapons Usage in Korea, Winter of 1950-51*, , Operations Research Office Technical Memorandum ORO-R-13, (Chevy Chase: Johns Hopkins University 19/06/52), [Online]. Available: <http://www.dtic.mil/dtic/tr/fulltext/u2/000342.pdf>, p.7.

²⁰ *Ibid*, p. 74.

diverged. This divergence lay the foundations for the rifle controversy which would engulf Anglo-American alliance.

As early as 1943, even before the war had ended, the British Army anticipated the need for a new rifle. The choice of what ammunition this rifle would fire was not simple and demonstrated how quickly decisions could change in military bureaucracy. The British began to seriously consider the replacement of the aging .303 round in March 1943, when the Chiefs of Imperial General Staff published a long-term policy memorandum announcing that all future ammunition adopted or developed was to be rimless and 'if possible... the standard American calibres are to be used.'²¹ This would have meant that the American M1 Garand and .30-06 ammunition would be adopted after the war. However, within months of this decision the General Staff revised their policy envisaging a more ambitious project. In October 1943, it was decided that 'very long-term research (to be measured in decades) into the ideal S.A.A [small arms ammunition] cartridge not limited by calibre'²² would be undertaken. In the meantime it was suggested that the German 7.92x57mm round be used as an interim as this was already in production and a semi-automatic rifle that fired it was in development by a Belgian team at the Armaments Design Department (ADD).²³ However, opposition arose from the Royal Navy and the RAF as well as from the other Commonwealth nations that it was pointless to have an interim round when stocks of the current arms and ammunition were so large.²⁴ It was therefore decided that the new 'ideal' ammunition would be developed in conjunction with the Commonwealth and the USA after the war.²⁵ As a result, in the space of ten months the replacement rifle policy had evolved from post-war adoption of American

²¹ National Archives, WO 32/10515 - 21A, 'General Staff Policy on S.A.A', 20/03/43.

²² *Ibid*

²³ The Armament Design Department's name was later changed to the Armament Design Establishment c.1949-50.

²⁴ National Archives, WO 32/10515 - 22A, 'General Staff Policy on S.A.A', 31/01/44.

²⁵ *Ibid*

weapons to the short-term adoption of the 7.92x57mm round to the decision to begin an in-depth study to decide the 'ideal' calibre ammunition for a new rifle.

Before the end of the war serious consideration and preliminary attempts were made to engage the Americans in the development of the new ammunition. Between October 1944 and July 1945 numerous attempts were made by the British to foster cooperation between America and the Commonwealth. The aim was to 'attain standardisation of small arms throughout the English-speaking world.'²⁶ It was believed that the Americans were 'thinking along the same lines... and would in all probability be fully prepared to enter into the proposed investigation in parallel... collaboration with us.'²⁷ British attempts to engage the USA in co-development or ammunition standardisation initiatives had initially been met with unofficial agreement.²⁸ However, by June 1945 no further discussion of development had taken place.²⁹ As early as May 1945, the British recognised that they would have to develop the calibre they thought was best and subsequently persuade the Americans to adopt it.³⁰

In February 1945 the Ideal Calibre Panel (ICP) was established, chaired by Dr Richard Beeching, Deputy Chief Engineer of the Armaments Design Department.³¹ The panel's task was to carry out ballistic testing to discover the ideal calibre, muzzle velocity and projectile weight for the British Army's new rifle ammunition.³² Standardisation with the USA was not the panel's objective but rather to identify the

²⁶ National Archives, WO 32/10515, 67A, p. 1., 'Development of a New Standard Round for Small Arms - Draft Report', 31/10/44.

²⁷ *Ibid*

²⁸ National Archives, WO 32/10515 p. 1., 'Future Round for Small Arms Ammunition - Draft', Lt. Gen. Macready, British Army Staff, Washington.

²⁹ National Archives, WO 32/10515, 2A, p. 1., 'Untitled Draft Report on Progress of S.A.A. Development', July 1945.

³⁰ National Archives, WO 32/10515, p. 1., 'Long Term Policy for development of S.A.A', Director of Infantry (DInf), 22/05/45.

³¹ National Archives, National Archives, WO 32/10515, 'Meeting of the Sub-Committee of the Committee on Infantry Weapon Development', 08/02/45.

³² E. C. Ezell, *The Great Rifle Controversy*, (London: Arms & Armour Press, 1984), p. 89

most efficient calibre regardless of external opinion.³³ Beeching's experiments were without parallel for the period, testing various aspects including the size of the projectile, the amount of propellant, projectile penetration of armour, earth and concrete, the trajectory of various projectile weights and shapes and the ammunition's accuracy.³⁴ In all this took just over two years to complete. Lieutenant-Colonel Edward Kent-Lemon, the Assistant Chief Engineer Armament Design (A/CEAD) and head of the Infantry Personal Weapon project, later explained the ADD had fired 'thousands of rounds of ammunition, in a wide range of calibres... to determine the calibre which would best meet the War Office requirements and enable a light and efficient weapon.'³⁵

In March 1947, the Panel reported its findings to the Chief Engineer of Armaments Design and representatives of the major Commonwealth nations and the Americans. The Panel recommended that the new calibre should be approximately .270 inches (6.8mm).³⁶ In June 1947 development of a .270 round began but was discontinued in April 1948, following consultation with the USA, contrary to the panel's original intentions.³⁷ The projectile's size was increased to .276-inches (7mm) and designated the '.280' in order to improve the British cartridge's chances of American adoption. This was the first of many compromises made in an attempt to appease the American military.³⁸ Following consultation with the ICP a second team of experts under Brigadier C.A. Dixon anticipated the panel's findings and developed a new cartridge with dimensions roughly similar to those

³³ National Archives, WO 32/10515, Minutes of Meeting held at War Office between DInf, DGofA and others, 22/06/45.

³⁴ National Archives, DEFE 15/239, 'The Choice of a Standard Round for Small Arms, Technical Report No. 5/47', Armaments Design Department, March 1947.

³⁵ E.N. Kent-Lemon, 'British Automatic Rifle', *American Rifleman*, August 1952, p. 42.

³⁶ NA, DEFE 15/239, p. 10., 'Choice of a Standard Round...'

³⁷ R. Blake Stevens, *UK & Commonwealth FALs*, (Toronto: Collector Grade Publications, 1980), pp. 237-238.

³⁸ Ezell, *Great Rifle Controversy*, p. 89.

recommended.³⁹ This .280-inch round had approximately half the recoil of the .303 cartridge it was intended to replace.⁴⁰ This allowed it to be extremely controllable when fired in the fully automatic mode.⁴¹ This new cartridge became the basis for all future ammunition development and subsequently the Infantry Personal Weapon programme. Over the course of six years between 1947 and 1953 the .280 round was continually adapted and altered in an effort to create a compromise ammunition which would be acceptable to both the British and the Americans.⁴² At each stage of compromises the ICP's original recommendations were undermined by increasing the power of the ammunition.

In the spring of 1947 the British dispatched a team of small arms and ballistics experts to America to share and explain the ICP's findings. This team included Brigadier J.A. Barlow, Major Braybrook (the Panel's secretary) and Kent-Lemon, then leader of the ADD's Small Arms Group.⁴³ The British hoped the visit would foster Anglo-American collaboration. The British had been completely open about their ammunition experiments and in March 1947 a copy of the ICP's report had been given to the American Military Attaché in London.⁴⁴ However, upon arriving in America and meeting with representatives of the U.S. Ordnance Department they discovered that the USA was 'already deeply committed to a new round... which they had themselves designed.'⁴⁵ Without communication with Britain or any of her other allies America had also embarked on a search for ammunition which best suited their needs. The new American ammunition, designated T65, was developed from

³⁹ Brig. C. Aubrey Dixon, 'The Nato Rifle', *American Rifleman*, January 1952, p. 17.

⁴⁰ I.V. Hogg & J. Weeks, *Military Small Arms of the 20th Century*, (London: Arms & Armour Press, 1985), pp. 296-297.

⁴¹ 'New Rifle Test For Experts 1951', *British Pathé Newsreel*, [Online] Available: www.britishpathe.com/video/new-rifle-test-for-experts.

⁴² Stevens, *UK & Commonwealth FALs*, pp. 238-239.

⁴³ T.B. Dugelby, *EM-2 Concept & Design: A Rifle Ahead of its Time*, (Toronto: Collector Grade Publications, 1980), pp. 14-16.

⁴⁴ NA, DEFE 15/239, 'Choice of a Standard Round...'

⁴⁵ Kent-Lemon quoted in Dugelby, *EM-2 Concept & Design*, p. 16.

their .30-06 service round retaining the .30-06's case head and the same bullet diameter.⁴⁶ However, not only had the Americans developed new ammunition in secret, they had also designed a new rifle. The British party was given a firing demonstration of the new T25 rifle, which came as a profound shock.⁴⁷ This fundamentally affected the future of British small arms development and precluded cooperative collaboration with the Americans. The conservative outlook of elements of the U.S. Army meant they were wholly unwilling to sacrifice the range and stopping power of their old standard .30-06 ammunition and as such the new cartridge was smaller but just as powerful.⁴⁸ While this meant that the T65 was theoretically able to hit targets at ranges out to 2,000 yards, it was also too powerful to be fired in a light automatic rifle which, according to American specifications, was to weigh no more than seven pounds.⁴⁹

This was in direct contrast to the path British ammunition research and development had taken, but the U.S. Ordnance Department was vehemently opposed to the intermediate cartridge concept pursued by the British with their .280 ammunition.⁵⁰ A key American officer, Lieutenant-Colonel Rene Studler, the chief of the Small Arms Division of the Office of the Chief of Ordnance, bluntly stated that he was 'definitely not interested'⁵¹ in the new British ammunition. British designers realised that the T65 cartridge was too powerful to be chambered in a truly practical light rifle. Anglo-American ammunition tests were scheduled for 1949 and the British believed that their intermediate ammunition would not be seriously considered if they did not have a rival rifle capable of firing it.⁵² It was decided that the ADD would

⁴⁶ L. Thompson, *The M14 Battle Rifle*, (Oxford: Osprey, 2014), p.7.

⁴⁷ Ezell, *Great Rifle Controversy*, p. 109.

⁴⁸ *Ibid*, p. 70.

⁴⁹ *Ibid*, pp. 70-1.

⁵⁰ R. Blake Stevens, *North American FALs*, (Toronto: Collector Grade Publications, 1979), p. 4.

⁵¹ Stevens, *UK & Commonwealth FALs*, p. 17.

⁵² Ezell, *Great Rifle Controversy*, p. 110.

develop a new rifle in time for the trials.⁵³ This gave the designers just 18 months to design and build working prototypes which would be able to withstand trials.⁵⁴ What developed was a miniature arms race between Britain and the USA.⁵⁵ While the American's essentially had a two-year head start the British were determined to have a rifle capable of demonstrating their new ammunition.⁵⁶

Between 1947 and 1953 the .280 ammunition was constantly worked on by the British and from April 1949 work on a compromise which was hoped would appeal to the Americans began. In December 1949, the redesign of the .280 ammunition was completed in final preparation for trials which were had been delayed until spring 1950. The new round, which combined some of the dimensions of the American T65 round's case with the British .280 projectile, was designated the .280/30.⁵⁷ The teams at the ADD had begun work on a number of new rifles, to be chambered in the .280 round, in late 1947. These new Experimental Models (EM) were to fill the assault rifle role the Germans had pioneered with the StG-44.

The ADD began work on a series of new automatic rifles in May 1946 using the German intermediate 7.92x33mm kurz round in the interim while waiting for the new 'ideal calibre' to be finalised.⁵⁸ In September 1947 the War Office issued its official specification for the characteristics and features it wished to see in the army's new rifle and ammunition. This specification, W.O.P.S No.9, called for a long list of desirable characteristics for both a new rifle and the ammunition it fired. The ammunition was to be smokeless and flashless, able to penetrate steel helmets at 600 yards, be accurate enough to achieve a six-inch group at 200 yards and be able to

⁵³ Ezell, *Great Rifle Controversy*, pp. 109-110.

⁵⁴ Stevens, *UK & Commonwealth FALs*, p. 17.

⁵⁵ Stevens, *North American FALs*, p. 6.

⁵⁶ Brig. C.A. Dixon, 'The Nato Rifle', *American Rifleman*, January 1952, p. 17.

⁵⁷ Stevens, *UK & Commonwealth FALs*, p. 238.

⁵⁸ Royal Armouries Library (Former MOD Pattern Room Library), 120 Meetings/Conferences Box 1, 2A, 'Specification of an Infantry Combat Weapon - Departmental Use Only', 15/05/46.

work in any climate.⁵⁹ The new .280/30 round was able to meet and surpass all of these criteria. W.O.P.S No.9 also laid out a substantial list of requirements for the new Infantry Personal Weapon (IPW). These included: the capability to fire 30 rounds per minute, be convenient and handy, capable of being manually cycled if the gas system failed, have an optical sight, weigh no more than 8 lbs, be able to fire rifle grenades, have provision for a detachable bipod and have a rate of automatic fire between 500 and 700 rounds per minute.⁶⁰ Additional requirements demanded the rifle also be capable of being used as a sniper's rifle and as such should fire from a closed bolt making it more accurate.⁶¹

By late-1947 three principal rifles had been designed and in January 1948 these were designated the EM1 designed by Stanley Thorpe, the EM2 designed by Captain Kazimierz Stefan Januszewski and the EM3 developed by an Australian, Major J.E. Hall.⁶² These three designs shared one common design feature, they all utilised a bullpup configuration. In addition to the rifle designs developed by the ADD, two private companies were also contracted to develop rifles chambered in the .280 cartridge. The first and most important of these was the Belgian company Fabrique Nationale (FN) who developed a lightweight carbine designed by Dieudonné Saive.⁶³ The new FN rifle design would eventually become the EM2's principal rival. The other private contractor was a British company with a long history of firearms manufacture, Birmingham Small Arms Ltd. (BSA). BSA developed a more traditional design with a full wooden stock which weighed a pound

⁵⁹ Royal Armouries Library (Former MOD Pattern Room Library), 280(7mm) Ammunition, Box 1(82 Series File), File G.1, 'British User Requirements For the New SAA and Automatic Rifle', ADE draft paper, 20/05/49.

⁶⁰ Royal Armouries Library (Former MOD Pattern Room Library), 340(200) EM2, Box 1, 16.27.1-197, 'Notes on .280 SAA and Light Auto Rifle and the New Sustained fire M.G.', ADE paper, 15/01/51.

⁶¹ *Ibid*

⁶² Royal Armouries Library (Former MOD Pattern Room Library), Box 340(200)EM2, file 1, 16.27.1, 9., 'Nomenclature for New Automatic Rifles', 06/01/48.

⁶³ Stevens, *UK & Commonwealth FALs*, pp. 5-14 .

heavier than the EM2.⁶⁴ However BSA's rifle, the 28P, suffered a catastrophic failure during testing in June 1950 and was dropped.⁶⁵ The FN Universal Carbine had been in development since 1946 and had a substantial lead in development and testing over the British designs. In late 1948 the British shared the specifications of their new .280/30 round with FN who then began adapting their carbine to fire the new intermediate British round. From 1949 onwards the FN rifle and the EM2 were developed and tested in tandem and were both taken to the Anglo-American trials.



Figure 2. The four main rifles of the Infantry Personal Weapon programme: EM1, EM2, BSA 28P & FN Universal Carbine

⁶⁴ Stevens, *UK & Commonwealth FALs*, p. 49.

⁶⁵ Please see Appendix A for more detail about the BSA 28P.

The bullpup layout of the EM series differed greatly from the conventional rifle configuration in that it repositioned the weapon's magazine and working parts behind the trigger mechanism, as can be seen in *figure 3*. This had the advantage of maintaining the barrel length of a conventional rifle while shortening the weapon's overall length by removing the need for a butt stock. This meant that the rifle was short and handy enough to be well suited to urban and close quarter combat while having the same length barrel as the rifle it would replace.

