

LONG IRON

The Black Powder Arms of Lewis & Clark

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Standing in a silhouette, one with an arm out-stretched, the other holding a long rifle, Meriwether Lewis and William Clark are immortalized on the trail signs bearing their names. Although a stylized pose, it reveals much about the men and their expedition of discovery. Courage, fortitude, and a determination to open a continent, all are symbolized in a simple brown profile. Aside from their silhouettes, the most identifiable accouterment is, fittingly enough, a black powder rifle—a bulwark of their expedition.

If Lewis and Clark were the vanguard of American western expansion, then black powder weapons were the tools that allowed them to succeed. Without the rifles and smoothbore muskets, the Corps of Discovery would have foundered along the lower Missouri River and never have reached the Mandan-Hidatsa villages in 1804, let alone the Pacific Coast in 1805. Food and protection, the primary and perpetual issues of daily life, depended on guns. Exploration and Indian diplomacy, two vital aspects of their orders, were ultimately dependent on the firepower their weapons conveyed.

Although historians have discussed the value of Lewis and Clark's Native American studies and the wealth of their zoological and botanical discoveries, the Corps of Discovery was, above all, a military unit. President Thomas Jefferson had more practical matters than anthropology and science in mind when he authorized Lewis on June 20, 1803, to explore the Missouri River and its principal tributaries in hope of locating "the most direct and practicable water communication across the continent for the purposes of commerce."

To help fulfill this mission, Jefferson authorized Lewis to draw supplies, arms, and munitions from the War Department, to appoint a second in command, and to secure from American troops "by voluntary agreement" enough men to complete the exploration. Jefferson anticipated that ten to twelve men would be sufficient for the task. Lewis's preparations underscored the necessity of armaments. His list included rifles, powder horns and pouches, bullet molds, wipers (also called gun worms), ball screws (to remove jammed bullets in rifle muzzles), gun slings, extra parts, and tools for repairing arms. Lewis further ordered 500 "best flints," 200 pounds of "best rifle powder," and 400 pounds of lead from the federal arsenal at Harpers Ferry, Virginia (now West Virginia).

By April 1803 Lewis informed Jefferson, "My Rifles, Tomahawks and knives are prepared at Harper's [*sic*] Ferry, and are already in a state of forwardness that leaves me little doubt of their being in readiness in due time." Of particular note were the rifles, a new breed of weapon for the American professional soldier. Differing from the standard smoothbore American military

musket, they were shorter, of smaller caliber, had rifled barrels, and were the prototypes of the first United States military rifle, the Model 1803.

Rifles were not new to the American frontier. Indeed, many pioneers possessed rifles of several types, including those that would become famous in American folklore as the Kentucky long rifle. By the 1770s, the American rifle was recognized as a significant weapon. But rifles were not common weapons in the United States Army, and commanders in the late 18th and early 19th centuries were not anxious to make them so.

Due to the nature of the barrel, they considered rifles inferior to smoothbore muskets for general military use. First, rifles lacked a bayonet lug. Second, rifle barrels took their name from rifling (spiraling, or internal grooves), which gave the projectile a spin that increased accuracy, distance, and hitting power. While those were admirable traits in a weapon, the rifling had a significant drawback; it made loading the weapon more difficult. Because of the need for a tight fit between bullet and barrel (to insure the projectile gained spin), a patch was fitted around the ball and then forced into the muzzle. The patch gripped the rifling, imparting the spin, but the tight fit dramatically slowed the loading process. Loading a rifle took three or four times as long as a smoothbore musket, thus decreasing the infantryman's rate of fire.

Due to these perceived difficulties, military leaders favored the non-rifled musket. Although considerably less accurate than the rifle (a non-rifled musket was virtually useless beyond 100 yards), the smoothbore was preferred because of its ease of loading, consequent rapid rate of fire, and ability to carry a bayonet. Volley fire and the bayonet charge were the accepted infantry tactics, and American officers (like their European counterparts) stressed their value.

