The Kerr Rifle Project

With the burgeoning Volunteer movement in Great Britain in the 1860s came a great interest in target rifle shooting, stimulated largely by the National Rifle Association. This market lead to a proliferation of gunmakers who, following principles established by Joseph Whitworth, developed a special class of 'small-bore' target rifle. Outwardly these rifles initially maintained the characteristics of the military issue arms of the time, with open sights, full stocks, band fastened barrels and ram rods. The majority of these rifles were around .451 calibre, and the term 'small-bore' was used to distinguish them from the 'large-bore' service rifle of .577 calibre.

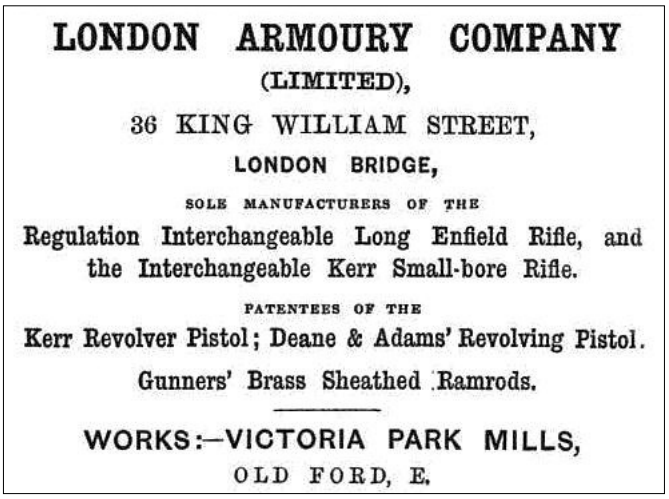
Captain Heaton, in his 1864 'Notes on Rifle Shooting' describes a number of small-bore rifles: Baker, Beasley, Bissel, Crockart, Edge, Henry, Kerr, Lancaster, Newton, Parsons, Rigby, Turner and Whitworth. These are just a few of the gunmakers connected with the history of the small-bore rifle.

Two of these rifles, the Whitworth and the Kerr, have particular American interest because of their use in the Civil War (1861-1865). The Whitworth has been available in reproduction form for many years and has a keen following. There are however no commercial reproductions of the Kerr rifle available. Not content with this, Pat Watson has set about a project to reproduce a Kerr barrel. Details of Pat's project follow, but first one of his collaborators, Bill Adams, provides some historical context to the project.

David Minshall

Thoughts on the Confederate Kerr Rifle: the "Poor Mans Whitworth" by Bill Adams

Confederate sharpshooters were perhaps the best trained troops fielded by either side during the War for Southern independence. Their tactics, skill, and élan were similar to those of specialized units in the 20th and 21st centuries. While most Confederate sharpshooters carried .577 Enfield-pattern rifles and often functioned as light infantry, a select number utilised "small bore" long range military-target rifles such as the Whitworth, Kerr, Turner, or Nuthall. Their military style rifles combined accuracy, simplicity, reliability, ruggedness, and utilized standard calibres (.577 or .451). Such rifles were far more practical and less cumbersome than the heavy target rifles initially used by most Union sharpshooters as they could be loaded with prepared cartridges rather than requiring complicated accessories and being of many different individual calibres. The Whitworth became the most romanticised and best known of the Confederate sharpshooters' rifles, perhaps because it was the most numerous of the .451 rifles in use and it was often equipped with a telescope sight that gave it a longer effective range than the other .451 rifles. The Kerr rifle was not as well known, but it was greatly feared by those who were its targets.



A period advertisement mentioning the Kerr Rifle

The Kerr was a "small bore" .451 calibre military configuration long-range target rifle based upon the P53 Enfield rifle musket. It was an affordable and accurate competitor to the more expensive .451 rifles that were popular in the rifle matches of the era. The rifling system was developed by James Kerr, the superintendent of the London Armoury Company, and the rifles were made by LAC. The barrel was 37" long; two inches shorter than the standard .577 P53 barrel. The bore had 6-groove ratchet rifling starting straight at the breech and increasing to a twist of one turn in twenty inches. The rear sight was mounted "backwards" compared to a standard P53 and the sight ladder was numbered on the side that faced the shooter. Front sights on the typical Kerr rifle were either a hooded pin-and-bead or a blade mounted in a dovetailed slot and locked in place with a set screw. Kerr mounts were normally all iron and the stocks were checkered; however some Kerr rifles had standard P53 brass mounts and smooth stocks. The correct ramrod for the Kerr rifle and as furnished with a Kerr barrel is iron with a brass cupped tip. The tip is not slotted. The correct bullet for the Kerr was said to weigh 530 grains. Most Kerr barrels are marked simply Kerr's Patent, although some few Kerr barrels have markings like those of a Kerr described on the website of the Springfield Armory, NPS:

> KERR'S PATENT / INTERCHANGEABLE / WITH THE / MACHINE MADE ENFIELD / LONDON ARMORY CO. BEMONDSEY 111 / REGISTD / 10TH MAY, 61.