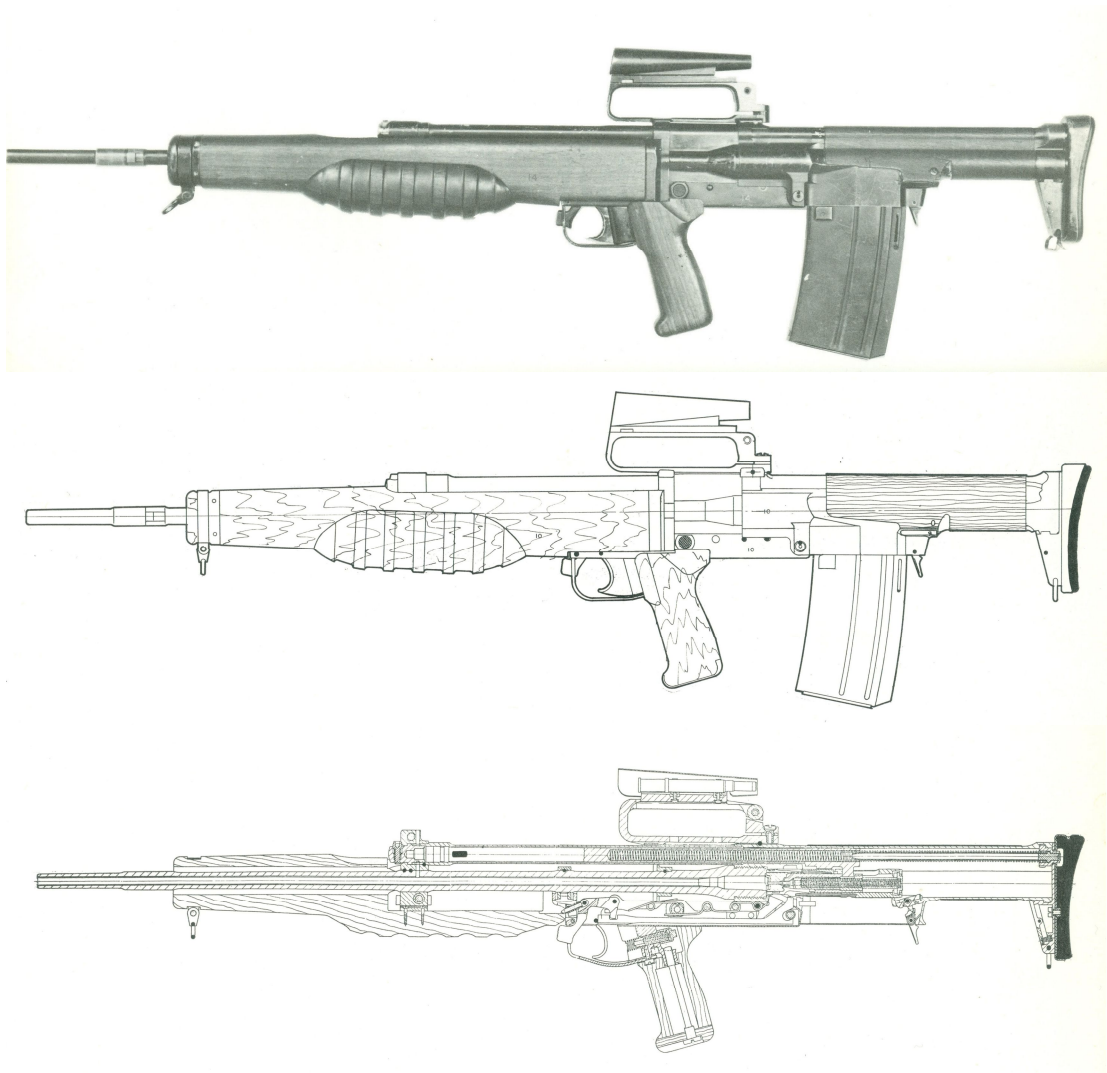


Figure 3. Photograph and diagrams showing the external and internal layout of the EM2 'bullpup' rifle.⁶⁶

⁶⁶ Dugelby, *EM-2 Concept & Design*, pp. 274-278.

The first bullpup weapon developed by the ADD was the EM-1 LMG (not to be confused with the EM1), designed in 1944 by Roman Korsac, the leader of the Polish émigré contingent working at the RSAF Enfield.⁶⁷ Korsac's weapon was chambered in 7.92x57mm and was initially designed to fill the role of a light machine gun. The development of the bullpup concept continued with the development of the EM series of rifles. The EM3 was the first of the three rifles to be dropped as it was 'unlikely that EM3 will be developed in the required time.'⁶⁸ As development of the various IPW designs was ramped up the shortage of technical staff became acute and in September 1947 staff were redistributed to other projects.⁶⁹ Subsequently it was decided to cease work on the less developed rifles and for design and technical staff to focus on the EM1 and EM2.⁷⁰ Thorpe's EM1, codenamed 'Cobra', utilised advanced metal stamping techniques which minimised the machining necessary, in theory making the rifle simpler to mass produce.⁷¹ The EM1 was first tested in December 1949, but due to problems with the new stamping techniques used to manufacture the rifle, it was eventually dropped in favour of the EM2 which was in a more advanced state of development. None of the EM1 prototypes manufactured were taken to the Spring 1950 light rifle trials in America.⁷²

The EM2, designed by Captain Januszewski, was a continuation of work which had begun with the Korsac EM-1. Januszewski was a wartime Polish émigré who remained in Britain after the war.⁷³ He later anglicised his name to Stefan

⁶⁷ Dugelby, *EM-2 Concept & Design*, p. 17.

⁶⁸ Royal Armouries Library (Former MOD Pattern Room Library), 'Ministry of Supply, Armaments Design Department, General Progress Reports Nos. 9-12, 1947', D.5/2/9, December 1947.

⁶⁹ Royal Armouries Library (Former MOD Pattern Room Library), Ammo/280/1, file G1, 10A, 'Development of the Optimum or Standard S.A.A. Round', 22/09/47.

⁷⁰ Royal Armouries Library (Former MOD Pattern Room Library), 'Ministry of Supply, Armaments Design Department, General Progress Reports Nos. 9-12, 1947', D.5/2/9, December 1947.

⁷¹ Dugelby, *EM-2 Concept & Design*, p. 41.

⁷² *Ibid*, p. 45.

⁷³ *Ibid*, p. 57

Kenneth Janson in October 1950.⁷⁴ When the EM2, codenamed 'Mamba', was adopted in April 1951 it was the first service rifle in the world to use the 'bullpup' configuration. For the period the EM2's revolutionary layout was certainly unconventional and arguably ahead of its time as another bullpup would not be adopted by a major military power until the Steyr AUG was adopted by the Austrian Army in 1977.⁷⁵ The EM2's futuristic appearance and unusual layout would be one of the factors which American ordnance officials would criticise. Kent-Lemon, leader of the IPW programme, defended the EM2's layout in an article in *American Rifleman* describing it as 'a logical, but unorthodox solution.'⁷⁶

The EM2 was built to be as lightweight as possible, with the aim of satisfying both British and American weight targets. Unlike the EM1, Janson's rifle was machined from blocks of steel to create the weapon's body, barrel and internal parts. While this was more complex than stamping, it lightened the gun's weight to just 7.13 lbs (3.53kg) compared to the EM1's 10.25 lbs (4.62kg). Janson filled a 500-page book with thousands of calculations needed to design the weapon to the closest tolerances of the materials used.⁷⁷ By March 1949 the ADD had managed to design, develop and assemble working EM2 prototypes in just 18 months.⁷⁸ The prototype rifles were expertly made by skilled machinists and while they used wooden furniture, once mass production began the ADD intended to use advanced plastic and fibreglass manufacturing techniques to make the rifle's furniture and grips, contacting several companies which specialised in these materials including Lignumform Ltd. and

⁷⁴ *The London Gazette*, 19/05/50, Supplement: 38915, p. 2484, [Online] Available:

www.thegazette.co.uk/London/issue/38915/supplement/2484

The London Gazette, 27/10/50, Issue: 39053, p. 5391, [Online] Available:

www.thegazette.co.uk/London/issue/39053/page/5391

The London Gazette, 30/05/52, Supplement: 39555, p. 3020, [Online] Available:

www.thegazette.co.uk/London/issue/39555/supplement/3020

⁷⁵ T. B. Dugelby, *Modern Military Rifles: the EM2 Concept Comes of Age*, (Toronto: Collector Grade Publications, 1984), p. 66.

⁷⁶ Kent-Lemon, 'British Automatic Rifle', *American Rifleman*, p.42.

⁷⁷ 'So Now They'll Have to Change The Drill', *Sunday Express*, 12/08/51.

⁷⁸ Royal Armouries Library (Former MOD Pattern Room Library), .280 (7mm) Ammunition Box 1, file G1, Letter from Gen. Sir Kenneth Crawford to Brigadier J.A. Barlow, 17/03/49.

Flexplywood.⁷⁹ These were extremely sophisticated materials for the period and if full scale production had begun, the EM2 would have been the most advanced service rifle in the world.

The EM2's other cutting edge features included an optical 'unit sight' which replaced traditional iron sights.⁸⁰ The anticipated conflict with the Soviet Union meant fighting in cold climates was expected therefore the EM2 could be fitted with an Arctic trigger assembly and its gas piston system had variable settings for adverse conditions.⁸¹ Another new feature was the 'last round hold open' which allowed soldiers operating the rifle to reload the weapon and automatically chamber a new round once the fresh magazine had been placed in the weapon.⁸² In theory this enabled a soldier to manipulate the weapon without having to take his eyes off his target. The short length, light weight and bullpup configuration of the EM2 made it a well-balanced, handy and easy-to-shoot weapon.⁸³ A key advantage of the EM2 and its .280 ammunition was that it was radically lighter than earlier weapons, allowing a soldier to carry more ammunition.⁸⁴ The lighter recoil of the intermediate .280/30 cartridge meant that it was much more controllable and allowed rapid aimed fire. During public tests at the School of Infantry at Warminster in 1951 the EM2 fired 84 aimed shots per minute in semi-automatic mode compared to the 43 rounds fired by the American M1 Garand and the 27 rounds fired by the rifle it was set to replace, the

⁷⁹ Royal Armouries Library (Former MOD Pattern Room Library), 340(200)EM2, Box 1, 16.27.1, 232, Various letters from manufacturers, c.1951.

⁸⁰ Royal Armouries Library (Former MOD Pattern Room Library), 340(200)EM2 - 16.27.1, 'Development of Infantry Weapons'.

⁸¹ Dugelby, *EM-2 Concept & Design*, p. 84.

⁸² *Ibid*, p. 53.

⁸³ Royal Armouries Library (Former MOD Pattern Room Library), 340(200)EM2, Box 2, pp. 4-5, 'The New Self Loading Rifle', Report by ADE, 26/03/53.

⁸⁴ National Archive, WO 185/242, 123'280' SAA and .30' T65 Type', 27/03/51.

Lee-Enfield.⁸⁵ In fully automatic fire the rifle could fire 600 to 650 rounds per minute while still being controllable.⁸⁶

The EM2 was designed to fulfil a number of radically different roles in an effort to replace a variety of niche-use weapons with a single rifle.⁸⁷ It was initially hoped that the IPW would replace the STEN submachine gun in the machine carbine role and the aged Lee-Enfield in the infantry rifle role while also being able to act as a light machine gun and a sniper rifle.⁸⁸ *Figure 4* below shows how the EM2 was to be used in various roles.

⁸⁵ 'New Rifle Test For Experts 1951', *British Pathé Newsreel*, [Online] Available: www.britishpathe.com/video/new-rifle-test-for-experts.

⁸⁶ Royal Armouries Library (Former MOD Pattern Room Library), 340(200)EM2, Box 1, 16.27.1, 197, 'Notes on .280 S.A.A. and Light Auto Rifles and the New Sustained fire M.G.', 06/02/51.

⁸⁷ Royal Armouries Library (Former MOD Pattern Room Library), 120 Meetings/Conferences, Box 1, file: Minutes from Committee Infantry Weapon Development standing, 2A, 'Specification of an Infantry Combat Weapon', 15/04/46.

⁸⁸ Royal Armouries Library (Former MOD Pattern Room Library), 120 Meetings/Conferences, Box 1, file: Minutes from Committee Infantry Weapon Development standing, 29A, 'Minutes from the Standing Committee on Infantry Weapon Development', 23/03/47.

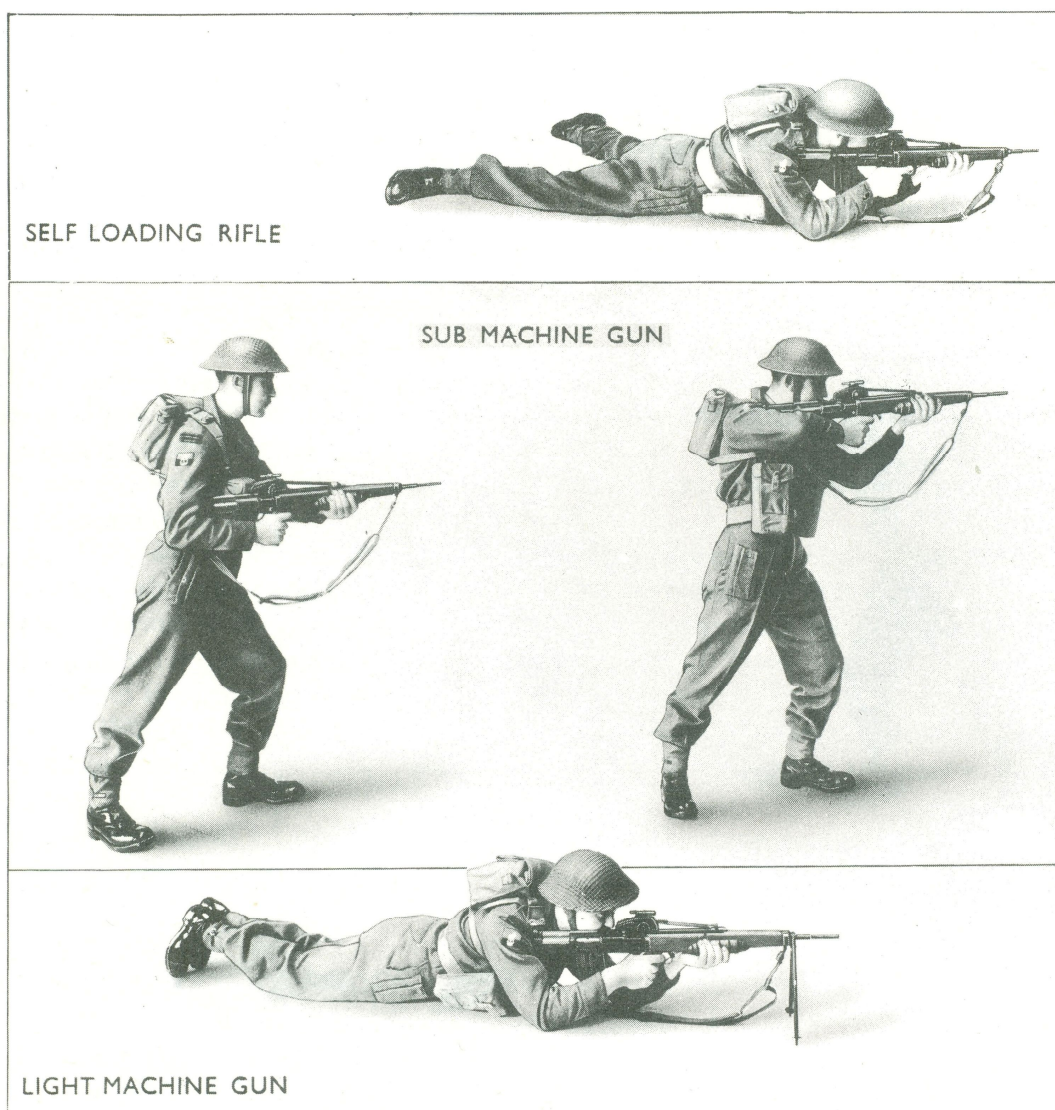


Figure 4. Diagram from the EM2's Provisional Notes (manual) showing the various roles in which the rifle could be used.⁸⁹

In spring 1950 the EM2 was taken to the Anglo-American rifle trials much to the surprise of the American officials. The EM2 was undoubtedly the world's most advanced infantry rifle in 1950. However, it was still a prototype and inevitably suffered teething problems during the testing. During the trials the EM2 was praised for its ease of field stripping, handiness and its in-line stock which mitigated recoil. Conversely, American ordnance officials criticised the EM2's complexity and

⁸⁹ Royal Armouries Library (Former MOD Pattern Room Library), 340(200)EM2, Box 1, 16.27.1, 'Provisional Notes for users of Rifle, Automatic, .280-in. EM-2 (CEAD)', DofA(SA)', Ministry of Supply, London 1950, pp. 8-9.

unconventional layout.⁹⁰ Despite these shortcomings the British still believed that the EM2, once perfected, was the best weapon as the others tested were also found lacking. During the trials the FN was found to be the most reliable of the prototypes tested surviving an endurance test with the fewest failures.⁹¹ However, complaints were made about its ergonomics and most significantly its poor accuracy.⁹² Following further testing in Britain the ADE reported that the EM2 met almost all of the War Office's extensive requirements leading to the government's Defence Committee deciding to adopt the rifle on 19 March 1951, as the Rifle No.9 Mk1, a month later the decision was announced in the House of Commons.⁹³ However, within six months a new government came to power and the EM2's future was cast in doubt. In early 1952, with the future of the .280/30 round also uncertain, FN decided that they would begin to adapt their rifle to fire the American T65 round.⁹⁴ By 1952 the EM2 and FN rifle were comparatively equal in performance however, when the rifles were converted to fire the larger American cartridge the FN was more controllable and handled the round's higher pressures better.⁹⁵ In 1953 the ADE's report following trials recommended that 'if urgency existed, the FN rifle showed the most promise of development for early use.'⁹⁶ It was eventually agreed by the British Cabinet that the FN FAL, as it became known, would be adopted by the army on the 1 December 1953.⁹⁷

⁹⁰'A Comparison Test of United Kingdom and United States Lightweight Rifles, Tenth Report on Project No. TS2-2015', Development and Proof Services Aberdeen Proving Ground, 05/04/50, [Online]. Available: <http://www.dtic.mil/dtic/tr/fulltext/u2/896858.pdf>, p. 29.