But Americans were familiar with rifles, which had a somewhat successful history on Revolutionary War battlefields. National politics, influenced by cultural norms, influenced the army's development, and the rifle played a role in the land force. In 1799 Congress passed an act to augment the army, providing for additional infantry and cavalry regiments, a battalion of artillery and engineers, and a regiment and a battalion of riflemen. By definition, riflemen were armed with rifles, but the nation lacked a facility to produce the new weapons. Production at the national armories eventually met the demand, but an interim supply was needed. The government contracted with several Pennsylvania gun makers to produce rifles until a standard type could be developed.

While identifying specific guns is impossible, rifles made under such contracts may have accompanied Lewis and Clark. In a recent article Steven Allie stated that their rifles were contracted Pennsylvania arms, with shortened barrels, new locks, and swivels added for slings. Allie concluded that the expedition rifles "were similar in appearance" to Model 1803s and that they were possibly the initial design used to develop the 1803 rifle.

However, it is more likely that the expedition's principal rifle was not a contracted weapon. In 1800 and 1801, Harpers Ferry armorers experimented with full-stocked rifle development, and the new design was advanced by 1803. Secretary of War Henry Dearborn placed the onus squarely on Harpers Ferry Superintendent Joseph Perkins's shoulders in 1803: "You will be pleased to make such arms & Iron work, as requested by the Bearer Captain Meriwether Lewis and to have them completed with the least possible delay." Lewis arrived at Harpers Ferry on March 16, and indicated his rifles were ready by April 20, so Perkins and his armorers must either have rapidly developed a weapon that met Lewis's requirements or had prototypes

already designed. Whether modified contract rifles or a new design, these rifles were the forebears of the Model 1803.

Several historians have speculated on the Model 1803 design. Berkeley Lewis and G. W. P. Swenson asserted that the rifle was an "imitation" of the old German jager rifle, with a short barrel, large caliber, and using a large powder charge. David F. Butler believed that the design "was much closer to the commercial Pennsylvania designs than it was to the standardized Model 1795 Springfield musket". Most of the arsenal's master craftsmen had backgrounds in Pennsylvania gunsmithing, and German smiths initiated rifle development in that region in the middle of the 18th century. The influence was unavoidable.

Charles Winthrop Sawyer described the rifle as a "cross between the heavy carbine of the French, the short *gewehre* of the Germans, and the strongly individual American all-purpose rifle." He called it the "Model 1800," although no such official designation existed, and indicated that using 90 to 100 grains of fine-grained rifle powder provided a velocity of about 2,000 feet per second. Given Lewis's order for "finest rifle powder," Sawyer's description seems accurate.

In *Guns of the Lewis and Clark Expedition*, Ruby Hult evaluated Sawyer's misidentification of the Model 1800. Organized prior to the Louisiana Purchase, the exploration was to be of foreign territory, and the Corps of Discovery could be viewed as an armed invasion by Spain or France. Proof of weapons produced in American arsenals was discouraged, and markings common to later Model 1803 rifles were not on the expedition's guns. The prototype Model 1803 *must* be Sawyer's "Model 1800." Hult's analysis makes even more sense considering the expedition's time frame. Because of Lewis's tight time schedule, nonessential markings would have been left off.

Dearborn confirmed the rifle's development and production on May 25, 1803, directing the manufacture of "a suitable number of judiciously constructed Rifles manufactured at the Armory under Your [Perkins's] direction." The rifle barrel was not to exceed 33 inches, with a caliber of .52 to .54, or "carrying a ball of 1/30 of a pound weight." Barrels were to be round to within ten inches of the breech, then octagonal, and half-stocked, the wooden stock stopping where the barrel changed shape. Steel ramrods must be "sufficiently strong for forcing down the ball without binding." Dearborn advocated a short rifle, believing it superior to the traditional long rifle in loading time and in diminished fouling: "I have such convincing proof of the advantage the short rifles [have] over the long ones...in actual service as to leave no doubt in my mind of preferring the short rifle...." Where Dearborn got his "convincing proof" is unknown.

Satisfied with his rifles, Lewis wrote, "I shot my guns and examined the several articles which have been manufactured for me at this place; they appear to be well executed." Lewis's acceptance of the prototype rifles likely contributed to Dearborn's decision. Perkins and Dearborn suggested minor modifications, and the rifle was standardized on December 2, 1803, with an initial order for 4,000.