The practicality of using a rifle based upon the P53 Enfield can be understood from a period description: "*A great advantage connected with this rifle arises from the system of manufacture, as the lock and all other parts and limbs are interchangeable with the Long Enfield rifle, thus rendering the repair of any accident a mere matter of writing for a duplicate part; and whenever a purchaser, whether at home or abroad, is within reach of a garrison town, the armourer is always competent to supply any defect.*"

Although the Kerr is most frequently mentioned in conjunction with exploits of General Patrick Cleburne's Kentucky Orphan Brigade sharpshooters in the Army of Tennessee (AOT) and documented as seeing extensive use in the AOT; Kerr rifles were also likely to have been used elsewhere in the Confederacy. Extant records confirm that at least 20 Kerr rifles were shipped from Richmond to Col. Oladowski, the chief ordnance officer for the Army of Tennessee. Whether those 20 rifles were a unique shipment that went from Richmond to the AOT or were a part of a larger

Kerr's Small Bore Rifle and the London Armoury Company's Long Enfield

The Enfield Rifles manufactured by the London Armoury Company are well known to volunteers in every part of the country, for the excellence of their workmanship and finish has been attested in many a hard-fought contest during the past year. They are bona fide Government rifles – every part interchanging with those manufactured at Enfield – and as such are allowed at Wimbledon and other prize matches.

The application of machinery to the manufacture of firearms, though recently introduced into England, has been in use for several years, with more or less success, in America and on the continent of Europe.

According to the evidence of Mr. Prosser, given before a select Committee of the House of Commons in 1854, an English firm, Messrs. James and Jones, of Birmingham, took out a patent for the Improvement of Firearms, and for the application of Machinery thereto, so far back as 1811. This patent was offered to the English Government and refused, and was ultimately bought by the Russian Government, who established a factory at Toola, in order to work the patent.*

The experiment appears to have been successful, for a gentleman who visited Toola, in 1822, reports that he saw a number of soldiers put the various parts of these machine-made rifles together, and fire oft the rifles in two minutes! We give the fact just as it was stated to the Committee, without offering any opinion of our own as to its accuracy. There can be no doubt, however, that these rifles had been put together and properly fitted previously to the public exhibition just described.

With respect to the machinery now in active operation at the works of the London Armoury Company, the lock and barrel bedding machines are, perhaps, the most interesting. The latter performs its work in about two and a half minutes, whilst the lock can be fitted to the stock in about fifty-eight seconds! The whole time taken up by the operations in finishing off the-entire stock being less than twenty-five minutes!

The Enfield rifle consists of sixty-one limbs or parts (counting every screw, &c), and these pass through, on an average, twenty-five operations each!

The London Armoury Company was established, we believe, in 1856, and some idea may be formed of the extent of its operations, when we state that it is capable of turning out about 400 rifles and 150 revolving pistols per week; the number of hands employed being about 350, and the machines, including jigs and fixtures, which may almost be called machines, being little short of 600!

That the rifles manufactured by this company are of a superior description may be inferred from the fact that they invariably make a rule of informing purchasers that they are ready to change any barrel failing to give entire satisfaction, and out of the thousands issued, the returns have not reached half-a- dozen.

What the Kerr rifle patent** consists of is, that the portion of the grooving at the breech end, where the charge explodes, is straight, or nearly so, to allow of the proper expansion of the bullet before commencing the quick spiral. As the bullet turns from left to right, the deepest part of the groove is on the right, to prevent stripping, the left of the groove merging into the cylinder bore, that the bullet may more easily expand, and prevent windage.

The depth of the grooves, like those of the Enfield, diminishes from the breech towards the muzzle, being .015 at the breech, and .005 at the muzzle.

The short time taken to win for itself its present high place in public estimation augurs well for its future success. Apart from the excellence of its finish and the distinctive peculiaries of its construction, the price at which it is produced cannot fail to make it a popular arm with the general body of riflemen.

W. H. Blanch (1st Lancashire R.V.),
'Volunteer's Book of Facts' (1862)

* 26 July 1811, No. 3469: James, Henry, and Jones, John "An improvement in the manufacture of barrels of all description of fire-arms and artillery."
Also: 28 September 1809, No. 3267: "Improvement in the manufacturing skelps for fire-arms" and 20 February 1806, No. 2911: "Improvements in the mode of manufacturing barrels for fire-arms"

** James Kerr did not Patent his rifling although it was a Registered Design (No. 4368, 10 May 1861)

[provided by David Minshall]

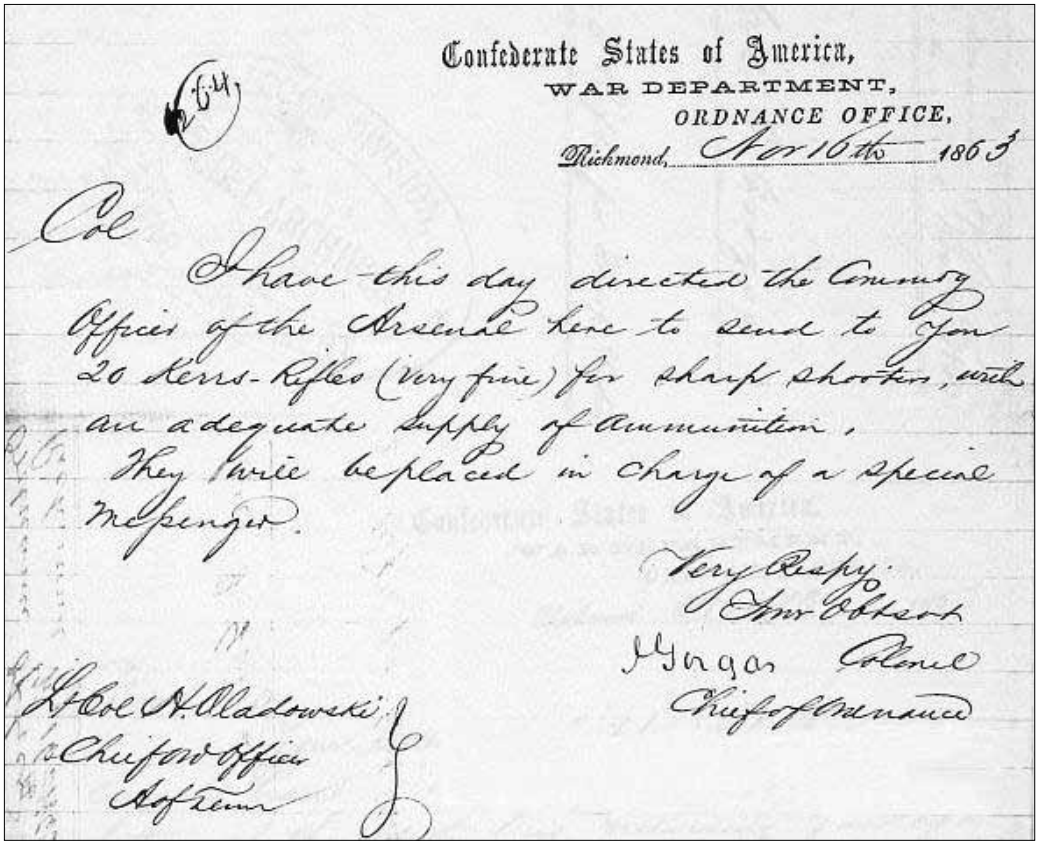
lot of Kerr rifles distributed from Richmond is not known as of this writing; however, more than 20 Kerr rifles were used in the AOT. Various sources state that Cleburne's sharpshooters initially received 10 Kerr rifles, and an additional issue of 16 Kerr rifles. 11 Kerr rifles were contributed to General Breckinridge in 1864 by "an English admirer" and used by an Orphan Brigade sharpshooter unit led by Lt. George H. Burton. Cross-checking of various sources results in the conclusion that at the very least 26 Kerr rifles were used in the AOT, with a possibility that as many as 47 were received and put into service.