⁹¹ *Ibid*, p. 31.

⁹² *Ibid*, p. 34.

⁹³ National Archive, CAB/128/19, p. 125, 'Cabinet Conclusions 49, Minute 2., The .280in. Automatic Rifle', 05/07/51.

⁹⁴ R. Blake Stevens, *The Metric FAL*, (Toronto: Collector Grade Publications, 1981), p. 69.

⁹⁵ Dugelby, *EM-2 Concept & Design*, p. 97.

⁹⁶ Royal Armouries Library (Former MOD Pattern Room Library), 340(200)EM2, Box 2, p. 1., 'The New Self Loading Rifle', Report by ADE, 26/03/53.

⁹⁷ National Archives, PREM 11/854, 69, Cabinet Minutes, 'New Type of Rifle and Ammunition', 01/12/53.

Between 1947 and 1951 the British had designed, developed and adopted a revolutionary new rifle in record time. Developing the weapon and its ammunition in line with their ideas of what a modern rifle should be capable of. The EM2 was adopted in the face of both national and international criticism and the timing of the 1951 general election meant that Clement Attlee's Labour party was not in a position to push through the EM2's adoption and production. Instead it fell victim to both national and international political machinations. The British insistence on the EM2 and its intermediate ammunition saw a schism develop between Britain and her American ally. Winston Churchill's Conservative government believed this gulf threatened the safety of Europe and were determined to pursue standardisation at any cost. This placed the EM2's future in the politicians' hands.

Chapter Two:

International Intrigue and the Great Rifle Controversy

Britain's international allies had a profound affect on the Infantry Personal Weapon programme. Initial hopes of collaboration with America quickly evaporated leading to years of uncertainty and stalemate, while Canada and the other NATO powers were caught in limbo waiting for an agreement upon which ammunition and rifle would become standard. It was during the first Anglo-American rifle trials that the American opposition to the British design became clear.

The trials took place at the Aberdeen Proving Ground and at Fort Benning (the U.S. Army Infantry Centre) testing both the EM2, the FN rifle and the American T25. It quickly became clear that none of the weapons were sufficiently developed to give a true indication of their potential. The T25 rifle struggled with unreliable experimental ammunition, mechanical failures beset the EM2 and the Americans criticised the relative weakness of the British intermediate ammunition when compared to their T65 round. The performance of all three prototype rifles during the trials was disappointing. They had been brought to test too soon and failed to give a accurate impression of their ability and suitability. This had a profound effect as it was the spring 1950 trials which shaped not only the future of the various rifles but also the long-term opinions of the respective participants.

The fundamental problem with the trials was that they were evaluated using American criteria and the rifles and ammunition had been developed with two differing philosophies on what Britain and America wanted from a light rifle. The Americans perceived the British .280/30 ammunition as being underpowered when in fact it was never intended to be effective at the extreme ranges the Americans demanded from the T65. The result is that the British rifle and ammunition performed as it was originally designed to. However, the Americans remained reluctant to

abandon the power and reach of full power rifle ammunition, which combat and scientific reports increasingly regarded as redundant, to gain the benefits of a lighter more controllable assault rifle.

Some members of the British team felt the Americans were purposely trying to undermine them and that the testing staff of the U.S. Army Infantry Centre had not been impartial in their presentation of the arguments for and against the British intermediate ammunition to the Army Equipment Board.¹ Brigadier Barlow, the Director of Artillery (Small Arms), wrote a memorandum on the American trials' report alleging foul play. He believed that senior U.S. Ordnance officers had worked to 'ensure that our proposals are stillborn, even though the test results may be distinctly favourable.'² He believed that correct information about the British ammunition had deliberately not been shared with the U.S. Army Equipment Board by American ordnance officers in an effort to discredit the British ammunition.³ What Barlow termed as American attempts 'to queer the pitch'⁴ can also be seen in the testing of rifle grenades. The British had designed the EM2 to fire the American M9A1 rifle grenade which was agreed upon in the test plan. However, the American's intentionally used a completely different grenade which resulted in one of the EM2 prototypes being badly damaged.⁵ This was a clear attempt by U.S. Ordnance officers to deliberately sabotage the testing and undermine the EM2.

Britain and America fundamentally differed on the importance of range and how lethality was understood. The USA was unwilling to change its views or compromise. The U.S. Ordnance Corps hid their prejudice against the EM2 behind technical objections to the British ammunition, arguing that the .280 cartridge was

¹ National Archives, WO 185/242, 120, 'Report of the U.S. Army Equipment Board - 8th March 1950', Memorandum from Brig. J.A. Barlow, DofA(SA) to DGofA, 28/04/50.

² *Ibid*

³ *Ibid*

⁴ *Ibid*

⁵ Royal Armouries Library (Former MOD Pattern Room Library), 340(200)EM2, Box 1., Letter from Kent-Lemon, A/CEAD to Barlow DofA(SA), 28/04/50.

unsuitable because it was not a full-power rifle round. This was indeed true as it had never been designed or intended as such and had been developed as an intermediate round, not the more powerful ammunition favoured by the USA.⁶ The EM2 represented a break with traditional American rifle doctrine; sacrificing power and long-range accuracy for rapid fire was unthinkable. The U.S. Ordnance Corps was adamant on the adoption of an American rifle and ammunition. A large amount of money had been spent on developing a series of prototype rifles and Lieutenant-Colonel Studler and elements of the U.S. Army were intent on their adoption.⁷ This preferential policy for American equipment regardless of the technical worth of other designs sacrificed both the EM2 and later FN's rifle. Following the trials Britain believed that with changes the .280 round and EM2 might yet be accepted by the USA despite American misgivings and attempts to undermine the testing.⁸ If they could not be convinced, NATO's goal of standardisation was in the balance.

By the end of 1951 the American government was increasingly eager to reach an agreement. The U.S. Secretary of the Army Frank Pace wrote to Antony Head, the British Secretary of State for War, calling for a 'broad agreement or conclusion' before the next meeting of the NATO standing group.⁹ However, even with these calls, they refused to compromise and the situation failed to improve. By contrast the British were willing to compromise the performance of both their ammunition and rifle in order to reach an agreement. Despite it meaning a departure from their original goals of creating a lightweight rifle which fired an intermediate cartridge suitable for engaging the enemy at distances up to 600m. In an early attempt to appease U.S. Ordnance officials, the British redesigned their cartridge casing, altering the groove that allowed

⁶ Ezell, *Great Rifle Controversy*, p. 92.

⁷ *Ibid*, pp. 97-98.

⁸ Stevens, *UK & Commonwealth FALs*, p. 49.

⁹ National Archives, PREM 11/854, 148, Memorandum from A. Head, Sec. State for War, to W. Churchill, PM, 09/11/51.

spent cases to be extracted by existing American rifles.¹⁰ This meant that American weapons would not have to replace their extractors if the British ammunition was selected. This small change would minimise expensive changes in American production machinery. When it became clear that the Americans were unimpressed by the power and ballistics of the original .280 ammunition the British improved it by increasing the ammunition's velocity. This was standardised in August 1951 as the '7mm Ball Mark 1Z'.¹¹ The Americans refused to adopt ammunition they considered to be less than equal to their current .30-06 round in performance.¹² The British then re-chambered the EM2 to fire the American T65 cartridge in time for trials in 1952.¹³ This attempt to modify the EM2 failed as the rifle's design was unable to handle the increased power of the ammunition.¹⁴

In sharp contrast to British pragmatism the Americans were categorically unwilling to compromise. A telegram from the British Joint Services Mission (BJSM) in Washington warned that the USA was 'so adamant over decision not to take .280 that it is tactless on our part to discuss it.'¹⁵ This signalled that no conceivable progress could be made to convince American ordnance officers. Another example of American reluctance to compromise on armament standardisation can be seen in the selection of aircraft machine guns. The USA refused to adopt a gun developed in Britain as they 'saw no pressing reason for a compromise... to a foreign make that they felt was not up to the standards'¹⁶ of their own designs. This same American obstinacy essentially blocked the possibility of the .280 round being adopted by NATO.

¹⁰ Royal Armouries Library (Former MOD Pattern Room Library), .280(7mm) Ammunition, 82 Series File, 'Ammo .280', letter from DofA(SA) to A/CEAD, 13/05/49.

¹¹ Stevens, *UK & Commonwealth FALs*, p. 235.

¹² 'US Army Lightweight .30 Calibre Rifle', Press Release, Department of Defense, Office of Public Information, 295-51S, 27/12/51.

¹³ Stevens, *UK & Commonwealth FALs*, p. 75.

¹⁴ T.B. Dugelby, *EM-2 Concept & Design: A Rifle Ahead of its Time*, (Toronto: Collector Grade Publications, 1980), p. 97.

¹⁵ National Archives, WO 185/242, 124, Telegram BJSM to War Office, 11/06/51.

¹⁶ '3 Powers Reveal Arms Unity Lack', *New York Times*, 20/12/49.

Britain's rearmament efforts were just one part of the Western Powers' move to combat the Soviet threat. On 4th April 1949, the North Atlantic Treaty Organisation was formed with the express aim of maintaining 'stability and well-being in the North Atlantic area.'¹⁷ This in theory bound the USA to the defence of Europe, which the British government saw as the only way to deter Russian aggression.¹⁸ As a result successive British governments focused on demonstrating to the Americans that Britain and the other European countries were able to share the weight of defending Europe and match American defensive efforts.¹⁹ One of NATO's central aims was the standardisation of arms and equipment between all member nations. The impetus behind this was experience gained during the 1944-45 European campaign which had seen logistical problems develop from the numerous different kinds of ammunition the Allies used.²⁰

The aim of standardisation was to bring interoperability to equipment, weapons, and logistics in order for Allied forces to co-operate together effectively against a common enemy.²¹ As early as 1946 Britain, America and Canada had been discussing standardisation.²² Limited talks continued and once NATO was founded several types of artillery and artillery ammunition were standardised.²³ Beyond this initial limited standardisation little progress was made. In December 1949 Britain, Canada and America agreed a standardisation policy.²⁴ But even before this agreement senior British officers questioned 'how much are we prepared to pay for standardisation...

¹⁷ 'The North Atlantic Treaty', 04/04/49, [Online]. Available: http://www.nato.int/cps/en/natolive/official_texts_17120.htm.

¹⁸ E.H. Fedder, *NATO: The Dynamics of Alliance in the Postwar World*, (New York: Dodd, Meade & Co., 1973), p. 29.

¹⁹ D. French, *Army, Empire, and Cold War: The British Army and Military Policy 1945-1971*, (Oxford: Oxford University Press, 2012), p. 29.

²⁰ 'A New Rifle For NATO?', *American Rifleman*, September 1952, p. 14

²¹ K. Hartley, *NATO Arms Co-Operation: A Study in Economics and Politics*, (London: George Allen & Unwin, 1983), p. 41.

²² 'Atlee Says Talks on Arms are Limited', *New York Times*, 11/12/46.

²³ E. C. Ezell, 'Cracks in the Post-War Anglo-American Alliance: The Great Rifle Controversy, 1947-1957', *Military Affairs*, Vol. 38, No. 4 (Dec., 1974), p. 139.

²⁴ '3 Powers Reveal Arms Unity Lack', *New York Times*, 20/12/49.

how important is it in relation to performance of weapons?'²⁵ By 1951 the British were fully committed to the EM2 with all of their resources focused on developing it.

Clement Attlee's Labour government hoped that by acting decisively the other NATO powers would follow Britain's example and adopt the EM2.²⁶

Opinion on the benefits of full standardisation of ammunition and rifle was questioned by some experts. In March 1952, Kent-Lemon wrote a paper on the problems with complete standardisation. In it he made a compelling argument for the immediate adoption of the .280 round believing that standardisation 'can very easily be bought at far too high a price and the struggle to achieve it may well be a serious bar to progress.'²⁷ As the Assistant Chief Engineer of Armament Design, Kent-Lemon laid out the practicalities of adopting the new British round explaining that it already shared many of the dimensions of the American T65 round and that if that was later adopted it would not be difficult to refit the EM2 by rebarrelling.²⁸ Kent-Lemon complained that 'it is only when the threat of war appears that there is any possibility of change...' and that unless Britain began 'to equip our troops with a truly efficient automatic weapon we shall find ourselves at a very grave disadvantage.'²⁹ With no decision forthcoming NATO agreed to temporarily standardise to the American .30-06 round, as this was already in widespread use in Europe.³⁰ The USA increased pressure on Britain to temporarily adopt the M1 Garand and the .30-06 round in line with other European nations. However Britain was unwilling to rearm with a weapon it saw as soon to be made obsolete by weapons like the EM2 and FN carbine.³¹ A month before

²⁵ National Archives, WO 185/244, 47A, 'Standardisation with Canada S.A.A.', Director of Artillery (Small Arms) to Controller Supplies (Munitions), 29/03/49.

²⁶ Ezell, 'Cracks in the Post-War Anglo-American Alliance', p. 139.

²⁷ Royal Armouries Library (Former MOD Pattern Room Library), 340(200)EM2, Box 1, 16.27.1, 424, p. 1., 'The Penalties of a Policy of Complete Standardisation', paper by E.N. Kent-Lemon, A/CEAD, 19/03/52.

²⁸ *Ibid*, p. 2.

²⁹ *Ibid*, p. 2.

³⁰ 'Many NATO Arms are Standardized', *New York Times*, 12/10/52.

³¹ National Archives, WO 185/244, 'Light Rifles and Ammunition', Letter BJSM to DofA(SA), 09/02/51.

the British announcement of the adoption of the EM2, in April 1951, a meeting of senior standardisation officers from Britain, Canada and the USA met. Lieutenant-Colonel Studler reiterated America's commitment to their current rifle the M1 Garand and that the T65 round would be their future ammunition.³² Similarly the British confirmed that they would not standardise to the M1 Garand as they considered it inferior to the EM2.

In April 1951 the British government announced that they were to unilaterally adopt the EM2 and its .280/30 ammunition. This caused consternation amongst the NATO powers and threw standardisation efforts into doubt. In response to Britain's announcement the U.S. Secretary of Defense, General George C. Marshall, confirmed that America did 'not consider it to be in the best interests of Western Defence to adopt at this time a new small arms ammunition and weapon unproven in combat.'³³ The British were acutely aware of the consternation their decision had caused and the BJSM in Washington reported that 'the repercussions within NATO may be serious.'³⁴ Without standardisation Britain, the Commonwealth and America would go to war using four different types of ammunition between them (the two older and two newer types) instead of one standard round.

The situation fundamentally changed following the October 1951 General Election in which Winston Churchill's Conservative Party came to power. Churchill had long believed that standardisation within NATO and harmony with America were essential.³⁵ His government eventually oversaw an agreement on ammunition standardisation which would be in place for over 20 years.

³² National Archives, WO 185/244, 'Light Rifles and Ammunition', Letter BJSM to DofA(SA), 09/02/51.

³³ National Archives, CAB 21/3465, 15, 'Telegram from BJSM, Washington to Ministry of Defence, London', 23/06/51.

³⁴ *Ibid*

³⁵ *Hansard*, House of Commons Debate, 25/04/51, vol. 487 cc379, [Online]. Available: http://hansard.millbanksystems.com/commons/1951/apr/25/small-arms-calibre#S5CV0487P0_19510425_HOC_201.

Throughout the controversy surrounding the rifle, Canada found itself geopolitically trapped between Britain, its former imperial metropole to whom it was inexorably linked, and the United States, with whom they shared a land border and vital trade links. It is important to note that during 1951 alone American orders for arms, ammunition and equipment from Canada totalled the huge sum of \$412,600,000, roughly half the total worth of orders Canada received that year.³⁶ The situation deteriorated following Britain's unilateral adoption of the EM2. Attlee's government may have hoped that once Britain made a choice that the Commonwealth nations would follow Britain's example. For a time this looked to be the case when in August 1951, Australia announced they would use the new British rifle.³⁷ However, Canada remained impartial throughout the rifle debate, refusing to side with either party. Canada's Minister of National Defence, Brooke Claxton, defended the Canadian government's position saying that it was in the 'interests of our common defence in NATO... that we should agree on a round and on a rifle'³⁸ and that Canada facilitated and continually pushed for an agreement. Canada felt increasingly trapped between Britain and the USA for whom they were manufacturing two different types of ammunition.³⁹ The Canadian military was using 'British type equipment while [their] industry was organised on North American industrial standards.'⁴⁰ They felt that the logistical strain of producing a third type of ammunition, the British .280/30, would be too much. A despondent Claxton addressed the Canadian Parliament lamenting that 'we have worked on standardisation committees over the last five years... we hoped

³⁶ *Canadian Parliamentary Hansard*, House of Commons Debates, 21st Parliament, 6th Session: Vol. 3, 30/05/52, p.2749, [Online]. Available: http://parl.canadiana.ca/view/oop.debates_HOC2106_03/473?r=0&s=2.