Skeptical about the Model 1803 as Lewis and Clark rifles, Stuart E. Brown, Jr., argued that the expedition's 15 rifles may not have been manufactured in Harpers Ferry and that they were likely not Model 1803s. Noting that gun slings were not intended for a half-stocked rifle, he concluded the rifles must have been full-stocked. However, a sling for a half-stocked prototype rifle could have been designed. Given the army's later acceptance, some type of sling was available. Lewis specifically requested gun slings in his original list, and they appeared on the

final Harpers Ferry invoice. Since Lewis's list has been given the arbitrary date of June 30, 1803, the exact date is unknown, and Lewis's activities at Harpers Ferry cannot be placed in proper context. Perhaps Lewis ordered the slings after he saw the rifles, and Harpers Ferry artisans retrofitted them. The 15 rifles obtained at Harpers Ferry were undoubtedly prototypes of the Model 1803 rifle adopted by the United States Army in December.

What of the rest of the expedition's weaponry? Again, records are scarce, but an examination of the permanent party composition reveals that the remaining weapons must have been a combination of Kentucky-style rifles, United States Model 1795 muskets, and fusils.

The first identifiable Corps members are the so-called "nine young men from Kentucky," the civilians recruited as Lewis moved down the Ohio River. John Colter and George Shannon joined Lewis on the river. Clark recruited William Bratton, Joseph Field, Reubin Field, Charles Floyd, George Gibson, Nathaniel Pryor, and John Shields, and they joined the expedition when the leaders met at Clarksville, Indiana, on October 14, 1803. While the journals contain no references to armament, young frontiersmen eager for adventure would be armed, their weapon of choice being the "Kentucky" rifle.

The second group, the army "volunteers," came from Fort Massac and Kaskaskia (both in Illinois), and South West Point, Tennessee. George Drouillard, a civilian, and Joseph Whitehouse, whose military unit is unknown, joined from Fort Massac. John Collins, Patrick Gass, John Ordway, Peter Wiser, Alexander Willard, and Richard Windsor arrived from Kaskaskia, members of either the First Infantry Regiment or the artillery, while Hugh Hall, Thomas Howard, and John Potts reported from the Second Infantry Regiment at South West Point. The other soldiers, Robert Frazer, Silas Goodrich, Hugh McNeal, John Thompson, and William Werner, arrived from unknown units. As they were infantry or artillerymen, the soldiers likely carried the Model 1795 smoothbore musket rather than contract "long rifles."

The Model 1795 musket was the army's standard shoulder weapon, based on the French Model 1763. A .69 caliber, smoothbore gun with a 44.75-inch barrel and an overall length of about 60 inches (size varied because the guns were handmade and no two were identical), it included a 15-inch long triangular bayonet.

The final corps members included Pierre Cruzatte and François Labiche, recruited at St. Charles, and the Charbonneau family and Baptiste Lepage, recruited at Fort Mandan. Their weapons are not identified, but they likely carried muskets or fusils.

Fusils, or "fusees" as Lewis and Clark wrote, were short, light, smoothbore weapons favored by Indians and French *engagés*, and were a common sight along the Missouri River in the early 19th century. Frequently used as personal weapons by British, French, and American officers, fusils arrived along the Missouri in large quantities for Hudson's Bay Company Indian trade. Clark noted that Toussaint Charbonneau possessed an "elegant" one, lost in a flash flood on June 29, 1805.

Exactly what Clark, Clark's slave York, or Lewis carried is uncertain. Clark mentioned a "small rifle" on several occasions, which indicated a Kentucky-type piece with a small caliber. Recording a day's hunting in August 1804, Clark and John Ordway both noted that Clark failed to kill an elk: "I fired 4 times at one & did not kill him, my ball being Small I think was the reason." Two months later Clark recorded using his "Little gun" while buffalo hunting. The "little gun" fired a smaller ball with a lighter charge than the Model 1803, thus being less effective on large game.

Clark may also have carried a fusil, writing in the summer of 1805 that, "I Gave my Fuzee to one of the men & Sold his musket for a horse which Completed us to 29 total horses." Since he still had his "small rifle" on the Pacific Coast, Clark started with a second shoulder weapon. Given the nature of the trip and Clark's experience, two personal guns is not an unreasonable assumption.