To date, researchers have found no conclusive proof that Kerr rifles were used by the Army of Northern Virginia. Barrett Decker of the N-SSA began a "…search for the elusive Kerr rifle" after reading an article by Captain Laughton of the Sharpshooter Battalion of Mahone's Brigade, ANV, in the Southern Historical Society Papers. Laughton described their weapons as "small bore Enfield rifles" and their ammunition as "special elongated English ammunition. We never used Confederate issue ammunition."

Barrett said that whereas Mahones' Battalion of Sharpshooters initially consisted of 180 men plus officers… "I felt sure that a lot of ammunition was getting fired through those 180 Kerr rifles, and yet I could find no record of it." Barrett concluded that "…if the Kerr rifle was being used as much as Captain Laughton had indicated… then the relic hunters should be finding quite a few fired 'elongated' Kerr bullets. And yet such was not the case. Very few, if any, real, verified Kerr bullets have been found up until now in the Eastern Theatre… at this time I can only think that Captain Laughton was mistaken in his statement about the 'small bore Enfields,' and that in reality his sharpshooters were probably using 2-band Enfield rifles, most likely firing the longer Pritchard (Pritchett) bullet."

Of the rifles used by the ten Kerr Sharpshooters under Lieutenant, later Captain, Buck Schell in the AOT, one was ruined after a bullet was lodged half-way down the barrel and the sharpshooter "tried to melt it and so ruined the gun" and another was taken from a dead sharpshooter at Dallas, GA by federal soldiers.

In a 1907 interview, former Kerr Sharpshooter detachment



Confederate States of America,
WAR DEPARTMENT,
ORDNANCE OFFICE,
Richmond, Apr 16th 1863

Col

I have this day directed the Commdg Officer of the Arsenal here to send to you 20 Kerrs-Rifles (very fine) for sharp shooters, with an adequate supply of Ammunition.
They will be placed in charge of a special Messenger.

Very Respy.
Your Obt Svt
J Gorgas Colonel
Chief of Ordnance

Lt Col N Vladowski
Chief Ord Officer
Dept Tenn

Issue Of Twenty Kerr Rifles From Richmond

"I have this day directed the Commdg Officer of the Arsenal here to send to you 20 Kerrs-Rifles (very fine) for sharpshooters, with an adequate supply of ammunition." J. Gorgas, Colonel, Chief of Ordnance. A shipping manifest mentioned in Confederate Blockade Running Through Bermuda, 1861-1865 lists 20 "small bore Enfields" shipped by Caleb Huse in December 1862. Researchers have suggested that those rifles were Whitworths; however, being of P53 configuration, it is more likely that the "small bore Enfields" were Kerr rifles as they could be easily shipped in standard 20-gun Enfield crates as were the above rifles.

officer A. Buck Schell stated that the unit received sixteen Kerr rifles that "were made in (the) Arsenal at Macon, GA." Macon records confirm that sharpshooter rifles were produced there using country rifle barrels bored out to a uniform calibre. Those would not easily be mistaken for Kerr rifles. It is possible that Confederate purchasing agents or private arms buyers purchased readily-available Kerr barrels from the London Armoury Company and those barrels were later fitted into P53 stocks at Macon or elsewhere.

Confederate records refer to "globe sights" being fitted to sharpshooter rifles produced at Macon. Lt. Col. Cuyler, commanding the Macon Arsenal, also reported that some rifles produced at Macon had been set up with telescope sights and that "the number of telescopes received from Charleston was one hundred seventy." It is unlikely that any Confederate-acquired Kerr rifles were fitted with Davidson telescopes in England, as Whitworth had bought the rights from Davidson. The author has seen LAC casings that included both .577 and Kerr .451 barrels with bullet moulds for both and a range spotting scope and other accessories, but has not seen or heard of a Kerr fitted with a telescopic sight.