³⁷ 'Australia to Use New British Rifle, *The Times*, 14/08/51.

³⁸ *Canadian Parliamentary Hansard*, House of Commons Debates, 22nd Parliament, 1st Session: Vol. 6, 21/06/54, pp.6406-7, [Online]. Available: http://parl.canadiana.ca/view/oop.debates_HOC2201_06/722?r=0&s=1.

³⁹ Ezell, *Great Rifle Controversy*, p. 96.

⁴⁰ National Archives, CAB 21/3465, 14, Letter from Brooke Claxton, Canadian Minister of National Defence to Emanuel Shinwell, UK Minister of Defence, 22/06/51.

for success. ...Unfortunately that was not achieved in respect to the fundamental weapon of all, the rifle.⁴¹ He continued 'if this failure to agree continues, it not only affects the development programs of Britain and the United States... but far more it affects ourselves because we are a surplus producer.'⁴² Canadian frustration with Britain and America's inability to compromise reached its climax in late July 1951, when Canada announced they were suspending arms shipments to NATO nations until an agreement over a standard infantry rifle was reached.⁴³ Claxton felt Canada had to reconcile the two major powers it was caught between. In a telegram to Emanuel Shinwell, the British Minister of Defence, he complained that 'failure to agree on this weapon represents a serious setback in our common purpose. If there is no agreement on... the rifle, the outlook for any agreement on any weapon seems poor indeed.'⁴⁴ Claxton asked that given 'the grave seriousness of going off in separate directions on so important a matter'⁴⁵ that representatives at the highest possible level from Britain, Canada and America meet. A meeting in Washington of the British, French, Canadian and American defence ministers was arranged for August. These high level talks had the potential to break the Anglo-American deadlock, however the impasse continued prolonging the stress on the alliance.

The summit began badly when the British delegation landed in Washington and the American welcoming committee failed to meet rank with rank as Secretary of the Army Frank Pace was at a prior engagement.⁴⁶ The conference itself saw continued deadlock with each nation presenting a statement before a general discussion. Shinwell

⁴¹ *Canadian Parliamentary Hansard*, House of Commons Debates, 21st Parliament, 4th Session: Vol. 5, 14/06/51, p.4107, [Online]. Available: http://parl.canadiana.ca/view/oop.debates_HOC2104_05/89?r=0&s=2.

⁴² *Canadian Parliamentary Hansard*, House of Commons Debates, 21st Parliament, 4th Session: Vol. 5, 14/06/51, p.4107, [Online]. Available: http://parl.canadiana.ca/view/oop.debates_HOC2104_05/89?r=0&s=2.

⁴³ '4 Nations to Discuss Standardized Arms', *New York Times*, 01/08/51.

⁴⁴ National Archives, CAB 21/3465, 14, Letter from Brooke Claxton, Canadian Minister of National Defence to Emanuel Shinwell, UK Minister of Defence, 22/06/51.

⁴⁵ *Ibid*

⁴⁶ Ezell, *Great Rifle Controversy*, p. 97.

and Lieutenant-General Sir John Whiteley, the chairman of the Chiefs of the Imperial General Staff, attempted to convince the USA and Canada that the .280/30 was the best option and that as recommended by the Anglo-American trials the ammunition had been further improved to 'conform to US military characteristics.'⁴⁷ Technical spokesmen from both sides argued their cases with U.S. Ordnance officers suggesting that Congress would not fund a weapon firing non-American ammunition. This was a questionable suggestion as Congress appropriated funds on the recommendation of the Ordnance Corps.⁴⁸ Once again U.S. Ordnance was attempting to undermine the British argument. Neither side was willing to back down and Shinwell suggested that 'the matter be referred to the [NATO] Standing Group for further examination.'⁴⁹ This represented the failure of the conference as the Standing Group had already been fully involved in the testing of the competing weapons. A joint statement was issued at the end of the conference announcing that the three countries had unanimously agreed to continue with their current weapons until a decision was made.

Following the ministerial meeting, Brigadier Barlow once again alleged foul play. He claimed that the U.S. Small Arms Section had purposefully misrepresented the British ammunition in their presentation to the meeting by using data about an older prototype version of the British ammunition in an effort to undermine the credibility of the British cartridge.⁵⁰ Similarly the EM2 was misrepresented in the American press. An article appearing in *American Rifleman* magazine stated that it was heavy, unreliable and was 'far below acceptable U.S. standards.'⁵¹ Brigadier Dixon, who had been part of the British team at the trials, wrote a response defending the

⁴⁷ National Archives, WO 185/320, 14, p. 2., 'Precis of the Defence Ministers' Conference in Washington, 2-3 August 51', October 1951, Comments by DofA(SA).

⁴⁸ Ezell, *Great Rifle Controversy*, p. 98.

⁴⁹ National Archives, WO 185/320, 14, p. 2., 'Precis of the Defence Ministers' Conference in Washington, 2-3 August 51', October 1951, Comments by DofA(SA).

⁵⁰ National Archives, WO 185/320, 14, p. 3., 'Precis of the Defence Ministers' Conference in Washington, 2-3 August 51', October 1951, Comments by DofA(SA).

⁵¹ C. Blair, Jr., 'A New Rifle For NATO', *American Rifleman*, (September 1951), p. 35.

EM2 and its performance but was hamstrung from giving details by security restrictions.⁵² The British struggled to both convince American officials and to defend the rifle publicly, disastrously this handed U.S. Ordnance the initiative.

Throughout the rifle controversy the French made it clear that their intention was to 'continue to be equipped with the 7.5mm and .30-06 calibres for several years... The general future French policy is to standardise on American equipment.'⁵³ It was noted by Brigadier Barlow that the French had 'no detailed knowledge of the British .280 calibre yet they agreed with the USA that it... was likely to be inadequate.'⁵⁴ The British felt the French position was driven by the belief that by standardising to American equipment they hoped to get 'something for nothing'⁵⁵ whereas adopting .280/30 would have been considerably more expensive. In September 1951 the NATO Standing Group tasked with standardisation met to test the respective American and British ammunition. The T65 was deemed to have outperformed the British round and the USA, France and Canada agreed that it was superior. However, a Canadian caveat recommending further development of the .280/30 round meant that again the debate over NATO's new standard ammunition was not settled.⁵⁶

As the standardisation deadlock continued it became a key issue at the first meeting between President Truman and the recently re-elected Winston Churchill which took place in Washington at the beginning of January 1952. The meeting was to discuss a range of defence and foreign policy issues including recognition of Communist China, the stationing of American strategic bombers in Britain, selection

⁵² Brig. C.A. Dixon, 'The NATO Rifle - A British Statement on the Development of a Shoulder Weapon for the North Atlantic Treaty Organisation', *American Rifleman*, January, 1952, pp. 17 & 40.

⁵³ National Archives, CAB 21/3465, 15, 'Telegram from BJSM, Washington to Ministry of Defence, London', 23/06/51.

⁵⁴ National Archives, WO 185/320, 18, p. 2., 'Report on the Small Arms conference Held in USA on 2 & 3 August 1951', 08/08/51.

⁵⁵ *Ibid*

⁵⁶ Stevens, *UK & Commonwealth FALs*, p. 75.

⁵⁶ Dugelby, *EM-2 Concept & Design*, p. 61.

of a NATO naval commander for the North Atlantic and the ongoing arms standardisation debacle.⁵⁷ In the weeks leading up to the meeting the British government blocked the appointment of an American admiral in the new role of Supreme Naval Commander of the North Atlantic.⁵⁸ Churchill believed that the position should go to a British admiral. At the same NATO meeting the British also declined to discuss the rifle dispute.⁵⁹ It is possible that Churchill intended to use the EM2 as a bargaining chip, offering to yield to the Americans on standardisation of rifle and ammunition if in return Britain secured an important NATO command. This is a theory which was first postulated in Parliament by Woodrow Wyatt, the former Parliamentary Under-Secretary of State to the War Office, who became an extremely vocal opponent of the government.⁶⁰ Two days into the meeting the subjects of rifle standardisation and Atlantic naval command were raised.⁶¹ Truman stated that the American government were keen to achieve standardisation while the American Secretary of Defence, Robert Lovett, tactfully suggested that 'the press of both countries had magnified out of all proportion the difference of opinion between the U.S. and U.K. about the rifle.'⁶² While again no clear settlement was agreed at the Washington meeting the Americans agreed to Churchill's suggestion of a limited production run of 20,000 EM2s for use by specialist soldiers like paratroops and commandos which would allow the rifle to be properly tested in the field.⁶³ In turn the British delegation agreed that both countries would rely on their current pool of rifles while a joint effort to find 'the best possible rifle for standardisation in the future'⁶⁴ was

⁵⁷ Ezell, *Great Rifle Controversy*, p. 104.

⁵⁸ 'Churchill Blocks Sea Post for U.S.', *New York Times*, 27/11/51.

⁵⁹ *Ibid*

⁶⁰ *Hansard*, House of Commons Debate, 06/12/51, vol. 494 cc2591-688, [Online]. Available: http://hansard.millbanksystems.com/commons/1951/dec/06/defence#column_2627.

⁶¹ National Archives, CAB 21/3057, p. 7., 'The Prime Minister's Visit to Washington & Ottawa, January 1952', Cabinet Office minutes, 08/02/52.

⁶² *Ibid*, p. 7.

⁶³ *Ibid*, p. 8.

⁶⁴ *Ibid*, p. 7.

made. This represented an American victory, with Britain agreeing not to begin full-scale production of the EM2 as envisaged by the previous Labour government. The question of NATO command in the Atlantic was then discussed but officially the decision was deferred for further consideration.⁶⁵ However, by the end of the summit it was announced that Britain's area of naval influence would expand and Churchill ceased the blocking of a Supreme Commander of the North Atlantic.⁶⁶

The agreement in Washington represented a political compromise, as has been seen the British were willing to accept compromises when it came to the EM2 and its ammunition in order to gain American acceptance. Another example of British pragmatism in the interests of maintaining American involvement in NATO was the acquiescence to the American push for the rearmament of West Germany. Both Britain and France were initially strongly opposed to German re-armament.⁶⁷ However, while France continued to block the idea, the British slowly accepted the American position. Upon returning to power Churchill said that 'there should be a European Army and that Germany must take an honourable place in it.'⁶⁸ British support was confirmed when it became clear that the USA would only increase their troop numbers in Europe if West German rearmament and reintegration proceeded.⁶⁹

The Washington meeting signalled the end of Britain's serious attempts to convince NATO to standardise on the EM2 and its ammunition. The British attempted to re-chamber the EM2 to fire American ammunition in time for a new round of Anglo-American trials in 1952. However, the hastily assembled rifles sacrificed their earlier weight advantage and performed poorly leading the trials board to eliminate the

⁶⁵ National Archives, CAB 21/3057, p. 9., 'The Prime Minister's Visit to Washington & Ottawa, January 1952', Cabinet Office minutes, 08/02/52.

⁶⁶ 'Agreement on Supreme Commander for N. Atlantic', *The Times*, 19/01/52.

⁶⁷ 'European Army', *New York Times*, 24/02/52.

⁶⁸ *Hansard*, House of Commons Debate, 06/12/51, vol. 494 cc2591-688, [Online]. available: http://hansard.millbanksystems.com/commons/1951/dec/06/defence#column_2594.

⁶⁹ T.P. Ireland, 'Creating the Entangling Alliance: The Origins of the North Atlantic Treaty Organization', (London: Aldwych Press, 1981), p. 197.

EM2 from consideration while testing of American and Belgian rifles continued.⁷⁰ The momentum then rested with the American T65 round and at a NATO summit on 15 December 1953 it was announced that the T65 had been selected and would be designated 7.62x51mm.⁷¹ It was reported that the decision had been made on the basis of how much easier it would be for countries to retool their manufacturing to produce the new ammunition and convert existing weapons to fire it.⁷² However, Britain had begun to make its decision in November and Cabinet minutes from 1 December detailed a plan of action. First announcing standardisation through NATO, informing the other Commonwealth nations and finally announcing the adoption of the Belgian rifle publicly.⁷³ Churchill did this on the 19 January, informing the House of Commons that the FN was 'equal in performance to the latest British pattern, and easier and quicker to make and maintain.'⁷⁴

The international political situation was a fundamentally important factor in the downfall of the EM2 and its intermediate ammunition. The dawn of the Cold War and the formation of the NATO alliance meant that unity and collective defence were a primary foreign policy concern for Britain, Europe and North America. Geopolitically a number of factors impacted on the eventual decision to acquiesce to the American choice. With the profound threat of the Communist Bloc, Western Europe needed American assistance and aid. Many believed it to be unrealistic to expect the USA with its larger economy, manufacturing base and military complex, to accept ammunition or a rifle from a foreign power, albeit an ally.⁷⁵ For Canada it was political and economic ties which motivated her attempts to bring the Anglo-American rifle controversy to an

⁷⁰ Royal Armouries Library (Former MOD Pattern Room Library), 340(200)EM2, Box. 3., 'Evaluation of U.K. Rifle, EM2 Cal .30, Appendix B', 12/02/53.

⁷¹ '30-Caliber Bullet Adopted for NATO', *The New York Times*, 16/12/53.

⁷² *Ibid*

⁷³ National Archives, CAB/128/26, p. 140, 'Cabinet Conclusions 74, Minute 5., Armed Forces: New Type of Rifle & Ammunition', 01/12/53.

⁷⁴ 'Britain Will Adopt Belgian Rifle Favoured by US for Use by NATO', *The New York Times*, 20/01/54.

⁷⁵ Ezell, 'Cracks in the Post-War Anglo-American Alliance', p. 139

amicable end. The political situation both internationally and domestically evolved in tandem. British pragmatism had been exercised at a number of levels. Initially only on a practical basis with attempted compromises in the ammunition and later the rifle's design to meet the USA halfway, these failed because of American duplicity and unwillingness to compromise. Despite Canada's efforts to facilitate an agreement it was only once Churchill's government came to power that political pragmatism saw Britain recognise the need to concede and allow standardisation to occur along American lines. The integrity of the NATO alliance and America's involvement in Europe were more important than a small victory for British technical and engineering ability.

Chapter Three: Political Pragmatism

The political and economic backdrop against which the British Infantry Personal Weapon programme developed was complex and difficult. With the Iron Curtain descending across Europe, the 1948 Communist coup in Czechoslovakia, the Soviet blockade of Western sectors of Berlin, the formation of NATO and initial Russian nuclear weapons testing in 1949, tensions between the Soviet Union and the West were at an all time high.¹ In the shadow of this new threat Britain was engaged in a delicate economic balancing act with Clement Atlee's newly elected Labour government striving to rebuild Britain's infrastructure and create a welfare state while also trying to rearm its war-weary armed forces and achieve nuclear parity with the USA and Russia. It was during this difficult period that politics decided the fate of the EM2.

By August 1945 Britain's international debt was massive, at approximately £4,700 million.² The situation worsened when the lend-lease agreement which had helped sustain Britain during the Second World War was unceremoniously ended without consultation by President Truman in August 1945, just days after the defeat of Japan.³ The loss of this lifeline and the difficult negotiations in December 1945 of the American loan needed to sustain Britain's economy in the short-term shook the British government deeply.⁴ The Anglo-American relationship was also shaken by Truman's insistence on limiting nuclear proliferation and his refusal to assist Britain in beginning an atomic programme.⁵ Another reason for this change in relationship may have been a general suspicion of British socialism which was embodied by the

¹ French, *Army, Empire, and Cold War*, p. 28.

² *Ibid*, p. 37.

³ J. Baylis, *Anglo-American Defence Relations 1939-1984*, (London: Macmillan Press, 1984), p. 29.

⁴ French, *Army, Empire, and Cold War*, pp. 37-8 & Baylis, *Anglo-American Defence Relations*, p. 29.

⁵ A. Goldberg, 'The Atomic Origins of the British Nuclear Deterrent', *International Affairs (Royal Institute of International Affairs)*, Vol. 40, No. 3 (Jul., 1964), p. 414.

