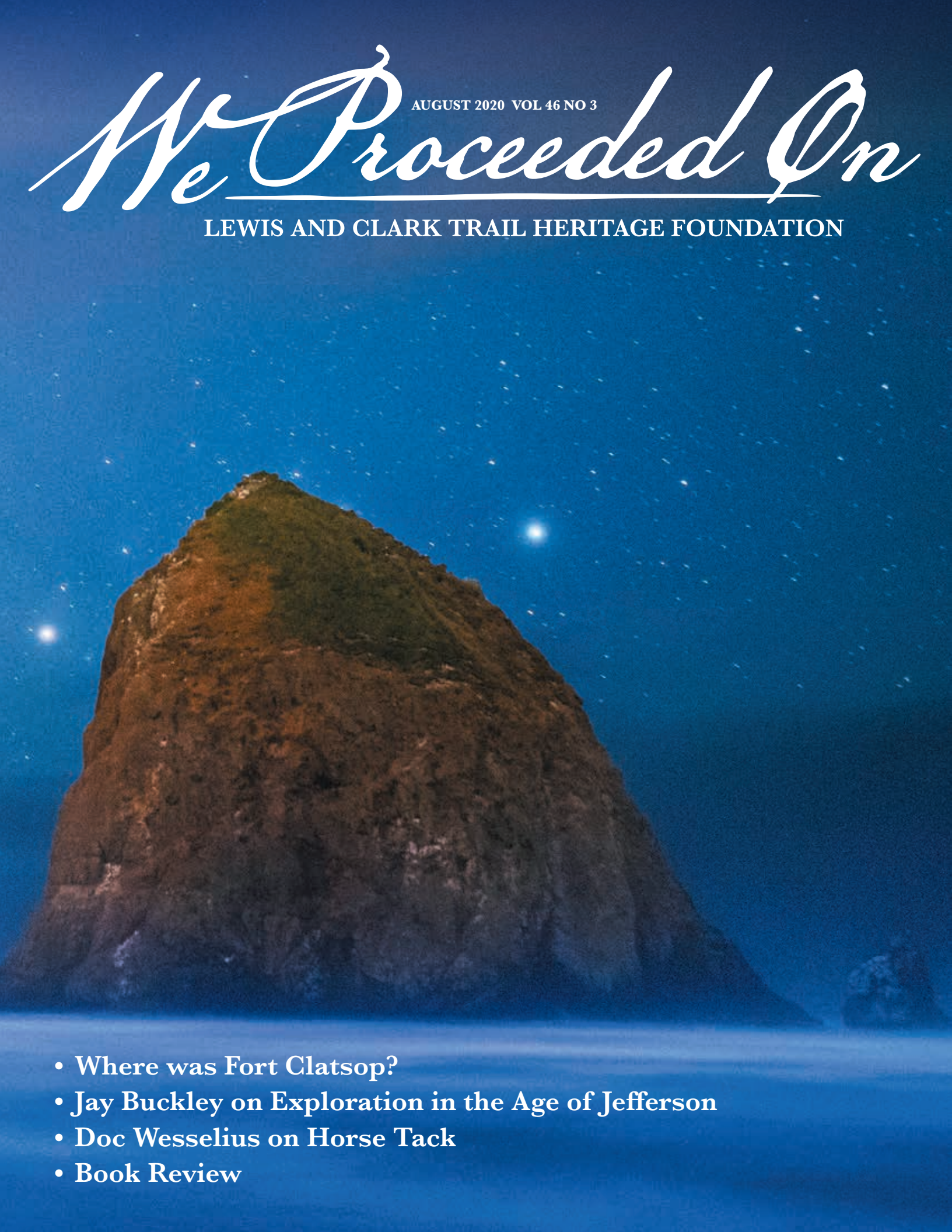
AUGUST 2020 VOL 46 NO 3

# We Proceeded On

LEWIS AND CLARK TRAIL HERITAGE FOUNDATION



- Where was Fort Clatsop?
- Jay Buckley on Exploration in the Age of Jefferson
- Doc Wesselius on Horse Tack
- Book Review

# *COVID-19 in the Context of Jefferson and Lewis and Clark*

Thomas Jefferson knew something about epidemics. He lived through the Yellow Fever epidemic in Philadelphia in 1793, when the U.S. government was still stationed in Philadelphia, the most populous (and cultured) city in America. One in ten Philadelphians died. One of the heroes of the Yellow Fever epidemic was Dr. Benjamin Rush, a signer of the Declaration of Independence, the father of dream psychology in America, an advocate for the humane treatment of mental illness, and the medical adviser to the Lewis and Clark Expedition.