Since slaves did not own guns, York's weapon, cited only in the context of an accident in May 1805, was probably one of Clark's, possibly his "small rifle." A buffalo overran the expedition's camp, and in the melee, York's weapon sustained a bent barrel.

Lewis frequently mentioned a rifle but did not identify the make or model. Carl Russell stated that Lewis "seems to have been partial to the long rifle as a personal arm" but offered no substantiation. Given that both captains led hunting trips or hunted on their own, they probably carried the best rifle available for their needs, which was the prototype Model 1803 with its large caliber and hitting power.

Black powder shoulder arms were not the corps' only weapons. Lewis possessed pistols and his "big medicine," the air rifle. The pistols' make and model are unclear. On May 21, 1803, Israel Whelen, purveyor general, received an invoice from Robert Barnhill for "1 Pair Pocket Pistols, Secret Triggers \$10." The bill was paid with Barnhill's notation, "The within Pistols were delivered by me to Captn. Meriwether Lewis." Pistols with secret triggers were not standard military fare, as they were smaller weapons (both in size and caliber), often hidden in a coat pocket or sash for personal protection.

The May 1803 "Invoice of Articles" from the Harpers Ferry arsenal indicates "1 P. [pair] Horseman's Pistols" issued to Lewis, which were almost certainly Model 1799s. Manufactured by Simeon North of Berlin, Connecticut, they were .69 caliber smoothbore weapons (the same caliber as the standard musket, thus simplifying supply) based on the French army's 1777 pistol. North produced about 2,000 in 1799 and 1800. Designed for saddle holsters, the pistols weighed more than three pounds each and were 14.5 inches long, packing a considerable wallop at close range.

In March 1804 Clark recorded that he loaded "a small pr Pistols" in anticipation of trouble. Gary Moulton believed that Clark may have been concerned over the court martial verdict of John Shields, John Colter, and Robert Frazier on March 29, or over the potential for theft of supplies due that evening. Whatever caused Clark's alarm, this is the only time he documented potential use of pistols. A "small pair" intimates a set like the Barnhill hidden trigger models.

Clark referred to pistols twice again, in a trade with the Shoshone in August 1805 and in a gift exchange with the Nez Perce in April 1806. Traded for a horse, the first gun was identified only as "my Pistol," its origin unclear; the second pistol's ownership was equally unrecorded. If the "small pair" mentioned above was Clark's, the pistols were likely a set. If they were Lewis's, they were the Barnhill pistols.

While not a black powder weapon, any work on Lewis and Clark's armament must include the air gun built by Isaiah Lukens of Philadelphia and loaned to Lewis by its creator. A .31 caliber weapon looking much like a Kentucky rifle, the air gun was a hunting piece, designed to shoot small game (as large as deer) without making a sound. A pneumatic air reservoir in the weapon's butt provided the propellant power. Holding 900 pounds per square inch pressure and requiring upwards of 1,000 strokes to fill, the air supply lasted for up to 40 shots. Lewis's gun featured a screw mount on the pump that allowed the shooter to fasten it to a tree and rock it with a

shoulder, easing the loading process. The balls loaded singly through the brass barrel, much the same as a rifled musket, albeit without the powder charge. Never mentioned as a hunting weapon, the air gun figured prominently as a tool in diplomacy with Native Americans.

Lewis used the air gun to demonstrate American ingenuity and engineering, and firing it became an integral part of council meetings. Astounded at its power and silence, Indians called it "big medicine," and its ability to intimidate Native Americans was noteworthy: "Capt. Lewis fired his Air Gun which astonished them [the Nez Perce] in Such a manner that they were orderly and Kept at a proper distance dureing the time they Continued with him." Such a weapon was both an effective demonstration of American manufacturing and a valuable component of the corps' diplomatic mission.

The air gun caused the expedition's first accidental injury. On August 30, 1803, while on the Ohio River, Lewis demonstrated its power to a civilian group outside St. Louis. Firing seven shots, he impressed the spectators with its effectiveness. The gun was then passed around, and a gentleman named Blaze Cenas accidentally discharged it. The round struck a woman standing 40 yards away in the head. While the wound looked serious, it proved superficial.