Truman administration's distrust of the new left-wing Labour government. In the *New York Times*' report on the election it was alleged that 'a nation of shopkeepers voted for socialisation.'⁶ Brigadier Dixon, who as a senior technical officer experienced the relationship's disintegration at a practical level, suggested that the post-war breakdown of the Anglo-American relationship was triggered by the American government's fear of Communist influence over the new socialist Labour government.⁷ The *New York Times* reported that experts in Washington believed Britain's new government had 'moved only slightly to the Left and is far from anything like Communist in its views.'⁸ To many Americans the defeat and replacement of Churchill, Britain's venerated wartime leader, was seen as ungrateful.⁹

Regardless of the exact reasons behind the Truman administration's new approach to their relationship with Britain, the changes created animosity. The practical result, which impacted on Britain's small arms development, was a complete lack of communication from the Americans about their ammunition development programme which had been in progress since 1944.¹⁰ This programme was focused on developing what became known as the .30 calibre Light Rifle cartridge, which later developed into the T65 experimental cartridge and eventually become NATO's new standard rifle round in 1954.¹¹ The complete lack of cooperation and communication from the Americans meant the British laboured under the impression that they were the only ones working towards a new cartridge.

The July 1945 general election saw Clement Attlee's newly elected Labour government inherit no clearly defined defence policy. With Britain still at war in

⁶ 'The British Turn Left', *The New York Times*, 27/07/45.

⁷ Brig. C. Aubrey Dixon, 'The Nato Rifle', *American Rifleman*, January 1952, p.17.

⁸ 'Labor Landslide', *The New York Times*, 29/07/45.

⁹ Baylis, *Anglo-American Defence Relations*, p. 29.

¹⁰ K. Dockery, *The M60 Machine Gun*, (Oxford: Osprey Publishing, 2012), p. 26.

¹¹ N. Fitch, 'Light Rifle 1.5: A Clarification', *The Firearms Blog*, 27/05/15, [Online]. Available: www.thefirearmblog.com/blog/2015/05/27/light-rifle-1-5-a-clarification.

Asia and the burgeoning Soviet threat in Europe to deal with, Attlee's government was in a difficult position faced with uncertainty.¹² The British recognised the threat that Russia posed to Europe before the USA and by early 1946 the British military was incorporating Communist aggression into its planning.¹³ Attlee's Labour government had committed to a rearmament programme which would cost an enormous £4,475m between 1951 and 1954.¹⁴ Churchill's succeeding government was initially bound to this by public opinion, escalating tensions with Russia and the war in Korea.¹⁵ However, by 1952 Britain was on the brink of insolvency and significant cuts to defence spending needed to be made.¹⁶ The vast majority of Britain's defence spending during this period went to the development of jet aircraft, guided missiles and thermonuclear weapons. Replacement of war-era arms and equipment came a distant second.

Even as the Second World War ended, Britain's military leaders began to consider the next war. With the growing danger posed by Russia, the General Staff, War Office and the government department responsible for equipment procurement (the Ministry of Supply) began planning the rearming and re-equipping of the British Army for the next European war. In June 1946 it was estimated that the army would need approximately 825,000 new self-loading rifles.¹⁷ In 1947 Field Marshal Bernard Montgomery, the newly appointed Chief of the Imperial General Staff (CIGS), wrote a paper outlining his plans for rearming Britain's army in the face of the new Communist threat. He believed that Britain had just 10 years to develop new weapons and begin rearmament. This was based on estimates by British intelligence,

¹² C. McInnes, *Hot War, Cold War: The British Army's Way in warfare 1945-95*, (London: Brassey's, 1996), p. 5

¹³ *Ibid*, pp. 26 - 35

¹⁴ National Archives, CAB 129/44/16, 'Defence Programmes 1951-1954 Working Party', Cabinet Report to Chiefs of Staff.

¹⁵ French, *Army, Empire, and Cold War*, p. 149

¹⁶ *Ibid*, p. 151

¹⁷ Royal Armouries Library (Former MOD Pattern Room Library), 120 Meetings/Conferences Box 1, 1B, 'Long Term Planning for Equipment Provision Gross requirements of DInf. Items', 02/06/46.

who believed that the Soviet Union would not embark on another major war until their economy had sufficiently recovered and nuclear parity with the United States had been achieved.¹⁸ The first 'green' period, in which the threat of war was at its lowest, should see Britain commit to a serious program of research and development over five years to develop the new weapons which would give Britain the edge over Russia's advantage in numbers. The second 'amber' period would see the process of rearmament begin as the threat of war increased. The final 'red' phase projected that by 1957 war with Russia would be imminent and that Britain's rearmament program must be in full swing.¹⁹ Montgomery was not alone in this belief and in 1949 the Minister of Defence, A.V. Alexander, argued that 'we cannot measure up to the potential enemy in numbers of men, but in technique and equipment we are capable of far outstripping him.'²⁰ Similarly General John Harding, commander of the British Army on the Rhine, wrote to the Under Secretary of War in October 1951 that:

One of the main objectives must be to conserve manpower by making the maximum use of killing weapons, artillery, anti-tank guns, automatics and mines. The ammunition problem can be met and solved, indeed economy of material should come second in priority to economy in manpower.²¹

The EM2 represented the most basic of these 'killing weapons', an advanced rifle which could give the British infantryman a fighting chance against his Soviet adversaries.²²

The post-war Labour government found itself in a difficult position, caught between fulfilling its election promises for a welfare state and decreased military spending but also recognising the need to develop a nuclear capability and maintain a modern military. As a result Emanuel Shinwell, the Secretary of State for War, found

¹⁸ French, *Army, Empire, and Cold War*, p. 27.

¹⁹ *Ibid*, p. 49.

²⁰ *Ibid*, p. 49.

²¹ National Archives, WO 291/1169, Letter from General John Harding C-in-C, BAOR to the Under Secretary of State for War, 04/10/51.

²² 'New Rifle Speeds British Training', *New York Times*, 19/08/51.

himself orchestrating a complex balancing act of funding research and rearmament for all three branches of the military, with the Army playing the poor relation to the other services.²³ By 1949, funding for the procurement of new vehicles had been stopped and Second World War-vintage vehicles had to be refurbished. When these were deployed to Korea, as part of the United Nations' forces fighting there, they struggled to cope with the rough terrain.²⁴ The result was that by July 1950, the Army's Chiefs of Staff reported that 'if war should break out in July 1951, the whole of Europe would be overrun, and a similar position to that existing in 1940 would come about.'²⁵ With the outbreak of the Korean War, and increased American pressure to rearm, Attlee's government began a large programme of rearmament. A substantial sum of £570 million was earmarked for improving the Army's equipment including a relatively small amount for the continuing development of the EM2.²⁶ By early 1951 the CIGS felt that the need to begin the process of re-equipping with a new rifle was becoming urgent and that further delay was unacceptable.²⁷ While the Americans were equipped with the relatively modern M1 Garand the British were still armed with the obsolete Lee-Enfield and could not afford to wait for the USA to standardise to a new automatic light rifle. As such the British government had been forced to proceed unilaterally and adopt the EM2.

On the 25 April 1951, Attlee's government announced Britain's adoption of the EM2 rifle. It was hoped this attempt to break the deadlock and lead the way would encourage the other NATO members to follow Britain's example. However,

²³ French, *Army, Empire, and Cold War*, p. 50

²⁴ *Ibid*, p. 51

²⁵ National Archives, CAB 131/9/DO (50)58, Report by Chiefs of Staff: 'Ability of the Armed Forces to Meet an Emergency', 21/07/50

²⁶ For more on the British Army of the late 1940s and 1950s see: C. McInnes, *Hot War, Cold War: The British Army's Way in Warfare 1945-1995*, (London: Brassey's, 1996) & D. French, *Army, Empire, and Cold War: The British Army and Military Policy 1945-1971*, (Oxford: Oxford University Press, 2012)

²⁷ National Archives, CAB 21/3465, 6, p. 2., 'Adoption of New Small Arms Ammunition and Weapons into the British Armed Forces', 16/03/51, note by the Chief of the Imperial General Staff.

while the NATO Standing Group found the EM2 militarily acceptable, the Americans released a statement declaring that they were 'firmly opposed to the adoption of any less effective small calibre cartridge.'²⁸ The British gamble to break the standardisation deadlock failed. While the British adoption of the EM2 caused consternation amongst her allies it also stirred up an indigenous debate which would rage for four years.

The adoption of the EM2 became a partisan political issue for successive governments. In October 1951 Attlee's Labour government was beaten in a general election by Churchill's Conservative party. While in opposition, Churchill and the Conservative party had continually challenged and questioned the Labour government's choice of the EM2. It appears likely that Churchill's initial interest in the EM2 stemmed from political opportunism. The 1950 General Election saw Attlee's majority weakened and Churchill sought to harass the government questioning their policies.²⁹ During the debate in which the government announced the EM2's adoption Churchill was one of the first to question the decision. He fundamentally questioned the logic of giving soldiers a fully automatic rifle arguing that logistical supply would not be able to meet demand. Churchill asked what the advantage of having such a high rate of fire, to which Shinwell, now Minister of Defence, fired back 'I feel very much like consulting the person whom the bullets reach.'³⁰ While Churchill's logistical concerns about ammunition seem reasonable they had already been investigated and discounted. The ADE had found that due to the .280 round's smaller size an extra 828,000 rounds could be transported with no

²⁸ 'U.S. Army Lightweight .30 Calibre Rifle', *Office of Public Information, Department of Defense*, News Release 295-51S, 27/12/51, p. 1.

²⁹ R. Holmes, *In The Footsteps of Churchill*, (London: BBC Books, 2005), p. 338

³⁰ *Hansard*, House of Commons Debate, 25/04/51 vol. 487 cc378-81, [Online]. Available: http://hansard.millbanksystems.com/commons/1951/apr/25/small-arms-calibre#column_379.

change to established logistics.³¹ More importantly the Conservatives also questioned the implications on standardisation of the government's decision. Duncan Sandys asked why it was not possible that something as simple as a rifle to be standardised by the NATO Powers.³² During one exchange, another Conservative MP mocked Shinwell over the lack of standardisation, asking him if he knew that 'the only item of common use among the Allies in Korea at this present time is Petrol?'³³ At the same time in the House of Lords, Conservative Lord Cherwell questioned the government's logic behind adopting a new rifle 'when our economy is stretched to the utmost...'.³⁴ In June the EM2 was again debated, with Churchill warning that re-equipping with the new rifle would take a decade, during which time '...we shall have cut ourselves out of the opportunity of adopting a weapon which is being adopted by the United States and Canada.'³⁵ Sandys asked Shinwell if the practical disadvantages of having a different calibre from Britain's allies outweighed the EM2's technical advantages.³⁶ Labour's position was undermined when Shinwell was unable to make strong counter-arguments, instead saying that he trusted the judgement of his military advisers at the War Office. Despite these attacks Attlee's government remained committed to the EM2 until they lost power in October 1951.

The EM2 continued to be a partisan issue once Churchill's Conservative party came to power, with Labour pursuing the new government for a commitment to the

³¹ National Archives, WO 185/242, 123, '.280 SAA and .30 T65 Type', Brigadier Barlow, DofA(SA), 27/03/51.

³² *Hansard*, House of Commons Debate, 25/04/51, vol. 487 cc378-81, [Online]. Available: http://hansard.millbanksystems.com/commons/1951/apr/25/small-arms-calibre#column_379.

³³ *Hansard*, House of Commons Debate, 13/06/51, vol. 488 cc2302-5, [Online]. Available: http://hansard.millbanksystems.com/commons/1951/jun/13/280-rifle#S5CV0488P0_19510613_HOC_292.

³⁴ *Hansard*, House of Lords Debate, 06/06/51, vol. 171 cc1059-89, [Online]. Available: http://hansard.millbanksystems.com/lords/1951/jun/06/the-economic-situation#column_1066.

³⁵ *Hansard*, House of Commons Debate, 13/06/51, vol. 488 cc2302-5, [Online]. Available: http://hansard.millbanksystems.com/commons/1951/jun/13/280-rifle#S5CV0488P0_19510613_HOC_280.

³⁶ *Hansard*, House of Commons Debate, 13/06/51, vol. 488 cc2302-5, [Online]. Available: http://hansard.millbanksystems.com/commons/1951/jun/13/280-rifle#S5CV0488P0_19510613_HOC_280.

rifle they had selected. Despite being adopted in April 1951, the EM2 had not yet entered production. The change of government plunged the EM2 and Britain's quest to adopt a new rifle deeper into party politics - further complicating an already complicated process. While the matter was finally settled under his leadership, Churchill's election as Prime Minister had a fundamental impact on the rifle debate. Unlike its predecessor, Churchill's government was not committed to the production and adoption of the rifle. His eventual decision saw the abandonment of the EM2 and the concept behind it. Churchill did agree that 'there is no doubt that the .280 is a far better rifle than the .303. It may well be technically the best so far designed.'³⁷ However, this did not outweigh his apprehensions about the weapon. Churchill set out his concerns in a note a month after he returned to power. In it he argued that Britain needed to be part of 'the vast American pool' of rifles in order to ensure that in times of war, 'when rifles are lost and wasted on a great scale'³⁸ that the army would have the weapons it needed. He emphasised the scope of the American and Canadian manufacturing capabilities which, following standardisation, Britain and the other NATO members would be able to utilise.³⁹ These were points he raised in Parliament time and time again while in opposition and in government.

A month after Churchill came to power he received a War Office brief on the current state of the rifle controversy outlining the options available.⁴⁰ The brief suggested four courses of action, the first was to continue using the current weapons then in service. The second was to adopt the .280/30 ammunition and EM2 rifle as these could begin production the soonest. The third suggested using the U.S. M1 Garand as an interim measure. The final option was to adopt the American T65 ammunition despite the fact the U.S. themselves had not yet done so. In November

³⁷ National Archives, PREM 11/854, 145, 'Note by the Prime Minister', 12/11/51.

³⁸ *Ibid*

³⁹ *Ibid*

⁴⁰ National Archives, WO 216/374, 'Brief For Prime Minister on New Small Arms Ammunition and Weapons', 04/11/51.

1951, the newly appointed Minister of Supply, Duncan Sandys, recommended the 'tooling up for the .280 rifle, but that a further effort should be made to secure agreement with the Americans on a common type of ammunition, if possible the .280.'⁴¹ In June 1952 the Secretary of State for War, Antony Head, mirrored the CIGS's earlier warning and advised Churchill that 'our greatest single weakness... is our lack of fire power in small arms and I do not think we can afford to wait indefinitely until America makes a decision.'⁴² Despite the urgency of the situation Churchill's government found itself with no clear course of action, as a result the British continued using obsolete weapons.

Throughout November 1951, the Labour opposition increased their pressure on the government, calling for clarification on their position on the EM2. The Labour MP Woodrow Wyatt suggested that the Prime Minister should test the EM2 himself.⁴³ In late November Churchill followed Wyatt's advice and tested a number of weapons including an EM2 chambered in .280/30 and an example of the latest American rifle, the T25, firing the T65 .30 calibre cartridge. Upon firing both Churchill voiced his dislike for the American rifle after firing just eleven rounds, saying he 'did not wish to fire the damn thing any more'⁴⁴ finding the recoil unpleasant. He explained that he did not disagree with the argument that the EM2 was technically superior to the Lee-Enfield but that he was chiefly concerned that Britain should belong to a 'common pool of weapons... with an adequate supply of arms and ammunition'.⁴⁵ During the testing it was also suggested by General Henry

⁴¹ National Archives, PREM 11/854, 127, Memorandum Minister of Supply to Prime Minister, 20/11/51.

⁴² National Archives, PREM 11/854, 96, Letter from A. Head, Secretary of State for War to W. Churchill, Prime Minister, 04/06/52.

⁴³ *Hansard*, House of Commons Debate, 21/11/51, vol. 494 c380, [Online]. Available: http://hansard.millbanksystems.com/commons/1951/nov/21/280-rifle#S5CV0494P0_19511121_HOC_183.

⁴⁴ National Archives, WO 185/320, 20, p. 2., 'Demonstration of .280 and EM2 to the Prime Minister on Saturday 24 November at Chequers', 03/12/51.

⁴⁵ *Ibid*

Pownall, Churchill's personal advisor, that limited production of the EM2 could be started for use with special troops such as 'paratroops, commandos, or an independent brigade on a special mission.'⁴⁶ Churchill agreed with this idea and he suggested this course of action two months later during his meetings with President Truman.⁴⁷ At the end of the test firing Churchill made it plainly clear that he would attempt to persuade the Americans of the virtues of the .280 round but if he could not 'he was not prepared to proceed on .280 unilaterally.'⁴⁸ Before Parliament adjourned in December, Wyatt asked Churchill if the government had halted the preparations to put the .280 rifle into production.⁴⁹ Churchill replied that production would not begin until the end of 1953, confiding that he was 'not at all sure it is in our interest to embark single-handed on a lonely venture, even if that rifle is better than others put before us.'⁵⁰ This indicated that just months into its term the government had effectively chosen to continue with the existing rifle, despite it being outmoded, until a common agreement about a new rifle could be made between the major Western powers.⁵¹

Wyatt became one of the most vocal opponents to the Conservative's apparent abandonment of the EM2. He had served as a junior minister at the War Office in 1951 and as such was involved with the IPW project.⁵² His bitter opposition to the rifle's abandonment suggested that he felt a personal responsibility for the

⁴⁶ National Archives, WO 185/320, 20, p. 3., 'Demonstration of .280 and EM2 to the Prime Minister on Saturday 24 November at Chequers', 03/12/51.