The Whitworth and Kerr rifles could fire the same cylindrical bullets and use the same commercially available cartridges that would function in several other .451calibre rifles. A potential point of confusion when studying the Kerr rifle is that LAC also produced 37" long barrels with Turner-patent rifling that were fitted into LAC P53 stocks. Those rifles resemble the Kerr rifles from LAC except that the rear sights are slightly different and they are stamped Turner's Patent in tiny letters on the top of the barrels and have the typical tiny letters L. A. C. and London proof marks near the breech. A few such rifles have turned up in the United States and at least one was said to have been a Confederate Sharpshooter's rifle.

LAC sold significant numbers of P53 long rifle muskets, revolvers, and some P53 Artillery carbines to Confederate purchasing agent Caleb Huse. Whereas LAC also produced Kerr rifles and barrels as well as some barrels with Turner patent rifling, Caleb Huse could have as easily acquired Kerr military target rifles and/or Kerr barrels as any other purchaser. It has been stated that LAC did not supply large numbers of long guns to the Confederacy due to contracts with the British government and sales to the Volunteers; however, the Commonwealth of Massachusetts bought 2000 LAC P53 rifle muskets and unpublished CS War Department documents list significant purchases from LAC. The LAC production readily exceeded the number of arms that were delivered monthly under the terms of the contract with the British Government and the over production went to outside purchasers that included target shooters, Volunteers, and Caleb Huse. At least one Kerr rifle was the property of a United States sharpshooter and bears the legend "J. W. B. of Co. B 64 Ill." There were two men with those initials in Co. C of the 64th Illinois; both served in Yates Sharpshooters. Whether the Kerr was issued, captured, or awarded is unknown. It could have been the rifle taken at Dallas, GA.

Many of the so-called "Whitworth bullets" that have been excavated in both the Eastern and Western theatres exhibit impressions of rifling lands, suggesting that they were actually fired from Kerr or other .451 rifles. Projectiles that are passed off as Kerr bullets usually turn out to have been dug in areas where Tennessee troops were present, often early War sites, before any Kerr rifles were received. The bullets are approximately .45 calibre with three grease grooves and hollow bases; somewhat like a slightly stretched Harpers Ferry or Burton bullet. The bullets are too short to stabilize in a Kerr or other rifle with a fairly rapid twist. The bullets are for the Tennessee state .45 cal "minie" rifles made from modified civilian rifles.

On May 18, 1862, one Irby Morgan, a supplier of percussion caps, percussion cap machinery and woollen cloth, sent the following proposal to Confederate Secretary of War L. P. Walker: "In view of the patent facts, both of the scarcity and pressure for arms, I have conceived the idea of converting all the rifles in Tennessee of sufficient weight into as nearly as possible a uniform length and uniform caliber, and adopting for their use the Minie ball. This use of the Minie ball explains all of the difference between

the effectiveness of modern rifles and the Tennessee or Kentucky gun. By this scheme I am fully warranted in saying that all our deficiencies may be supplied." Morgan's suggestion to alter rifles to a uniform calibre was adopted and many hundreds of modified rifles were re-bored to .45 calibre and rifled. The rifles were tested and reported to be "deadly accurate" up to 300 yards using "standard sights."

Thousands of .45 calibre "Tennessee Rifle" cartridges were manufactured and issued for the modified rifles. From 2 January until 13 March 1862, 83,900 of the cartridges were issued from the Nashville Armory alone (pg 300, Nashville Armory letter book, NARS). The .45 calibre Tennessee bullets are frequently mistaken for Kerr bullets, although the Tennessee rifles may well have been used by sharpshooters.

In the following article, Pat Watson has given his family background and connection with Confederate arms. Perhaps our interests are genetic. My great-great grandfather carried an Enfield rifle as a mounted rifleman from South Carolina; in fact, 17 members of the family served in the SC cavalry. As a youth, I was astounded when my two great aunts and great uncle told me that they personally knew both Berry and Blackwood Benson, famed Confederate sharpshooters. Berry Benson was one of my childhood idols and remains so to this day.

In 1968, I acquired an iron mounted, "snub nosed" P53 Enfield with a checkered stock that was mostly covered with several layers of ancient, poorly applied black paint, but hanging from the sling swivel by a fragile piece of twine was an age-stiffened, wrinkled and chipped manila tag with a faded ink inscription: "Confederate officer's Enfield rifle picked up on the battlefield." I eventually soaked off the black paint and saw that the numbers on the rear sight were pretty much illegible due to the piece having apparently lain on the field for a while, but other than the fact that the front sight blade was missing and the mainspring was broken, the rifle was complete and in relatively good condition. I installed a mainspring and a folding front sight like the one shown in Firearms of the Confederacy and Confederate Arms, later discovering that the folding front sights often observed on Kerr rifles weren't patented until after 1865.

In those days, we shot original Fayettevilles, Richmonds, and other Confederate guns, so shooting the Kerr seemed practical. I went to a sand pit with the Kerr and ten or so 530 grain bullets cast in an original Confederate cylindrical bullet mould. I taped a foot-square pistol target to a somewhat bullet-riddled 55 gallon steel drum in front of a dirt berm and paced off 100 yards. I have long forgotten what I used for a charge, but it was probably a .45-70 case full of ffg Meteor or Dupont powder. The bullets were patched with bond paper and loaded without a grease or wax wad. When I pulled the trigger, the bullet passed through the steel drum and "splashed" in the berm behind it with a velocity that was noticeably faster than the .577 and .58 rifles and rifle muskets that I was used to firing. The rest of the test shots hit the paper and went through the steel drum. Not striving for accuracy, but for experience, I do not recall that the group size was impressively tight, but I had fired an actual Confederate sharpshooter's rifle!