Armament was not limited to personal weapons. The larger vessels had gun mounts; both pirogues had swivel-mounted blunderbusses, and the keelboat held a swivel-mounted cannon, the queen of the expedition's armament. Essentially shortened, overgrown muskets, the two blunderbusses were not government manufacture. First suggested to Lewis by Clark in an April 1804 letter, they must have been purchased in St. Louis, possibly from a firm already active in the Missouri fur trade. Carl Russell stated that two types were common to the river: one about 25 to 30 inches long with a 22-inch bell-shaped barrel and a two-inch smooth bore; the other a larger, heavier musket style. Firing small shot or several musket balls, they were large shotguns, valuable for close-in defense. Larger than the blunderbusses, the swivel cannon had a similar bore diameter and was in the one-pounder class of armament, meaning it fired an iron ball of one pound as a normal load. It also fired a substantial load of musket balls or buckshot and was another, even larger, close-range shotgun.

Ordway described the value of these boat-mounted weapons in the Teton Sioux confrontation on September 25, 1804: "The large Swivel loaded immediately with 16 Musquet Ball in it. The 2 other Swivels [*the blunderbusses*] loaded well with Buck Shot, Each of them well manned." Sixteen musket balls of .54 caliber, plus two loads of buck shot (.30 caliber in today's standards) represented a massive amount of shot from three guns. Facing three large weapons and the corps' shoulder arms, the Lakota backed down.

Ammunition was a prime concern throughout the expedition. Lewis ordered rifle powder and lead from Harpers Ferry, obtaining 20 pounds of lead and 125 musket flints, but received only 50 pounds of "finest rifle powder." The government purchased 52 lead canisters for powder from George Ludlam and 123 pounds of English canister powder, plus 53 pounds of "dbl. Seal" powder in papers from Beck and Harvey of Philadelphia. In December 1803 Lewis secured 75 pounds of "public" powder from army supplies (likely at Kaskaskia). This powder was probably of a coarser grain than rifle powder and was used for the Model 1795 muskets, the fusils, the blunderbusses, and the cannon.

In all, the corps carried at least 301 pounds of powder and 840 pounds of lead, plus the ammunition the men brought when they joined. An additional 50-pound keg of powder was

shipped for Indian presents. At 30 rounds to the lead pound for the Model 1803 rifles, the corps had more than 25,000 rounds of ammunition, certainly an adequate supply of powder and ball.

Weapons were of paramount importance in the men's day-to-day existence, giving them a sense of security, protecting the members when they took observations, recorded findings, and charted the unexplored wilderness. Rifles (and the smoothbore muskets, used as shotguns) helped gather the zoological specimens desired by Jefferson and American scientists. Most importantly, firearms formed the foundation for relationships between the corps, the wilderness, and the Native Americans.

Proper relations required discipline; and Lewis and Clark established military policies and procedures, including weapons and ammunition care. Black powder weapons were especially susceptible to water hazards; wet powder will not combust and can mean death. In April 1805 a barrel fell into the river, dampening almost 30 pounds of gunpowder. "The powder we regard as a serious loss, but we spread it to dry immediately and hope we shall be enabled to restore the greater part of it. This is the only powder we had which was not perfectly secure from getting wet." Inspecting it three days later, they found it "almost restored" and replaced it in the keg.

Lewis's "elegant" design of four pounds of powder stored in eight pound lead kegs, stopped by wax-sealed corks, solved the moisture problem. Preparing for the return trip in February 1806, Lewis described the powder as "perfectly as dry as when first put in the canestars, altho' the whole of it from various accedents had been for hours under water."

Water was also hazardous to 19th-century iron. Early guns had some protection via browning, a process that coated and theoretically sealed the iron, but browning was imperfect and patches of rust appeared. The corps struggled with wet weapons for two years, never finding a satisfactory solution. Their only option was to regularly clean their guns. In September 1803 Lewis ordered a stop to clean and oil guns, knives, and tomahawks—the first of numerous such occurrences to dampen moisture's insidious attack.

Weapons inspections began in May 1804, as arms were regularly checked, cleaned, oiled, and put in proper working order. The four enlisted men who kept journals recorded a number of arms examinations in May, June, July, and August 1804, but such notations decreased after early August and are intermittent thereafter; either they became less frequent, or they became so routine as to not warrant recording.