⁴⁷ National Archives, CAB 21/3057, p. 8., 'The Prime Minister's Visit to Washington & Ottawa, January 1952', Cabinet Office minutes, 08/02/52.

⁴⁸ National Archives, WO 185/320, 20, p. 3., 'Demonstration of .280 and EM2 to the Prime Minister on Saturday 24 November at Chequers', 03/12/51.

⁴⁹ *Hansard*, House of Commons Debate, 06/12/51, vol. 494, c2605, [Online]. Available: http://hansard.millbanksystems.com/commons/1951/dec/06/defence#S5CV0494P0_19511206_HOC_417.

⁵⁰ *Ibid*

⁵¹ *Hansard*, House of Commons Debate, 06/12/51 vol. 494, cc2605-2606, [Online]. Available: http://hansard.millbanksystems.com/commons/1951/dec/06/defence#S5CV0494P0_19511206_HOC_417.

⁵² T. Lancaster, 'Obituary: Lord Wyatt of Weeford', *The Independent*, 09/12/97, [Online]. Available: www.independent.co.uk/news/obituaries/obituary-lord-wyatt-of-weeford-1287784.html.

EM2 as he continued to be one of its most active supporters. The beginning of 1952 saw the intensity of the rifle controversy peak once again as the EM2's survival continued to be a party political issue. For a further two years the debate raged on with the opposition frequently calling on the government for an update on the status of the EM2. In the context of the British Army's expectation of war with the Soviet Union before the end of the decade, the Ministry of Defence recognised hesitation over the adoption of a suitable weapon was disastrous.⁵³

In February 1952, when Wyatt again pressed Churchill on the likelihood of the USA being convinced to standardise on the EM2, Churchill replied that he saw no prospect of them being persuaded.⁵⁴ Wyatt condemned the government for giving 'nothing but vacillation, delay, uncertainty and misunderstanding, we have had no clear picture...'⁵⁵ Churchill reiterated his position in November:

whether the rifle is the best does not settle the question. The question is the uniformity of weapons over a large area to the NATO organisation, and on that many questions remain unsettled as to achieving complete agreement.⁵⁶

With the ongoing war in Korea, Wyatt suggested that if the British Army in Korea was armed with the EM2 their American allies would offer 'any amount of dollars to get hold of it themselves for their personal use, and that that would end the controversy as to which was the better rifle.'⁵⁷ In the summer of 1953, he renewed his attack, arguing that a British-made rifle like the EM2 would give the British

⁵³ National Archives, WO 32/15798, 40A, Letter from Field Marshall Alexander, Minister of Defence to W. S. Churchill, PM, 06/11/53.

⁵⁴ *Hansard*, House of Commons Debate, 20/02/52, vol. 496 c234, [Online]. Available: http://hansard.millbanksystems.com/commons/1952/feb/20/280-rifle#S5CV0496P0_19520220_HOC_222.

⁵⁵ *Hansard*, House of Commons Debate, 24/03/52, vol. 498 cc69-127, [Online]. Available: http://hansard.millbanksystems.com/commons/1952/mar/24/vote-a-number-of-land-forces#column_108

⁵⁶ *Hansard*, House of Commons Debate, 19/11/52, vol. 507 cc1863-5, [Online]. Available: http://hansard.millbanksystems.com/commons/1952/nov/19/280-rifle#S5CV0507P0_19521119_HOC_224.

⁵⁷ *Hansard*, House of Commons Debate, 09/03/53, vol. 512 cc910-1069, [Online]. Available: http://hansard.millbanksystems.com/commons/1953/mar/09/married-quarters#S5CV0512P0_19530309_HOC_553.

infantryman vital 'confidence in the face of the overwhelming numbers of Russian troops he would have to face if there was a war in Europe.'⁵⁸ He condemned the government for seemingly abandoning the rifle following very little consultation with Parliament.⁵⁹

At the end of 1953 the situation moved quickly. In late October the Army Council recommended the adoption of the FN rifle chambered in the American cartridge.⁶⁰ On the 1 December the Secretary of State for War formally recommended the adoption of the FN rifle to the Cabinet stating that it was as good as the British EM2 while also proving more reliable and having the advantage of being simpler and cheaper to manufacture.⁶¹ These factors became the basis for the government's justification for the Belgian rifle's selection. The government's decision was also influenced by the belief that the Americans might also adopt the FN rifle as they continued to test it.⁶² While the Cabinet's decision to adopt the FN rifle was unanimous, Sandys (the Minister of Supply whose department oversaw the EM2's development) noted that his 'technical advisers do not share the view... that the Belgian FN rifle is as good as our own EM2'⁶³ but that he was satisfied enough with the FN that he would support the proposal. In late December NATO agreed to standardise the American T65 round as 7.62x51mm. A month later, on the 19 January, Churchill announced the adoption of the FN rifle chambered in the new NATO round. This sounded the death knell for the EM2. The Labour opposition was furious with the government's decision and demanded a Parliamentary debate about

⁵⁸ *Hansard*, House of Commons Debate, 29/07/53, vol. 518 cc1304-435, [Online]. Available: http://hansard.millbanksystems.com/commons/1953/jul/29/defence#S5CV0518P0_19530729_HOC_352.

⁵⁹ *Ibid*

⁶⁰ National Archives, PREM 11/854, 85, Letter from A. Head to W.S Churchill, 04/11/53.

⁶¹ National Archives, PREM 11/854, 73, 'The New Rifle and Ammunition memorandum by the Secretary of State for War', 01/12/53.

⁶² National Archives, PREM 11/854, 75, Cabinet Meeting Minutes 27/11/53.

⁶³ National Archives, PREM 11/854, 72, 'The New Rifle and Ammunition memorandum by the Minister of Supply', 01/12/53.

the adoption of the FN rifle. In reaction to the news Wyatt continued his attack on the government outside of Parliament. In a piece published in *Reynolds News*, a long established left-wing weekly newspaper, Wyatt condemned the government's decision and personally rounded on Churchill. In the article, entitled 'How the Yanks Scotched Our Rifle', he lambasted the Prime Minister's decision, calling it 'the biggest betrayal of British designers and inventors in Political history... a shameful abandonment of the British soldier and of British interests.'⁶⁴ This very personal attack continued with Wyatt arguing that 'pathetically Sir Winston clings... to his weak decision.'⁶⁵ Wyatt's aggressive language shows that he felt so strongly about the rifle that he was not afraid to personally attack Churchill, Britain's respected war-time leader and sitting Prime Minister. He argued that the Conservative government's decision to abandon the rifle was a grave mistake precipitated by Churchill's desire to placate the American government. Wyatt's argument was astute in that Churchill was profoundly influenced by both his legitimate concerns about standardisation and his need to maintain the Anglo-American relationship.

With Labour's attack intensifying, Antony Head wrote to the Prime Minister On the 26 January outlining the rifle's positives, saying he was '...convinced that the decision to adopt the FN .30 was the right one.'⁶⁶ On announcing the decision to adopt the FN rifle, Churchill defended the choice by saying the Belgian rifle was:

equal in performance to the latest British pattern, and the fact that it is simpler in design makes it quicker and easier to make and maintain. Moreover, there is a greater prospect of the Belgian pattern being adopted by a number of N.A.T.O. countries than is the case with the latest British type.⁶⁷

⁶⁴ W. Wyatt, 'How The Yanks...', *Reynolds News*, 24/01/54, reproduced in Dugelby, *EM2 Concept and Design*, p. 167.

⁶⁵ *Ibid*, p. 168.

⁶⁶ National Archives, PREM 11/854, 61, Letter from A. Head to W.S. Churchill, 26/01/54.

⁶⁷ *Hansard*, House of Commons Debate, 19/01/54, vol. 522, cc832-3, [Online]. Available: http://hansard.millbanksystems.com/commons/1954/jan/19/british-army-new-rifle#S5CV0522P0_19540119_HOC_175.

The national political debate surrounding the EM2 came to a climax in early February 1954 with the Labour opposition, led by Wyatt, calling for a vote on the motion: 'That this House deplores the decision of Her Majesty's Government to adopt the Belgian F.N. rifle for use by the British Army in place of the new British E.M.2 rifle.'⁶⁸ During the impassioned debate before the vote, members of the Opposition, (including Shinwell and Wyatt) attacked the government's decision to adopt the Belgian rifle. They condemned the decision as caving to American pressure and the abandonment of what the government had earlier agreed was the best rifle in the world. Wyatt opened his argument against the FN rifle by attacking Churchill's primary argument against the EM2, stating that as Britain and NATO had agreed to standardise to the American 7.62x51mm round that, the issue of manufacture had been negated. Britain could adopt the EM2 chambered in 7.62x51mm and if there was a rifle shortage in time of war Britain could import American - or Canadian - made rifles chambered in the same ammunition without logistical issues.⁶⁹ However, this argument ignored several important factors. Firstly, as discussed in chapter one, the EM2 re-chambered in the American ammunition did not perform as well as the FN and, secondly, imported rifles would require another set of spares and troops would have to be trained to use another type of rifle. Wyatt further mocked the government's standardisation argument by noting that not only had the Americans themselves not yet adopted the new ammunition, but neither had much of NATO, as even the Belgians were using the older American .30-06 round.⁷⁰ Wyatt ended his opening remarks by criticising what he perceived to be Churchill's 'Tory outlook' favouring a more traditional-looking weapon over the unconventional EM2. Wyatt

⁶⁸ *Hansard*, House of Commons Debate, 01/02/54, vol. 523, cc39-113, [Online]. Available: <http://hansard.millbanksystems.com/commons/1954/feb/01/british-army-new-rifle>.

⁶⁹ *Hansard*, House of Commons Debate, 01/02/54, vol. 523, cc39-113, [Online]. Available: <http://hansard.millbanksystems.com/commons/1954/feb/01/british-army-new-rifle>.

⁷⁰ *Hansard*, House of Commons Debate, 01/02/54, vol. 523, c48, [Online]. Available: http://hansard.millbanksystems.com/commons/1954/feb/01/british-army-new-rifle#column_48.

claimed that 'the Belgian rifle is the last development of the old style of rifle and the British rifle represents a move into the future.'⁷¹ Churchill countered Wyatt's remarks by explaining that the FN rifle gave Britain the best chance of having a sufficient number of rifles available in the event of war and that it was destined to be adopted by more allied nations than the EM2 was.⁷² The Prime Minister concluded his remarks by stating that the 'British rifle was a fine piece of work, but it would have been fatal to adopt it in isolation.'⁷³ Passions were high throughout the debate with Wyatt continuing the accusations he had begun in his article a week earlier. Churchill was surprised by the 'extraordinary rowdiness and malice'⁷⁴ directed toward him. Towards the end of the debate Shinwell attacked Churchill and Head, calling the decision to bow to American pressure and essentially be forced to adopt the Belgian rifle a 'squalid affair'⁷⁵ and that both should feel ashamed. He suggested that Churchill disliked 'the British rifle because he disliked the Labour Government who were behind the British rifle.'⁷⁶ The government made no reply to this accusation of prejudice. However, in his final remarks Head revealed that Canada had recently ordered 2,000 FN rifles for troop trials.⁷⁷ This was a strong indication that the FN rifle would be adopted by other Commonwealth and NATO nations and this had the effect of galvanising the standardisation argument which the Opposition had tried to undermine. Head then argued that by adopting the EM2 Britain would forfeit the

⁷¹ *Hansard*, House of Commons Debate, 01/02/54, vol. 523, c50, [Online]. Available: http://hansard.millbanksystems.com/commons/1954/feb/01/british-army-new-rifle#column_50.

⁷² *Hansard*, House of Commons Debate, 01/02/54, vol. 523, c53, [Online]. Available: http://hansard.millbanksystems.com/commons/1954/feb/01/british-army-new-rifle#column_53.

⁷³ *Hansard*, House of Commons Debate, 01/02/54, vol. 523, c64, [Online]. Available: http://hansard.millbanksystems.com/commons/1954/feb/01/british-army-new-rifle#column_64.

⁷⁴ *Hansard*, House of Commons Debate, 01/02/54, vol. 523, c63, [Online]. Available: http://hansard.millbanksystems.com/commons/1954/feb/01/british-army-new-rifle#S5CV0523P0_19540201_HOC_327.

⁷⁵ *Hansard*, House of Commons Debate, 01/02/54, vol. 523, cc39-113, [Online]. Available: http://hansard.millbanksystems.com/commons/1954/feb/01/british-army-new-rifle#S5CV0523P0_19540201_HOC_389.

⁷⁶ *Hansard*, House of Commons Debate, 01/02/54, vol. 523, c89, [Online]. Available: http://hansard.millbanksystems.com/commons/1954/feb/01/british-army-new-rifle#column_89.

⁷⁷ *Hansard*, House of Commons Debate, 01/02/54, vol. 523, c95, [Online]. Available: http://hansard.millbanksystems.com/commons/1954/feb/01/british-army-new-rifle#S5CV0523P0_19540201_HOC_395.

production benefits of standardisation. With the final arguments made the House voted on Wyatt's motion and divided as 'Ayes, 232; Noes, 266' with a clear government victory.⁷⁸ The large number of MPs voting on Wyatt's motion, with just 124 of 622 members abstaining, indicates that it was very much a party political issue. The government had a narrow 26 seat majority over Labour and both parties' whips mobilised a large number of MPs for a late evening vote following the three hour debate.

The EM2's fate was sealed and the process of adopting the FN rifle began with 5,000 rifles ordered from Belgium for troop trials. The ADE was directed to begin work on refining the FN rifle to suit British needs.⁷⁹ However, Kent-Lemon and his ADE team clung to the hope that their work on the EM2 would not be entirely wasted. In July 1954, Kent-Lemon wrote to the CEAD suggesting the EM2 be used as a sniper's rifle.⁸⁰ However, this possible reprieve came to nothing and an existing sniper variant of the venerable Lee-Enfield, the L42A1, continued in service until 1982.⁸¹ Instead, Kent-Lemon, who had tirelessly worked to bring the lightweight assault rifle concept to life, became the team leader in charge of preparing the FN rifle for British service.⁸²

The motivation behind Churchill's decision to abandon the EM2 was undoubtedly political pragmatism. He saw arms standardisation as fundamentally essential to the survival of Europe. Just two months after he was elected he told Parliament that he believed it was the duty of governments 'on both sides of the

⁷⁸ *Hansard*, House of Commons Debate, 01/02/54, vol. 523, c109, [Online]. Available: http://hansard.millbanksystems.com/commons/1954/feb/01/british-army-new-rifle#column_109.

⁷⁹ Stevens, *UK & Commonwealth FALs*, p. 81.

⁸⁰ Royal Armouries Library (Former MOD Pattern Room Library), Box 3, file 3, 16.27.1, 543, Letter from Kent-Lemon to CEAD, 1/7/54.

⁸¹ M. Pegler, *The Lee-Enfield Rifle*, (Oxford: Osprey Publishing, 2012), p. 40.

⁸² Stevens, *UK & Commonwealth FALs*, p. 79.

Atlantic to make new efforts to harmonise our long term policy.⁸³ When he recognised the Americans were reluctant to accept the British ammunition and rifle he pushed for compromise. However, this compromise eventually became capitulation. Churchill understood that Britain was reliant on the USA and feared America's slide back into its pre-war isolationism.⁸⁴ Following Churchill and Truman's talks in Washington in January 1952, the United States granted Britain a \$300,000,000 loan to safeguard British defence spending.⁸⁵ If defence spending was to remain high Britain was increasingly reliant on American aid for her survival. Churchill's decision to bow to American pressure was in the interests of preserving the Anglo-American relationship and signalled Britain's acceptance of a diminished role in World politics.⁸⁶ Inevitably it was Churchill's determination to achieve standardisation in order to bond the USA to Britain and the rest of Europe which killed the EM2 and the light rifle concept.

It is telling that by the time the FN rifle was adopted, Cabinet correspondence indicates that the selection was met with great relief not just from the government but also from the military. This shows how desperate all parties concerned were for a decision by 1954. In November 1953 Field Marshal Alexander, the Minister of Defence, called the decision a 'tremendous step forward in international standardisation' and that selection of the 7.62x51mm round was completely justified.⁸⁷ In February Antony Head wrote to the DCIGS enquiring what options were available if the FN rifle failed the planned troop trials.⁸⁸ The DCIGS

⁸³ *Hansard*, House of Commons Debate, 06/12/51, vol. 494 cc2603-2605, [Online]. Available: http://hansard.millbanksystems.com/commons/1951/dec/06/defence#column_2605.

⁸⁴ L.A Kaplan, 'The United States and the Origins of NATO 1946-1949', *The Review of Politics*, Vol. 31, No. 2 (Apr., 1969), p. 210.