I am looking forward to firing one of the new Kerr barrels. I have several of Bobby Hoyt's barrels in various rifling styles and they have all been great shooters in N-SSA events. There are no longer any N-SSA events that permit .451 rifles, but there are other venues for trying out James Kerr's rifling. Bobby Hoyt's workmanship and the Kerr rifling should be a winning combination.

Bill Adams

The Reproduction Kerr Barrel Project by Pat Watson

In Captain William Henry Heaton's 'Notes on Rifle Shooting' (May 1864; London; Longman, Green, Longman, Roberts, & Green) he states the "'London Armoury or Kerr Rifle'…is thus described by Mr. Kerr, the Superintendent of the London Armoury Company: *Diameter of Bore*. – .451 of an inch shape circular. *Grooving*. – Six grooves, Ratchett form, without angles…*Spiral*. – At the breech end the grooves are nearly straight, increasing in twist until, at the middle of the barrel, they obtain the full spiral of one turn in 20 inches, which is thenceforth maintained at the same pitch to the muzzle… *Weight and Shape of Projectile*. – The ordinary cylindro-conoidal bullet, weight 530 grains, diameter .442 of an inch. *Charge*. - 2 ¾ or 3 drachms of Small bore rifle powder…

Mr. Kerr claims the following as *the peculiar excellences of his rifle*: 'The straight part of the grooving allows of perfect expansion of the bullet, thus avoiding windage and consequent fouling; stripping, of course, is also prevented. A great advantage connected with this rifle arises from the system of manufacture, as the lock and all other parts and limbs are interchangeable with the Long Enfield rifle…"

If you have a Kerr stock, a P-53 LACo stock, RSAF Enfield stock or a Birmingham made P-H stock you just might be interested in what this project is about. We are in the process of reproducing a period type Kerr barrel that will be close to a drop in for those stock/lock combinations or any other that conforms to those. Some final fitting will be required as a minimum to properly mate the bottom of the bolster to the lock plate and the tang for a particular stock. The originals have had 150 years for the wood to change a bit.

The Enfield and Kerr rifles are of interest to some of us in the United States because they were used in our War Between the States, sometimes known as the Civil War or the War of Northern Aggression depending on your heritage. Early on, both the Union and the Confederate purchasing agents competed with each other and also against arms purchasers from many other countries for available Enfield's through direct purchase and contracts. British law forbade the sale of the exquisite arms from the Royal Small Arms Factory at Enfield, but commercial suppliers offered non-interchangeable arms. Although the United States managed to obtain far more P53 Enfield's than did the CSA before the US cancelled its overseas contracts in September of 1863, the P53 was the dominant standard issue rifled musket in the armies of the Confederate States of America. Kerr and Whitworth rifles as

well as some lesser-known British long range rifles were used for sharpshooting purposes by the Confederate armies. (The term sniper was not in general use until much later than 1865.)

Project Overview

On a personal note, the project to reproduce a Kerr barrel had its beginnings when I purchased an iron mounted Kerr stock with a .577 barrel in it. Initially I tried to be satisfied with an 18" twist, 37", .458 caliber (I had a number of .458 bullet moulds), rifle barrel that Bobby Hoyt made for me by relining a London made P-53 barrel. That sufficed for a while, but then I realized I really wanted to put a Kerr type barrel in the Kerr stock. One of my personal motivators was that my people fought for the Confederate States of America (CSA) with the Army of Tennessee. As a child, I was fortunate to know my great, great grandmother, who lived to be more than 100 years old. She lived in a small town in Arkansas and related the story of the men assembling at the local camp ground before going off to fight the Union armies as a part of the Army of Tennessee. At that time, it seems one of her uncles picked her up and put her on the saddle in front of him and she rode a little ways with the men until he set her down. She had three uncles: one came back, one was badly wounded and last seen being loaded on a Union gunboat after the battle of Shiloh, and the third simply disappeared. As I was reading about the Kerr rifle I found that the CSA Army of Tennessee made use of Kerr's perhaps even more so than the Army of Northern Virginia. So, in a way, I have a family history link to the Kerr and the Enfield and we share a common heritage in that sense with others that share that link.

I was fairly certain that finding a stand-alone Kerr barrel was not going to be in the cards for me. I mentioned my desire to a friend, Roland Wommack. Roland acted as a catalyst to help things come together so that what I was seeking might become a reality. Roland shares my interest, or I his, and he introduced me to Bill Adams who is very knowledgeable about the small arms involved in the American War Between the States. Also, Bill just happens to own a Kerr rifle. Roland had already introduced me to Bobby Hoyt, a well known barrel maker in North-South Skirmish Association (N-SSA) circles. Bobby makes P-53 Enfield barrels, 1861 Springfield's, etc. and even has the tooling to make 39" Whitworth barrels should anyone desire such for a P-53 stock. (It is my understanding that 39" Whitworth barrels are period correct.) Bobby has made gain twist barrels as well, and knows how to make the sine bar he will need to cut the twist of the Kerr rifling as it starts at zero for a few inches, goes from zero to 1 in 20 inches about half way down the barrel where it becomes a standard 20 inches twist for the remainder of the barrel length. His 33 inch length P-58 and P-60 barrels have period-correct 5-groove, 1:48 inch twist progressive-depth cut rifling.

With the ability to make barrels with a P-53 Enfield profile readily available, the next hurdle was to develop the ability to duplicate James Kerr's rifling in a barrel with a .451 bore. Roland had talked to both Bobby and Bill about what I wanted to do and so we began to work together to do what needed to be done to make it happen. I regard Bill as the Kerr barrel project engineer. We worked together to create a Kerr Barrel Description to give to Bobby.