Frequent inspections did not mean trouble-free guns, and problems dot the journals. The first mishap occurred on July 29, 1804, when Alexander Willard lost his gun (Ordway states it was his rifle) in "Bowyers R." when attempting to cross on a log. Men in the white pirogue returned to help him recover it, and Reubin Field finally dove into the creek and brought it up from the deep mud.

Fortunately, such incidents were rare. On June 29, 1805, Clark, Toussaint Charbonneau, Sacagawea, and baby Jean Baptiste, caught in a flash flood during the Great Falls portage, sought shelter in a ravine but were almost washed away. Scrambling to escape, Charbonneau lost his gun (the fusil mentioned earlier), shot pouch, powder horn, tomahawk, and Lewis' wiping rod. Clark saved his rifle while pushing Sacagawea (who held the baby) up the ravine's bank with one hand.

While losing guns was uncommon, damaging them was not: Richard Windsor burst his gun near the muzzle during the return trip, and the barrel was cut down; Lewis had the air rifle resighted

and repaired; Clark's "small rifle" was rebored; Hugh McNeal broke the lock of his musket over a grizzly bear's head; George Drouillard and Nathaniel Pryor damaged rifles, requiring repair and parts replacement from the Harpers Ferry extra locks. Repairing them was usually easy, but required skill: "but for the precaution taken in bringing on those extra locks, and parts of locks, in addition to the ingenuity of John Shields, most of our guns would at this moment [March 20, 1806] be untirely unfit for use; but fortunately for us...they are all in good order."

Occasionally, gun problems were due to an oversight. In September 1805 Clark had a bad hunting day, firing at a large black-tailed deer seven times, with seven misfires. He noted it was a singular event, as his gun had never misfired that many times before. Closer examination showed a loose flint, not a malfunctioning weapon. Fortunately for Clark, his target was a peaceful and apparently inattentive buck, rather than an aggressive bear.

Even in the hands of experienced frontiersmen, guns were dangerous tools. Lewis was twice the victim of unfortunate marksmanship, once when Robert Frazier fired at some ducks sitting on a pond. Ricocheting off the water, the shot narrowly missed the captain. Lewis's wounding at the hands of nearsighted Pierre Cruzatte was more serious. His reaction reveals his dependence on his weapons. Fearing he had been wounded by Indians, Lewis returned to his party: "I now got back to the perogue as well as I could and prepared my self with a pistol my rifle and air-gun being determined as a retreat was impracticable to sell my life as deerly as possible." Cruzatte's return eased his mind.

The intriguing aspect of this incident is not the wounding but rather Lewis's actions, entering the pirogue and preparing his rifle, a pistol, and the air gun. The only journal entry for the air gun as anything other than a curiosity for the natives, it showed Lewis's trepidation. Since loading the air gun was neither simple, nor rapid, Lewis must have been very concerned about an Indian attack.

The pistol is another interesting element. Lewis had at least four pistols on the expedition, so why does he note only one in this dire situation? Worried enough to load the air gun, he surely prepared all his black powder weapons. Since he loaded only one pistol, it appears he possessed but one. Given that, Lewis's statement supports the idea that the two pistols Clark had (one traded to the Shoshone, the other given to the Nez Perce) were Lewis's.

What, then, of the other pistol? Lewis was shot after the corps separated to explore the Marias and Yellowstone rivers, and it follows that the armament was also divided, leaving Clark in possession of the other pistol. With Clark's fusil traded and York likely using his "small rifle," he had only his Model 1803 rifle—logically, Lewis would lend him a pistol. Two being lost via trade, Lewis had only one left.

Working weapons were vital, but they were of small worth if not properly used. Lewis and Clark made sure the men shot with precision, but to conserve ammunition they allowed only one practice shot per day per man. Ordway taught off-hand firing, using a 50-yard target, and the best shot each day earned an extra gill of whiskey.

Common during the 1803-04 winter camp on the Mississippi River, shooting contests included the expedition's members and outsiders. George Gibson won the first recorded contest on January 1, earning one dollar, a not inconsiderable sum for a private who earned thirteen dollars a month. Reubin Field won the January 16 contest, along with a "pr. Leagens." The final contest was May 6, as they prepared to head west, with "Several of the Country people In Camp Shooting with the party all git beet and Lose their money." Practice, contests, and hunting along

the way proved beneficial; Lewis commented "that most of the party have become very expert with the rifle" by the beginning of the return trip.