⁸⁵ 'US Grants Britain \$300,00,000 to Aid Her Arms Program', *New York Times*, 29/01/52.

⁸⁶ Ezell, 'Cracks in the Post-War Anglo-American Alliance', p. 138.

⁸⁷ National Archives, WO 32/15798, 40A, Letter from Field Marshall Alexander, Minister of Defence to W. S. Churchill, PM, 06/11/53.

⁸⁸ National Archives, WO 32/15798, 69A, Letter from A. Head, Secretary of State for War to DCIGS, 03/02/54.

replied that there was no reason for the FN to fail but that he believed that 'at all costs, we must not change again.'⁸⁹ This exchange reveals the magnitude of the decision and the anxiety felt by both the military and the government about the selection of the rifle.

The beginning of the 1950s saw Britain in a difficult position, struggling to rearm in a harsh economic climate. Against this backdrop standardisation became the watchword and American obstinacy in the rifle debate undoubtedly influenced British policy directly. While party politics first brought the EM2 to Churchill's attention it quickly became embroiled in his effort to maintain the Anglo-American special relationship. Facing the Communist threat Churchill was desperate to keep the Americans engaged in Europe, believing standardisation amongst the NATO powers was key to drawing America into a symbiotic alliance. National pride and the EM2 were expendable in the face of Soviet aggression if it meant the USA was committed to the defence of Europe. It was Churchill's pragmatism, and his quest for standardisation, which ultimately sealed the fate of the EM2.

⁸⁹ National Archives, WO 32/15798, 69B, Letter from DCIGS to A. Head, Secretary of State for War, 08/02/54.

Chapter Four: The Technical Aspect

While national and international politics had a profound impact on the fate of the EM2, other factors must also be taken into account. While the EM2 was ahead of its time in concept and design with its light weight, bullpup layout and compact design, it also had its shortcomings, suffering from a number of design faults and issues which because of its relatively short and uncertain life did not have the opportunity to be rectified. Some of these factors helped the British government make its final decision to drop the rifle while others highlight that more improvement to the weapon was needed before it was truly ready for adoption.

The EM2 was undoubtedly advanced for its day. However, the bullpup layout which made the rifle so revolutionary was one of the causes of its complexity. It necessitated a more complex trigger mechanism in order to fire the rifle. The EM2's actual internal working parts were also extremely intricate when compared to the FN rifle. The ADE realised this and in 1951 it was suggested that 'the action and the breech block could be made simpler. If one or more breech block surfaces had been made flat, as in the FN, production procedure would have been simplified and cost reduced.'¹ There were a number of reasons for the EM2's complexity, the first of these was that it was designed to be able to fulfil the sniper rifle role.² Additionally the EM2's body was designed to keep the rifle's weight down. Unlike the EM1, which was designed to be made from stamped metal sheets, which made the rifle heavy, the EM2 was milled from solid blocks of high strength steel. Much of the steel was milled away to save weight but maintain strength, this made manufacture

¹ Royal Armouries Library (Former MOD Pattern Room Library), 340(200)EM2, Box 1, 16.27.1-197, Notes on .280 SAA and Light Auto Rifle and the New Sustained fire M.G.', ADE paper, 15/01/51.

² *Ibid*

much more complicated.³ Complexity was one of the complaints made by the Americans during the initial Anglo-American trials. The EM2 had 133 individual parts and, although simple to field strip, breaking the rifle down further became a complex process with the bolt itself made up of thirteen carefully machined pieces.⁴ The trials report criticised the rifle's 'complicated breech block assembly which gave excessive malfunctions and breakages.'⁵ The complexity of the EM2's action meant that on numerous occasions the firing pin did not strike the cartridge with enough force to fire the round, causing a failure to fire. The report also complained about 'a large number of parts which are not conveniently disassembled or fail to stay in assembly during firing.'⁶

³ Royal Armouries Library (Former MOD Pattern Room Library), 340(200)EM2, Box 3, 16.27.1-191, 'Memorandum from Kent-Lemon to DoFA(SA)', 01/11/50.

⁴ 'A Comparison Test of United Kingdom and United States Lightweight Rifles, Tenth Report on Project No. TS2-2015', Development and Proof Services Aberdeen Proving Ground, 05/04/50, [Online]. Available: <http://www.dtic.mil/dtic/tr/fulltext/u2/896858.pdf>, p.35.

⁵ *Ibid*, p.45.

⁶ *Ibid*, p.45.



Figure 5. The EM2 field stripped with its bolt disassembled and laid out.⁷

⁷ Author's photograph, courtesy of the National Firearms Centre, Leeds.

While the rifles tested were still prototypes, these were fundamental failings which impacted on the American opinion of the rifle. The intricacy of the pieces and how they fit with each other meant disassembling the rifle's bolt and trigger group was a task that could not be easily carried out in the field. In order to reassemble the bolt properly, the locking flaps, which locked the bolt in place while firing, had to be positioned exactly in order to fit.⁸ The intricacy of the bolt can be seen in the photographs and diagrams below.

Another of the EM2's problems was that it was in fact a prototype. While constantly refined and experimented upon, the EM2 never reached the pre-production stage in which it would have been simplified and made more cost effective for mass production. As such, only a relatively small number of rifles were produced. In all, over the seven years in which the EM2 was in development, just under 60 rifles were made.⁹



Figure 6. Close up photograph of the EM2's bolt partially disassembled, the intricately machined locking flaps have been removed.¹⁰

⁸ The author discovered this while disassembling and reassembling an example of the rifle.

⁹ Dugelby, *EM-2 Concept & Design*, pp. 258-261.

¹⁰ Author's photograph, courtesy of the National Firearms Centre, Leeds.

In *figure 6* it is easy to see the complex machining work needed to cut the various pieces, including the locking flaps on either side of the bolt and the hollowed out bolt itself. This intricate machining of toughened, high tensile strength steel would have taken many hours to complete. Despite the EM2's complexity, the British military and government were content to adopt the rifle in 1951, believing that it represented the most advanced rifle available. Had the ADE been given the time and resources to properly refine the design, its complexity could have been addressed. However, the continued uncertainty caused by the national and international debate surrounding the rifle prevented a full commitment to perfecting the design ready for production.

As early as December 1950 the EM2 was sent to British Army units on active service in Malaya for a series of field trials to determine its performance. In 1952 a report from the testing in Malaya made a series of complaints about the ergonomics and practical use of the rifle. It noted that the balance of the rifle was affected by the pistol grip and fore grip being too close together.¹¹ Another complaint made in several technical reports was that the butt of the rifle frequently caught in soldiers' clothing and webbing as they tried to shoulder the rifle quickly or while walking on patrol. This had the added problem of sometimes releasing the butt retaining catch (see *figure 5*) which when depressed caused the butt plate to inadvertently detach leaving the weapon useless.¹² Perhaps the most fundamental ergonomic problem with the EM2 was that its cocking handle and ejection port were located on the right side of the rifle, making it impossible for left-handed riflemen to fire it.¹³ The rifle's bullpup layout also meant that it needed a long bar to connect the rifle's trigger to its

¹¹ Royal Armouries Library (Former MOD Pattern Room Library), 340(200)EM2, Box 3, 'Some Comments on the Balance and General Design of the .280 (7mm) Rifle (EM2) When Used in the Machine Carbine Role', Technical Note 2/52, Operational Research Section Singapore, 25/08/52.

¹² Royal Armouries Library (Former MOD Pattern Room Library), 340(200)EM2, Box 3, 'Some Technical Points Concerning the .280 (7mm) Rifle (EM2) Which Arose During Range Trials in October 1952', Technical Note 4/52, Operational Research Section Singapore, 04/12/52.

¹³ Royal Armouries Library (Former MOD Pattern Room Library), 340(200)EM2, Box 3, 'Evaluation of UK Rifle, EM2 Cal .30', Unofficial Summary of US Tests by BJSM, 12/02/53.

action at the rear of the weapon, causing a stiff trigger pull which affected accuracy and made firing in bursts especially inaccurate.¹⁴ Other more serious issues were also identified during troop trials. On a number of occasions the EM2 was reported to fire as soon as a loaded magazine was inserted. This was due to the rifle's system of chambering a round automatically on reloading, when the sear which released the firing pin on firing was too narrow it caused accidental discharges.¹⁵ Another serious fault, which came to light during the Anglo-American trials, was that during sustained, automatic fire the cocking handle of the rifle became extremely hot and several riflemen suffered burns when they touched it.¹⁶ Riflemen firing the rifle also burnt their hands on the gas cylinder above the barrel as it became increasingly hot during firing.¹⁷ During testing by the Small Arms Wing of the School of Infantry at Hythe in 1951, the EM2 suffered from a number problems with its bolt failing to close properly, preventing the rifle from firing.¹⁸ The magazine catch was also noted to be too easy to unintentionally release while the testing staff believed the rifle's straight through action to be a 'serious disadvantage as it increases the exposure of the firer'.¹⁹ During tests at the U.S. Army's Springfield Armory in September 1952 another shortcoming was reported. Men firing the rifle reported that gas and powder residue was being blown back into their eyes while firing the rifle.²⁰ In November 1953 a questionnaire distributed among troops from four battalions in Malaya which

¹⁴ National Archives, WO 185/244, 116C, 'Automatic Rifles', Trials report from The School of Infantry', 22/12/50.

¹⁵ Royal Armouries Library (Former MOD Pattern Room Library), 340(200)EM2, Box 3, 'Some Technical Points Concerning the .280 (7mm) Rifle (EM2) Which Arose During Range Trials in October 1952', Technical Note 4/52, Operational Research Section Singapore, 04/12/52.

¹⁶ 'A Comparison Test of United Kingdom and United States Lightweight Rifles, Tenth Report on Project No. TS2-2015', Development and Proof Services Aberdeen Proving Ground, 05/04/50, [Online]. Available: <http://www.dtic.mil/dtic/tr/fulltext/u2/896858.pdf>, p. 35.

¹⁷ *Ibid*, p.35.

¹⁸ Royal Armouries Library (Former MOD Pattern Room Library), 340(200)EM2, Box 2, p. 34, 'User Trials .280 Rifle', Small Arms Wing, School of Infantry, 11/05/51.

¹⁹ *Ibid*

²⁰ Royal Armouries Library (Former MOD Pattern Room Library), 340(200)EM2, Box 3, 488, 'A Test of Rifle, Lightweight, Calibre .30, EM-2 (British)', Springfield Armory: Research & Development Division, 15/09/52.

had tested the EM2 reported issues with the rifle's optical 'unit sight', with the height of the operator affecting how easy it was to use the sight. Taller men reported that they had to lower their heads in order to aim.²¹ While many of these issues would have been addressed while preparing the rifle for production, the other more fundamental problems would have required more substantial work to improve the weapon. Despite the EM2's shortcomings, the ADE and the Attlee government believed it had the most potential and even in 1953 the EM2 was said to be equal to the FN in performance.²²

The sophistication of the EM2's design also impacted upon the cost of producing the rifle. As early as January 1948, the Infantry Personal Weapon (IPW) design team meeting to discuss mass production of the EM2 noted that 'the expense and complication of making a fully machined light weight [rifle] body... would require tooling and care over and above that normally expected'.²³ Kent-Lemon, the IPW project leader, was well aware of the difficulties the rifle's complexity would cause in mass production. In November 1950 he wrote to the Director of Armaments (Small Arms) informing him that minimising the weight of the EM2 'made the machining much more complicated than it need have been and a very small increase in weight... would make a very considerable difference to the cost of the weapon'.²⁴ Again in 1951, he advised that an increase of just a quarter of a pound would make a considerable difference to the cost of the weapon.²⁵ In November 1950 it was

²¹ Royal Armouries Library (Former MOD Pattern Room Library), 340(200)EM2, Box 3, 'Some Comments by four Battalions in Malaya on the .280 (EM2) Self-Loading Rifle Used in the Machine Carbine role, Technical Note No. 9/53', Operational Research Section Singapore, November 1953.

²² *Hansard*, House of Commons Debate, 19/01/54, vol. 522 cc832-3, [Online]. Available: http://hansard.millbanksystems.com/commons/1954/jan/19/british-army-new-rifle#S5CV0522P0_19540119_HOC_175.

²³ 'Automatic Rifle .280 E.M.2 - Minutes of meeting to discuss ease of production of pilot models and in mass', 11/02/48, Royal Armouries Library (Former MOD Pattern Room Library), 340(200)EM2, Box 3, 16.27.1-12.

²⁴ *Kent-Lemon to D. of A. (S.A.)*, 1/11/50, Royal Armouries Library (Former MOD Pattern Room Library), 340(200)EM2, Box 3, 191.

²⁵ 'Memorandum from Kent-Lemon to D. of A. (S.A.)', 01/11/50, Royal Armouries Library (Former MOD Pattern Room Library), 340(200)EM2, Box 3, 16.27.1-191.

estimated that the manufacturing cost per unit of an EM2 was £37.10 compared to £30 for the FN rifle.²⁶ This was not including an additional cost of £3.10 for the optical unit sight.²⁷ While this fluctuated during the course of the EM2's development the trend continued with the EM2 remaining more expensive to build. It was projected that to produce 100,000 EM2s it would cost £2,500,000 while the same number of FN rifles would cost £1,900,000.²⁸ Manufacture of 100,000 FN rifles was projected to cost just £400,000 more than the Lee-Enfield. The FN had been designed from its inception to be manufactured cheaply and by January 1954 it was estimated that the FN could be produced for up to £10 less than the EM2.²⁹ When compared to the EM2's bolt (seen in *figure 7*) the Belgian rifle's bolt (seen in *figure 8*), it is clear to see that the FN's was substantially simpler to manufacture, requiring less machining time with more flat surfaces and less intricate recesses. An estimated 100+ hours of precision machining was needed to produce a single EM2 prototype.³⁰ In total the development of the IPW and its ammunition had cost £233,000, just short of £6 million today when adjusted for inflation.³¹ A major factor in favour of the FN rifle was that, despite being a foreign design from a private company, FN had given Britain the licensing to manufacture the rifle for free.³² This removed any additional licensing costs which might have been charged by FN for production in British factories.

²⁶ 'Weapon Development: Cost of Proposed New S.A.A (.280) and Light Automatic Rifle', costing paper by Controller Supplies(Munitions), 14/11/50, National Archives, WO 185/320, 1, p. 2.

²⁷ *Ibid*, p. 2.

²⁸ *Ibid*, p. 2.

²⁹ Letter from Secretary of State for War to Prime Minister, 26/01/54, National Archives, PREM 11/854, 61.

³⁰ This machining involved extensive precision drilling, milling and turning of blocks of steel followed by heat treating to create the various parts of the rifle including the barrel, gas piston, bolt, receiver and butt assembly.

³¹ Royal Armouries Library (Former MOD Pattern Room Library), 340(200)EM2, Box 3, 16.27.1, 'Cost in Pounds Sterling of the Infantry Personal Weapon and Ammunition', Ministry of Supply, 1954.

³² National Archives, WO 185/320, 10, p. 3, 'The New .280 Rifle', letter from R. Laloux, Director-General FN to Lt. Gen. Sir K.N. Crawford, Ministry of Supply', 09/08/51.