In addition to being the instigator of the project, I am also the chronicler of the project. It is my job to make people aware of what the project is doing and to solicit their interest in participating in the project. I have asked anyone interested in such a barrel to send a personal message to me, Pat in Virginia, on whatever forum they are using when they discover the project indicating their interest in the project and to include their email address. I use four internet forums focused on muzzle loading rifles and, in particular, those that include rifles/muskets used during the American civil war period from 1861-1865. They include the MLAGB, Research Press, N-SSA, and the British Militaria Percussion Arms Forums (1). Using email makes it's far easier to attach files containing MS Word documents, MS Excel tables, and photos to get information out to a limited number of known people.

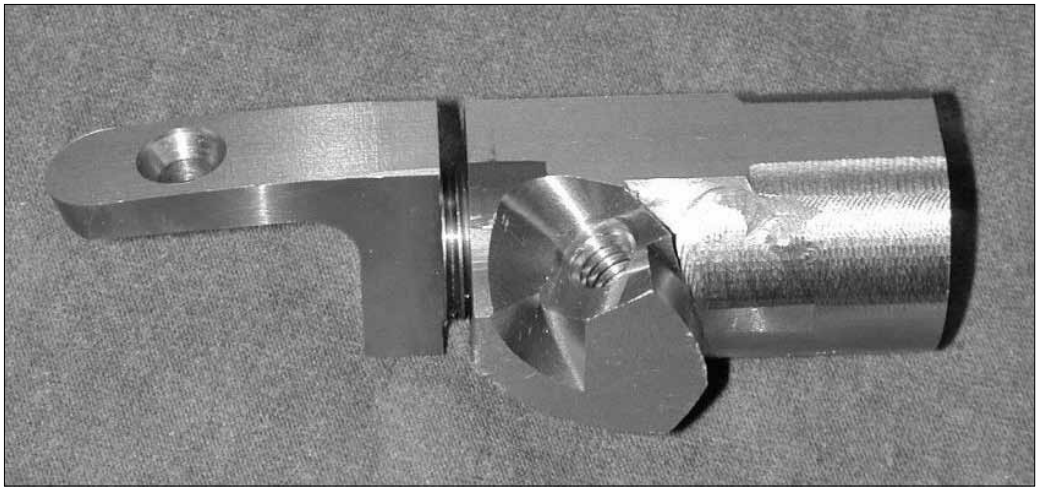
From time to time I post summary status to the forums, but there are times I need specific information about the needs of those interested and I use my Kerr Barrel email list to solicit that information, e.g., do they need a barrel with a nipple placement that is correct for an original LACo, Kerr or RSAF Enfield P-53 lock/stock, or one that is correct for a Birmingham made Parker Hale P-53. There is about .05 inch difference with the originals requiring a placement that is closer to the centre line of the barrel. Bobby does not make his own breeches; they have to be ordered from a gentleman that has been making them for him for many years. Currently, only those that are suitable to meet a Parker Hale P53's needs are available (see picture of in-the-rough breech above right). The others require a special order to acquire breeches where the nipple hole has not been drilled. As we are only anticipating a small number of barrels in this project, I need counts of how many of each type, P-H or LACo P-53, RSAF P-53, etc., may be required to allow Bobby to pre-order the breeches in appropriate quantities. Otherwise, delays can be rather long as the breeches are ordered in batches to reduce set-up time and cost on the part of the breech maker.

We needed to know specifically what the barrel profiles were of the original Kerr, machine made LACo and RSAF P-53 Enfield's. So we had to have a barrel measuring exercise to define/measure what they actually are in the examples available to hand. The first table below shows some of the detailed information developed by Bill Adams. No two comparable profiles were found to be the same. Yet, the barrels were supposed to be interchangeable among machine made LACo and RSAF Enfield stocks. Bill Adams has found empirically that this is mostly true, but not always true. So it would seem that barrels were made within certain tolerances and perhaps the tolerances were just a little larger for the stock channels. Perhaps, if a barrel was at the upper end of the tolerance spectrum and a stock was at the lower end the barrel would not interchange into that stock, but this is simply speculation on my part.

Bill's measurements are provided below in tabular form in the first table. Some additional, more detailed profile measurements that were taken by others are shown in the following table.

One thing I found very interesting in the second table was the measurement of the diameter of the very rear of the barrel. These measurements appeared to be very consistent, more so than any others. When a barrel is ordered it will be individually turned based on the profile information supplied by the person placing the order. The data from one of the profiles from the second table below may be used to specify the profile if that meets the needs of the purchaser. Bobby will use the barrel profile measurements to select points between which to taper the barrel linearly. He will not try to hit each and every measured diameter point exactly. He personally stands at the lathe and turns each barrel. Bobby holds the first rough turn to about .002 to .003 over diameter at the inflection points. He then polishes the barrel diameter down a couple of thousandths from there.

What follows next is the current Kerr Barrel Description that we are using to guide our work and to make known exactly what it is we are in the process of attempting to produce.



Kerr Rifle Barrel Project
Breech – in the Rough

(Picture Courtesy of
Pat Watson)

General Barrel Description:

- Bore: .451 in.
- Outside Length of Barrel: 37 inches
- Inside Length of Rifling: 36 in. approx. (37 inches less breech plug length, of .75 in. approx.)
- The straight section of rifling length at breech will be adjusted within bounds as needed to accommodate machining requirements for gain twist, but should be 3-4 inches in length.)
- Purchaser to specify nipple placement on bolster, the offset from the barrel's centre axis.
- The bolster is to be threaded to accept 5/16-18 Enfield nipple threads.
- Barrel is to be furnished with P53 Enfield type breech plug. Barrel will not be blued and be in the bright.
- Purchaser should expect to do some final fitting of the bolster to their particular lock/stock combination as well as tang to stock.
- Barrel contour and bolster is to be as per Enfield/LACo P53 (and English made Parker Hales) so will be an approximate drop in fit for 1862 or later (machine manufactured) LACo P53 stock and lock (same for RSAF Enfield P53, and English P-H's).
- Purchaser to provide complete set of measurements of barrel profile: Purchaser can either use one of the profiles in the table of profiles provided later in this description or specify own profile using the same measurement points detailed on the far left of the table. Double check your measurements.