Shooting practice had a physical element, but also a mechanical one. On April 7, 1806, the captains "made our men exercise themselves in shooting today and regulate their guns found several of them that had their sights moved by accident, and others that wanted some small alterations all which were completely rectified in the course of the day." Working weapons required attention, and regular inspections and practice insured that corps members had clean guns in good working order.

Guns were a crucial tool in Indian relations. Jefferson instructed Lewis to treat the Indians with "friendly and conciliatory manner" but to concentrate on commercial aspects of their relationship with the United States. Black powder weapons proved a prime commercial source because every tribe sought guns, powder, and lead as prized trade items. While Lewis and Clark forbade trading guns (a stricture broken to obtain horses), they encouraged the Indians' desire for weapons and played upon it. Promises of future trade, including guns, were major inducements for cooperation and peaceful relations, and gifts of small amounts of powder and shot demonstrated American friendship. Ammunition (and the promise of more, along with guns) was a prominent part of Lewis and Clark's diplomacy.

American rifles showed the Indians what might come in trade. The few guns owned by Native Americans were typically cheap British smoothbores, inaccurate beyond 50 yards. Shooting exhibitions using the Model 1803 or the Kentucky-type rifle displayed a technology that both excited and frightened Indian observers. The rifle's distance and accuracy made smoothbores less desirable and profoundly impacted tribal relations. When the Mandans, Hidatsa, Shoshones, and Nez Perce could get rifles, they had less to fear from the smoothbore-equipped Tetons and Blackfeet. A firepower revolution was at hand, and American allies stood to be the first to benefit.

By manipulating Native Americans' desire for firearms and ammunition, the captains laid the groundwork for a commercial enterprise to compete with both the Upper Missouri trade of the Hudson's Bay Company and the Columbia River trade of British and American seamen. Historian James Ronda noted that the new system included "well-established posts and dependable delivery schedules. And always in the background, visible but rarely mentioned, were guns and ammunition.... They were not reluctant to promise firearms to potential customers and allies," providing a foundation for later traders and fur trappers who used guns, powder, and shot as prized currency on the high plains and in the Rockies.

Guns and ammunition served not only as trade inducements but also as an integral part of the expedition's diplomatic mission. American military might was as much on display as its industrial capability. To succeed, diplomacy must offer attractive inducements or threaten severe consequences. While trade was the corps' positive inducement, military force was the negative inference. The corps itself was no threat to any Native American nation, but it represented the potential of one. American sovereignty over the newly acquired territory was not to be taken lightly, and the Corps of Discovery was the harbinger of things to come. Lewis and Clark offered trade and cooperation through councils and gifts, but presented the potential for force through their weapons. Greetings to chiefs and villages normally started with a fusillade, and every council east of the Rockies opened with a demonstration of firepower from the cannon and swivels and featured a military display, with close-order drill, shooting exhibitions, and a demonstration of the air gun, generally concluding with another volley. Designed to awe the

Indians, such shows usually succeeded. The sight of 30 or more heavily armed men backed by the heaviest artillery on the Upper Missouri caused concern for the Tetons, Arikaras, and other potentially hostile Indian nations while promising support to friendly tribes.

The corps' power of arms was both a diplomatic necessity and a deterrent to aggressive behavior, but it precluded meeting some tribes. Native Americans repeatedly fled from party members when first spotted, and the corps quickly learned to set aside their arms when initially meeting indigenous peoples. Contact with the Shoshones, Nez Perce, and Flatheads occurred only after party members laid down their weapons, demonstrating their peaceful intentions.

Weapons gave the Corps of Discovery, a small force in a potentially hostile environment, a technological edge over possible human opponents as well as nonhuman occupants. Food was an ongoing concern. Red meat was the staple, and the corps consumed massive amounts. Each member devoured up to nine pounds per day, supplemented by fruits and vegetables found along the way. Such quantities required daily hunting trips, usually led by one of the captains. And the hunting was good, at least across the Great Plains and into the foothills of the Rockies.