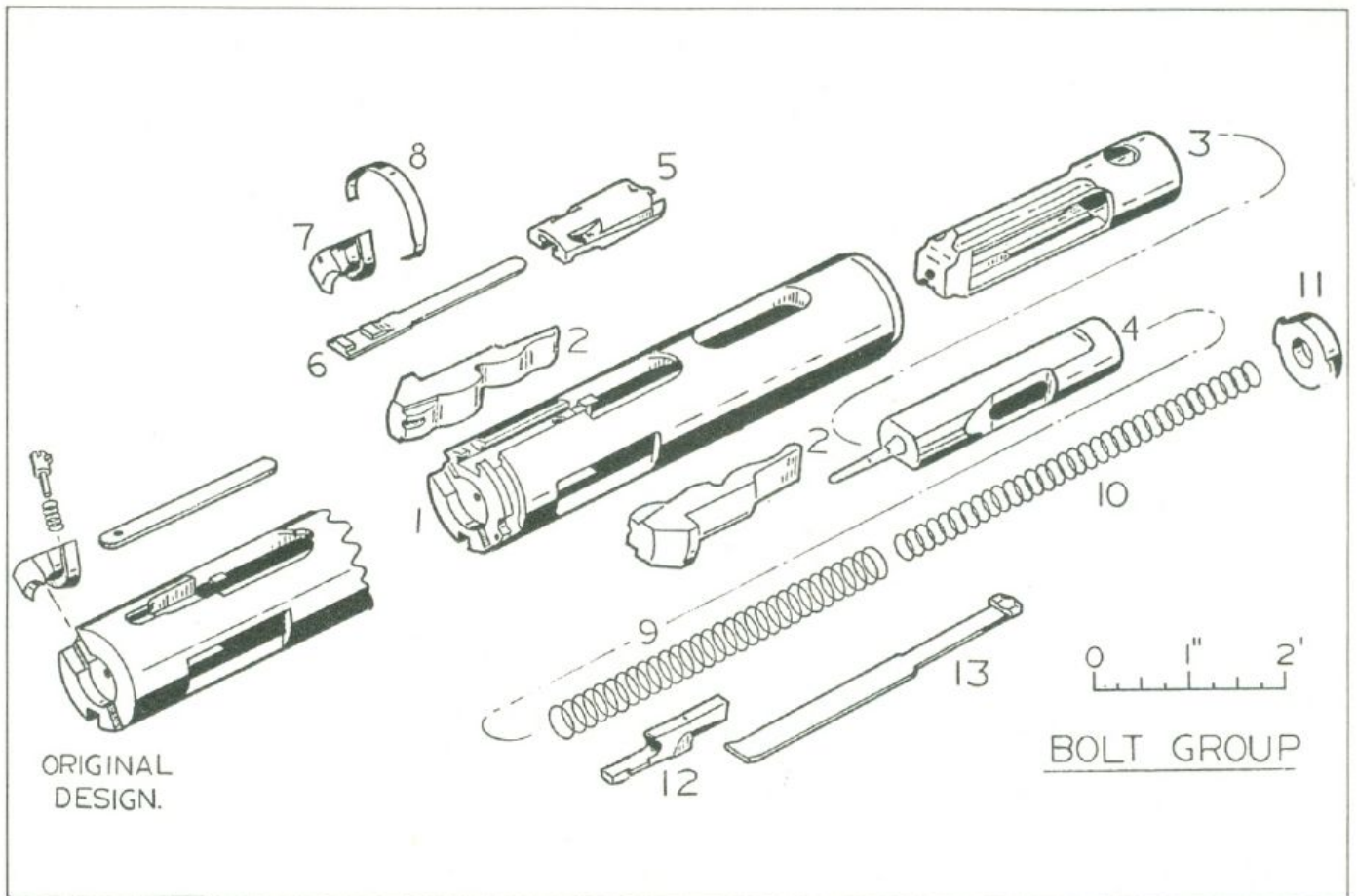


Fig. 143 Exploded Isometric drawing of the EM-2 Bolt System with modifications

Parts list for bolt assembly

- | | |
|------------------------|---------------------------|
| 1. Breech block | 7. Extractor |
| 2. Locking levers | 8. Extractor spring |
| 3. Firing pin sleeve | 9. Firing pin spring |
| 4. Firing pin assembly | 10. Firing pin spring |
| 5. Piston catch | 11. Breech block end plug |
| 6. Piston catch spring | 12. Sear |
| | 13. Sear spring |

Figure 7. Diagram showing the EM2's bolt disassembled.³³

³³ Dugelby, *EM-2 Concept & Design*, p. 283.

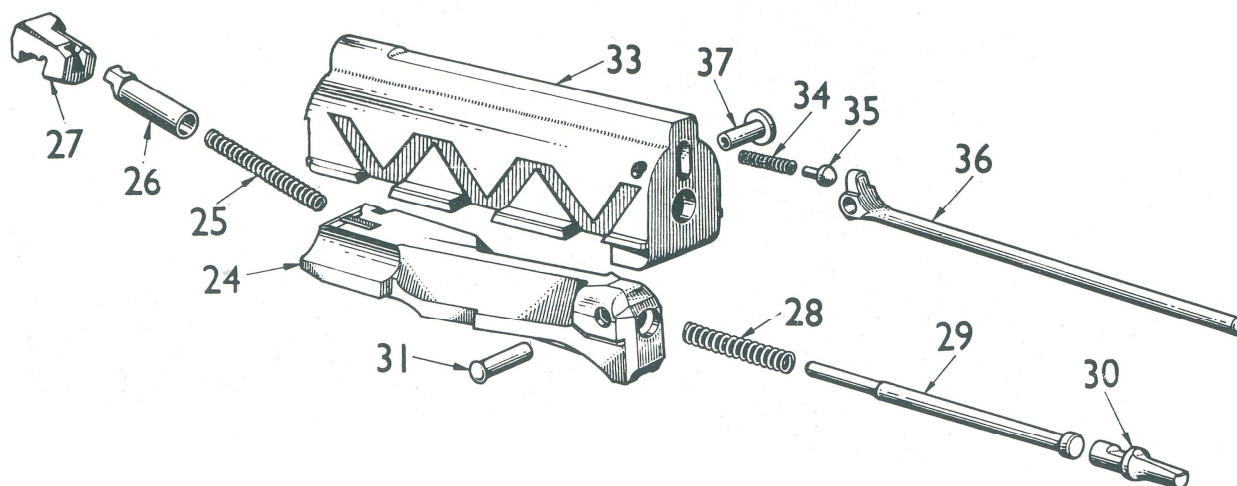


Figure 8. Diagram of the FN FAL's bolt.³⁴

In a November 1951 memorandum to Churchill, the Minister of Supply estimated that 15⅓ divisions would require 329,000 rifles.³⁵ The Ministry of Supply estimated that 1.5 million rifles would be needed to arm all three services adequately.³⁶ Rather misleadingly, the newly reformed Home Guard were included in this estimate, when they were actually to be armed with older equipment.³⁷ This is an indication of the Conservatives' willingness to inflate the number of rifles needed in order to accentuate the implications of how complex the EM2 was to manufacture. By increasing the number of rifles needed, the differences in cost and manufacturing time were highlighted. This created a dichotomy where the EM2 was portrayed as overly complex while the FN was presented as being ready for mass production. The complexity and cost of the EM2 had been believed acceptable by the ADE and Attlee's government who saw the EM2 as the superior weapon worth the expense.

³⁴ Stevens, *UK & Commonwealth FALs*, p. 247.

³⁵ National Archives, PREM 11/854, 127, Memorandum from Minister of Supply to Prime Minister, 20/11/51.

³⁶ *Ibid*

³⁷ The Home Guard Act 1951 was one of the new Conservative government's first pieces of legislation passed in December. They were eventually armed with the older Lee-Enfield Rifle before being disbanded again in 1957.

However, by April 1953, the pressure to standardise had increased and senior officers finally agreed that the EM2 'would have to show a greater superiority in performance and an improved cost ratio for it to supplant the FN.'³⁸ Once the support of the CIGS had ebbed away the ADE lost their last major ally in the argument to select the EM2. In December 1953, following the government's decision to adopt the FN FAL, Kent-Lemon wrote to A.P. Wickens, the CEAD, expressing his anger over what he considered inaccurate statements in the press suggesting the reason for the government's decision was not political but that the EM2 was inferior to the FN. He wanted it recognised that the decision had not been spurred by the EM2's inferiority but 'in the hopes of achieving all round standardisation.'³⁹ He condemned 'attempts to explain away a political move by erroneous press statements which are allowed to go uncorrected'⁴⁰ as distressing for him and his staff.

One of the Conservative government's main justifications for the selection of the FN FAL was the speed and ease with which production could begin. The FN factory in Belgium was contracted to provide the first 5,000 rifles for the troop trials while indigenous production was set up. One of Antony Head's arguments for the Belgian rifle was that by adopting the FN, production could begin a year earlier than EM2 production could.⁴¹ This was an important factor, Churchill had been concerned about the speed in which the rearmament of the army could be completed since he questioned the Labour government on the matter while in opposition in 1951.⁴² The debate and indecision surrounding the rifle meant that the British army continued to be armed with the Lee-Enfield when, if production had been begun as planned in

³⁸ National Archives, WO 185/320, Letter from DGofA to CS(M), 23/04/53.

³⁹ Royal Armouries Library (Former MOD Pattern Room Library), 340(200)EM2, Box 3, 16.27.1-531, Letter from Kent-Lemon, A/CEAD to A.P. Wickens, CEAD, 16/12/53.

⁴⁰ *Ibid*

⁴¹ National Archives, PREM 11/854, 61, A. Head, Secretary of State for War to W.S. Churchill, Prime Minister, 26/01/54.

⁴² *Hansard*, House of Commons Debate, 13/06/51, vol. 488 cc2302-5, [Online]. Available: http://hansard.millbanksystems.com/commons/1951/jun/13/280-rifle#S5CV0488P0_19510613_HOC_276.

1952, the EM2 could have been introduced in 1954.⁴³ The government faced the problem of Britain not being able to produce more than 100,000 rifles a year even when at full manufacturing capacity.⁴⁴ This meant that it would take at least a decade to produce enough rifles to equip Britain's armed forces unless it had the assistance of Allied industry in North America. The government argued that one of the benefits of NATO standardisation to the FN rifle was that allied overseas production capacity could be harnessed in time of need. Head laid out the stark scenario when he asked: 'In the next war, with atomic attacks, does the honourable member [Shinwell] think we could rely on the production of rifles entirely in this country?'⁴⁵ Manufacture outside of Britain was essential to Britain's survival. During the final debate on the rifle Churchill argued that to adopt the EM2 would not only leave Britain isolated amongst its allies, who would inevitably follow America's lead, but also relegate the British army in a decade-long transitional period where it was equipped with both the new and old rifles.⁴⁶

The choice of the FN rifle became obvious once NATO selected the American 7.62x51mm ammunition.⁴⁷ This negated the weight and recoil benefits which made the EM2 the better weapon.⁴⁸ The FN was better able to sustain the pressures of the powerful American round, and also being simpler and cheaper to manufacture, it was the clear choice. It is likely that with enough time and focused effort, instead of the uncertainty which prevailed between 1951 and 1953, that the EM2 could have been perfected enough to make it less complex and simpler to

⁴³ National Archives, CAB 21/3465, 'Adoption of New Small Arms Ammunition and Weapons by the British Armed Forces, Annex B', Cabinet Defence Committee, 12/09/51.

⁴⁴ National Archives, PREM 11/854, 139, 'Production Figures: .280 Rifles', 17/11/51.

⁴⁵ *Hansard*, House of Commons Debate, 01/02/54, vol. 523 cc39-113, [Online]. Available: http://hansard.millbanksystems.com/commons/1954/feb/01/british-army-new-rifle#S5CV0523P0_19540201_HOC_399.

⁴⁶ *Hansard*, House of Commons Debate, 01/02/54, vol. 523 cc39-113, [Online]. Available: http://hansard.millbanksystems.com/commons/1954/feb/01/british-army-new-rifle#column_53.

⁴⁷ 'NATO Agrees To .30 Round', *The Evening News*, 15/12/53.

⁴⁸ Royal Armouries Library (Former MOD Pattern Room Library), 340(200)EM2, Box 1, 16.21.1, file 3, 446, 'Development of 7mm Calibre', Letter from CEAD to DofA(SA), 04/06/52.

manufacture. However, the FN rifle was believed to already be perfected and able to go into full-scale production with comparatively little modification. This, coupled with American reluctance to accept any ammunition other than their T65 round, left Britain with little choice but to adopt the FN rifle. Ironically, once selected in early 1954, actual full-scale production of the FN FAL did not begin in Britain until 1957.⁴⁹ This delay stemmed from complications modifying the rifle for British service and converting its dimensions from the original Belgian metric to British imperial measurements.⁵⁰ Long after production had been expected to begin, the first year of production saw just over 40,000 rifles assembled in British factories by December 1958.⁵¹ While the government had used the FN's supposedly shorter manufacturing timescale as a justification for its selection, its delay in entering service shows that this was merely an effort to justify its adoption with the true motivation being to standardise and placate the USA.

The EM2 was an ambitious technical solution to the problems expected to be faced on the modern battlefield. While it is clear that the EM2 had its faults, they were not fatal flaws. The EM2's design was undoubtedly more complex than the rival FN rifle, but it cannot be argued that the complexity and cost of producing the rifle, along with its design flaws, were key factors in the decision to abandon it. While both Attlee and Churchill's governments recognised its potential, it was the political pressure for standardisation which led to the EM2's eventual abandonment. When the decision to adopt the FN was finally made, the EM2's flaws were not used to justify the choice. Instead the EM2's complexity and the FN's perceived simplicity were highlighted to disguise the fact that once Britain had abandoned the assault rifle

⁴⁹ Stevens, *UK & Commonwealth FALs*, p. 115.

⁵⁰ *Ibid*, p. 93.

⁵¹ *Ibid*, p. 128.

concept in the interests of maintaining American political and military support, the FN remained Britain's only choice.

Conclusion

The EM2 and the ideas behind it were undoubtedly ahead of their time. It was a lightweight rifle with a revolutionary layout, combined with intermediate ammunition specifically developed using evidence from studies which defined what an infantryman needed, and scientific testing to design a cartridge capable of fighting a modern war. When the rifle controversy began in 1950 it was American opposition which ignited it, but stubbornness on both sides prolonged it. It was only Churchill's political pragmatism which ended the deadlock and prevented a schism in Anglo-American relations.

While the EM2 was far from the perfect rifle, it represented an enormous leap forward for the British military and was seen by senior officers as a vital tool in the anticipated war with Russia. Its light weight and high rate of fire would have certainly given the average British soldier a distinct advantage in firepower and mobility, which was deemed essential to meet a potential Soviet onslaught. However, instead of this innovative new assault rifle the British infantryman found himself equipped with a heavy, slower firing, full calibre battle rifle, which was the antithesis of what the ADE's studies and experiments had envisaged.

The EM2 remains one of military history's great 'what ifs'. If Labour had remained in power in 1951 Britain would have persevered with the EM2 unilaterally and perhaps influenced NATO's attempts to standardise. If the USA had not been so reluctant to embrace a foreign and unorthodox design, the rift over the choice of rifle between Britain and America may never have developed. There are a number of possible explanations for the eventual abandonment of the EM2 but by far the strongest is the political obstacles it faced. While the EM2's flaws, complexity and cost must be considered, it was direct opposition from the United States and the

political desire at home to maintain good relations with America which can be seen as the main causes of the EM2's downfall. External pressure and international political developments drove the British toward the FN, leaving them with little option. American unwillingness to compromise forced Churchill to be pragmatic. Churchill had long held that standardisation amongst the Western Powers was crucial. To him the survival of Britain was more important than a rifle. If the EM2 and FN's positions had been reversed Churchill would have undoubtedly made the same decision based on the vital need for standardisation and unity in the face of the Communist threat. The Churchill government's acquiescence to American pressure, while pragmatic, was also an early sign of Britain accepting her diminishing place in the world.

Ironically it was the British doctrine of an assault rifle firing a smaller bullet which would finally be recognised as the way of the future. In under a decade the U.S. military discovered the hard way that their 7.62x51mm cartridge was too large and too powerful to be considered a controllable intermediate cartridge. Just twelve years after the abandonment of the EM2 the USA adopted a new light weight assault rifle, the M16. The M16's 5.56x45mm ammunition was even smaller than the .280/30 (7mm) ammunition championed by the British. The American move left behind the rest of NATO, which had adopted the American 7.62x51mm round. It would be another 25 years before a major power adopted a bullpup rifle. International politics stood in the way of small arms progress and British soldiers found themselves armed not with an advanced lightweight British assault rifle, but, a heavy Belgian battle rifle which fired American ammunition. Despite its potential, the EM2 remains Britain's forgotten rifle.

Appendix A: BSA 28P Rifle



Figure 9. BSA 28P prototype .280 rifle¹

Once the W.O.P.S No.9 specification had been issued by the War Office, the Ministry of Supply approached Birmingham Small Arms Ltd. (BSA)., a British company with a long history of firearms manufacture. BSA developed a more traditional design with a full wooden stock which weighed a pound heavier than the EM2. Development of BSA's rifle, designated the 28P, began in 1948 when the Ministry of Supply requested they submit a rifle for trials.² The first prototypes were

¹ 'BSA 28P', [Online]. Available: <http://www.invaluable.co.uk/auction-lot/bsa-an-exceptionally-rare-.280-british-selectiv-1056-c-146573d152>

² R. Blake Stevens, *UK & Commonwealth FALs*, (Toronto: Collector Grade Publications, 1980), p.47.

ready for testing in May 1950, and while being complex and difficult to take apart, requiring 28 separate actions to field strip them, they were cleared for further testing.³ However, during endurance trials the following month the 28P suffered a catastrophic failure.⁴ The rifle used an unusual offset mechanism for locking the breech closed, which is essential for safe firing of firearms. Just 810 rounds into a 6000-round endurance test the 28P's receiver exploded while firing.⁵ Inspections found that with extended firing the receiver had bulged and weakened preventing the breech from locking closed. When the operator fired the rifle the pressure from the ammunition threw the bolt back and blew out the side of the rifle's receiver. Further tests were made with another prototype and similar weaknesses were found.⁶ By the time BSA had fixed the issues with the 28P the other rival designs were much further ahead in trials and development and the BSA rifle was dropped from contention.⁷

³ Stevens, *UK & Commonwealth FALs*, p. 48.

⁴ *Ibid*, p. 49.

⁵ *Ibid*, p. 48.

⁶ *Ibid*, p. 49.

⁷ *Ibid*, p. 49.

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