Rifling:

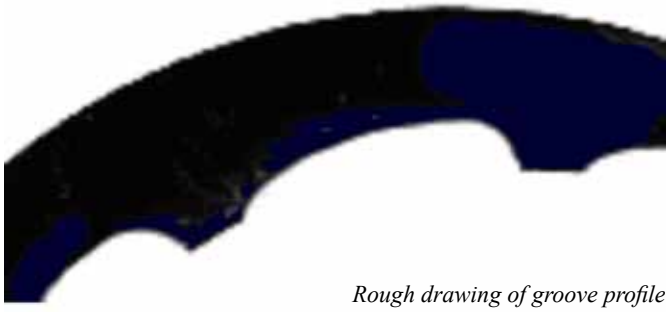
- Ratchet-type
- Six equally spaced grooves with faces of opposing pairs of ratchets lying on the same bore diameter line
- Face of ratchet is to drive the bullet in the twist section of rifling
- Rifling is to have right-hand twist.
- First 3 to 4 in. of rifling is straight (The 1861 registration statement by Kerr is not specific as to the exact length, but here is what DeWitt Bailey says about it "*The twist of the rifling was also progressive for the first half of the bore, from whence it began its spiral some four inches ahead of the breech plug, but by mid-bore it stabilized at the standard pitch of one turn in twenty inches…*" Guns Review, April 1970.
- Gain twist from straight section to 20:1. Gain twist ends approximately 18 in. from front end of barrel estimated as follows:
  - 37 inch barrel
  - 1 inch breech plug (approx), leaving 36 inches of usable barrel
  - Dividing that in half we have 18" for the front portion of the barrel with the 20:1 twist including the portion with the muzzle.
  - The first 4 inches (approx.) of rifling are straight leaving 14 inches of gain twist.
- Land bordering on ratchet drop is to be .085 in. wide approx. and maintained for length of barrel
- Groove from end of land going toward bottom of ratchet drop is to be shaped as per the drawing below.

Muzzle:

- After rifling, muzzle is to be recessed as per Kerr muzzle (see pictures on following pages):
  - Dish which appears to be a section of a globe
- If you want the rifling to then be chamfered at the muzzle, you will need to have that done yourself. (We don't know how to specify it and with the limited number of barrels expected to be produced we can't do the prototyping and testing required to make sure the chamfering of the rifling at the muzzle would not detract from accuracy.)

Sights:

- 3/8 in. dovetail for front sight to be furnished with barrel, if specifically requested by purchaser; otherwise, the barrel will be furnished without a dovetail.
- The front sight dovetail is to be located approximately as per original Kerr barrel front sight.
- The rear sight is purchaser's responsibility to add or not.



Rough drawing of groove profile

Current Project Status

As of this writing (January 2013), the breech of the first barrel is being joined with the barrel proper and turned to meet Parker Hale barrel and nipple requirements. The breech is correct for nipple placement on a Birmingham made Parker Hale. Boring of the barrel to approximately .451 caliber and rifling per Kerr the barrel description is soon to be done. As mentioned above, those interested parties on the Kerr Barrel email list have been asked to provide information regarding nipple placement so that an appropriate number of breeches with un-bored nipple holes can be ordered in order to avoid delays in responding to orders.

As soon as we have the first barrel made and any emergent issues are identified/resolved I will post that information to the forums. Additionally, I will send the members on the Kerr barrel email list the current barrel description, if there are any necessary changes other than editorial. Furthermore, I will send the email list members an order form with contact information for Bobby and the instructions and information to be followed and provided when ordering. After that time, my role will only be to chronicle project information as needed. I derive no financial gain from this project. Initially, as the barrels are put to use, I hope that load data, performance, etc. will be shared via the email list by its members. To be on the list you just need to have a serious interest; you do not have to commit to ordering a barrel.

I'm hoping that other accessories for a Kerr rifle will become available from other enterprising sources, for example, period correct front and rear sights, a not so period correct adapter that will permit installing a rear aperture sight base without making any modifications to an original rifle's stock (consider the use of the lock screw(s) and tang screws, a proper Kerr ram rod, etc. If anyone is interested in being a supplier of said items and they have a worthwhile design, I'll try to promote them and act as a chronicler for them, but I will not be behind their development as I have for the barrel. I have considered all of the above items other than an Enfield-like rear sight and have my own not quite period correct solutions that I will share and have already shared on the appropriate muzzle loading forums.

Bobby intends to make each barrel when ordered and intends to custom contour each barrel per the barrel profile provided by the purchaser as described above. Do not expect him to hit the barrel profile exactly, but that combined with the ability to custom place the nipple hole makes a repro Kerr barrel available for a great many lock/stock configurations for original as well as repro P53 Enfield's.

At this time, the approximate price for a barrel is anticipated to be around $400 US. If unanticipated fabrication problems arise, that estimate may have to be adjusted. We all hope that that will not be the case.

Orders for barrels will go directly to Bobby. I will remain available to chronicle and expedite information exchange once the barrels become available. After the barrels have been in use for a while, the exchange of information should move to an appropriate forum such as the Research Press forum. At that time I'll see what I can do to make some of the more pertinent earlier information exchanges available to all.