The mammalian population fed the corps. May 1805 exemplifies their hunting (and eating) habits: they killed at least 23 buffalo, 20 elk, 7 bear, 35 beaver, 37 deer, 2 antelope, 2 wolves, 8 bighorn sheep, and 1 goat. The total of 136 animals killed averaged over four per day. Some of these kills may have been for specimens—the journals are not always clear on what was eaten and what was preserved.

Some modern environmentalists have criticized the corps for excessive hunting, but evaluating 1805 activities by 21st-century standards is unfair. Game was so plentiful and the company was so attuned to living off the land, that any comparison is fallacious. The early 19th-century high plains offered a cornucopia of edible delights that no man could resist, and the numbers of animals were staggering: Ordway noted "great numbers of buffalow in every direction. I think 10000 may be Seen at one view." Thirty men, even armed with the best rifles, could not injure such a herd. The game appeared inexhaustible, and may very well have been so, considering the technology of the times. Buffalo were not hunted to near extinction until the 1870s and 1880s, when breech-loading rifles, more quickly fired and farther ranging than the black powder weapons available to Lewis and Clark, allowed systematic slaughter.

By the standards of the day, corps members were not wasteful hunters. Nonetheless, they undoubtedly killed more than they could possibly eat. Sometimes they killed buffalo only for tongues and hump ribs, considered the best parts. Unconcerned about hunting on the plains, Lewis commenting, "it is now [summer 1805] only amusement for Capt. C. and myself to kill as much meat as the party can consum; I hope it may continue thus through our whole rout, but this I do not much expect."

By late 1805, Lewis's fear was confirmed. Crossing the Bitterroot Mountains, the corps encountered a period of hunger that continued throughout the rest of their trek to the Pacific Ocean and their stay at Fort Clatsop. In October 1805 the men killed only 12 deer, 6 squirrels, a coyote, and a sea otter for food. Infrequently mentioned as food in May, birds became a common journal entry. Hunting was unproductive, food scarce, and the company would have starved if not for dogs (82 purchased for food during the month) and the occasional horse.

Lewis commented as they began the return trip in spring 1806, "Our dependence for subsistence is on our guns, the fish we may perhaps take, the roots we can purchase from the natives and as a last alternative our horses...yet nobody seems much concerned about the state

of provision." Lewis knew the land of plenty awaited them, and after crossing the Rockies and returning to the Great Plains, "game is so abundant and gentle that we kill it when we please." Only one animal belied Lewis's optimism: the grizzly bear.

The Corps of Discovery was the first group of white Americans to meet *Ursus arctos horribilis*. The journals record over 90 incidents involving grizzlies between April and September 1805 on the outward journey and May to August 1806 on the return trip. Aside from some bumps and bruises (to say nothing of fractured egos), the Corps of Discovery emerged intact. The same cannot be said for the bears. Although the exact number is impossible to determine, the corps killed at least 55 grizzlies, while another 22 were wounded and escaped. A few bears were shot for specimens, others for defense, and some for sport, but most were killed for food. Bear meat is especially fatty, containing vitamins not available in lean meat, and bear fat was a vital nutritional supplement.

Killing a grizzly bear was not an easy undertaking. Without the Model 1803 rifle, it would have been almost impossible. The military smoothbore possessed sufficient power to kill but was so inaccurate as to be virtually useless against game. The Kentucky type rifle was more accurate but lacked the musket's hitting power. Designed for smaller game, the bullet was too light to damage a 500-pound bear unless the hunter was a superlative shot. Even a head shot might not penetrate the bear's skull. The military rifle possessed the requisite power and accuracy to bring down a grizzly, although it often took several shots.

When food was sufficient, security became the prime concern. Shoulder arms provided the safety margin for the corps to meet its mission. Its arms gave it a firepower edge that intimidated even the strongest Native American bands. The promise of guns with superior technology made the corps many friends.

Thomas Jefferson gave Meriwether Lewis a specific goal: to explore the Missouri River and find a route across the North American continent to the Pacific Ocean, opening the West to American commerce. Lewis, his friend William Clark, and a small group of soldiers and frontiersmen achieved that goal in a spectacular manner. But they could not have done so without black powder arms. Fortunately for them, the right tools were available.

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