Notes

1. *MLAGB forum*:
   http://www.mlagb.com/cgi-bin/forum/YaBB.pl

   Research Press forum:
   http://www.researchpress.co.uk/cgi-bin/yabb2/YaBB.pl

   N-SSA forum:
   http://www.n-ssa.org/vbforum

   British Militaria forum:
   http://britishmilitariaforums.yuku.com/forums/4/British-Flint-and-Percussion-Arms

Kerr Rifle With Recessed Bore & Ramrod

(Picture Courtesy of Bill Adams)

Table 1: Kerr & P53 Barrel Profile Measurements

(*Measurements courtesy of Bill Adams*)

	KERR	LAC P53	LAC Vol	LAC Vol	LAC - CS	LAC - CS	CS - LAC	LAC Type IV	London Armoury	P-H P53	EuroA P53
Distance	Dia	1862 PB	1861 PB	1862 BB	#8xx PB	#59xx PB	1860 PB	dated 1865	HandMade	#58xx	#0xx
Bolster	1.403	1.412	1.432	1.427	1.406	1.423	1.408	1.414	1.463	1.435	1.368
Point 1	1.101	1.092	1.09	1.092	1.076	1.089	1.079	1.086	1.125	1.097	1.071
Back Band	0.953	0.959	0.963	0.96	0.974	0.969	0.964	0.964	1.018	0.975	1.017
Mid Band	0.860	0.846	0.862	0.848	0.854	0.853	0.959	0.856	0.844	0.858	0.935
Top Band	0.834	0.796	0.794	0.802	0.812	0.804	0.797	0.794	0.822	0.812	0.839
37”	0.761	0.776	0.779	0.781	0.780	0.785	0.785	0.782	0.783	0.812	0.811

NOTES:

1. Bolster signifies measurement was across the barrel and bolster at the middle of the bolster. Point 1 was taken directly in front of the bolster, with the vernier pressed against the front edge of the bolster.
2. Other measurements were taken with the vernier butted against the rear edges of the bands and pressed down against the stock. All measurements were taken with the barrels in the stocks. The final measurement was taken at 37” from the breech, which corresponds with the muzzle on the Kerr barrel.
3. PB indicates Palmer Bands; BB indicates Baddeley Bands. London Armoury indicates a pre-machine made rifle musket with the lock marked London Armoury Co. CS LAC is an 1860 dated P53 marked LACo that was carried by a soldier in the 27th Georgia.
4. CS indicates a P53 issued or used or by the army of the Confederate States of America. The arms range from very good to excellent. The two repro pieces are a 1st generation Parker-Hale and an early Euroarms with LACo on the lock.
5. No two barrels have the same dimensions.

smallest	LACo’s Only	largest	LACo’s Only	variance	LACo’s Only	average	LACo’s Only
1.403	1.406	1.432	1.432	0.029	0.026	1.416	1.417
1.076	1.076	1.101	1.092	0.025	0.016	1.088	1.086
0.953	0.959	0.974	0.974	0.021	0.015	0.963	0.965
0.846	0.846	0.959	0.959	0.113	0.113	0.867	0.868
0.794	0.794	0.834	0.812	0.040	0.018	0.804	0.800
0.761	0.776	0.785	0.785	0.024	0.009	0.779	0.781

Table 2: More Detailed P53 Barrel Profiles

(*Courtesy of Pat Watson and Richard McAuley*)

Distance to Back of Barrel	1862 LACo	1862 RSAF	LACo Variance	P-H 1986	LACo Variance	P-H 38xx	LACo Variance	P-H 1986 Variance
0	1.110	1.110	See Note 2	1.110	0.000	1.110	0.000	0.000
1	1.086	Snider		1.100	0.014	1.098	0.012	-0.002
2	1.073	Breech		1.091	0.018	1.088	0.015	-0.003
3	1.050	Snider Band		1.085	0.035	1.067	0.017	-0.018
4	1.034	1.025	-0.009	1.062	0.028	1.045	0.011	-0.017
5	1.023	1.014	-0.009	1.046	0.023	1.028	0.005	-0.018
6	1.010	0.997	-0.013	1.028	0.018	1.013	0.003	-0.015
7	1.000	0.982	-0.018	1.007	0.007	1.003	0.003	-0.004
8	0.988	0.971	-0.017	0.988	0.000	0.989	0.001	0.001
9	0.975	0.960	-0.015	0.981	0.006	0.978	0.003	-0.003
10	0.964	0.946	-0.018	0.962	-0.002	0.967	0.003	0.005
12	0.940	0.922	-0.018	0.938	-0.002	0.945	0.005	0.007
14	0.920	0.910	-0.010	0.918	-0.002	0.925	0.005	0.007
16	0.901	0.890	-0.011	0.904	0.003	0.907	0.006	0.003
18	0.881	0.877	-0.004	0.877	-0.004	0.887	0.006	0.010
22	0.848	0.844	-0.004	0.848	0.000	0.855	0.007	0.007
26	0.822	0.824	0.002	0.827	0.005	0.830	0.008	0.003
30	0.807	0.804	-0.003	0.803	-0.004	0.810	0.003	0.007
34	0.802	0.800	-0.002	0.797	-0.005	0.794	-0.008	-0.003
36	0.794	0.793	-0.001	0.794	0.000	0.787	-0.007	-0.007
37	0.786	0.786	0.000	0.791	0.005	0.785	-0.001	-0.006

NOTES:

1. Measurements only go to 37 inches as that is length of Kerr barrel
2. I also checked the rear of the stock channel on my RSAF Snider; it measured 1.110; Breech = 1.107