Jefferson's well-known distaste for cities and urban life was based in part on his concern about infectious diseases. In a letter to his friend Rush in September 1800, Jefferson wrote, perhaps a little heartlessly, "When great evils happen, I am in the habit of looking out for what good may arise from them as consolations to us: and Providence has in fact so established the order of things as that most evils are the means of producing some good. the yellow fever will discourage the growth of great cities in our nation." Jefferson believed that humans are safer when they diffuse themselves over a broad landscape, less safe in cities, where disease travels more efficiently and where humans packed too closely together tend to clutch each other's throats. Jefferson actually created a novel checkerboard design for new cities west of the Appalachians. Every other square would be reserved as permanent parkland. This would "ruralize" future cities, prevent the spread of disease (social distancing by way of zoning!), and allow each family to grow some of its own food within city limits. His model was actually adopted—for a time—in Jeffersonville, Indiana.

Jefferson's first journey out of Virginia was to Philadelphia in 1766 to be inoculated against smallpox. The variolation method then in use was highly controversial, because the patient was actually infected with a small dose of actual smallpox in the hope that her or his immune system could fight it off. Jefferson rejoiced in 1796 when the English physician Edward Jenner discovered the true smallpox vaccine, thanks to a chance remark of a dairy worker, a milkmaid, who said she would never get smallpox because she had already had cowpox (kinepox). Jenner investigated this cognate disease and discovered that it did immunize for smallpox.

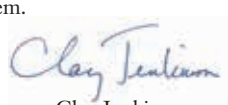
President Jefferson wrote a wonderful fan letter to Edward Jenner on May 14, 1806. Among other things, he wrote, "Medicine has never before produced any single improvement of such utility. Harvey's discovery of the circulation of the blood was a beautiful addition to our knowledge of the animal economy, but on a review of the practice of medicine before and since that epoch, I do not see any great amelioration which has been derived from that discovery. You have erased from the calendar of human afflictions one of its greatest. Yours is the comfortable reflection that mankind can never forget that you have lived." Who would not have wished to receive that letter?

When Lewis and Clark ascended the Missouri River in 1804, they were carrying some live kinepox matter with them, or at least they had planned to. In his instructions to Lewis of June 20, 1803, Jefferson wrote, "Carry with you some matter of the kine pox, inform those of them with whom you may be, of its efficacy as a preservative from the small pox; and instruct & encourage them in the use of it. This may be especially done wherever you may winter." Unfortunately, there is no evidence of the captains ever using that kinepox material, which, according to the best medical historians of the expedition, had probably become immunologically inert before they got very far west of Pittsburgh.

Lewis and Clark saw sad evidence of a smallpox epidemic when they reached the Arikara villages at the mouth of the Grand River in northern South Dakota in early October 1804. They were not quite sure what catastrophe had befallen the Arikara. Several of the villages they saw from their boats were abandoned. When they visited the mounded, semi-subterranean lodges of several of these villages, they found evidence of hasty evacuation: squash still growing in the fields, mats, baskets, and bullboats in and around the lodges. What Lewis and Clark could not have known, but sensed, was that the smallpox epidemic of 1781-1782 had shattered Arikara life. Historians estimate that as many as 75% of the Arikara had perished in the epidemic. From approximately 18,000 in as many as eighteen villages stretching over 200 miles of Missouri River frontage, the Arikara had been reduced to perhaps a thousand individuals living in just three villages. The survivors had found each other like refugees in a post-apocalyptic film. Lewis and Clark observed that some of the people living in the three inhabited villages near the mouth of the Grand River were suffering from post-traumatic social breakdown: the Arikara dialects were sufficiently different to cause linguistic confusion and incomprehension; there were great tensions among the remaining leaders (chiefs), because the people of many previous villages were now jumbled into three, and men formerly held in the highest esteem had to compete for a limited number of leadership positions.

Meriwether Lewis sometimes used the phrase "poor devils" to talk about the Native Americans he observed living near the edge of starvation or honeycombed with venereal diseases. The phrase sounds insensitive to us, but Lewis felt genuine sympathy for fellow humans suffering so severely, some of them thanks to their previous encounters with Euro-Americans. The fact is that the Old World disease of smallpox wreaked profound havoc on Native peoples who had no prior contact with the virus and therefore had not built up any herd immunity. The horrific 1781-1782 smallpox epidemic on the middle and upper Missouri was a mere prelude to the greater visitation in 1837, when smallpox destroyed all but an estimated 145 of the once-proud, formerly numerous Mandan people.

We are fortunate to live at a time when contagion, bacterial and viral infections, sanitation, hygiene, and germ theory are well-understood and when the same rational creativity that fueled the Enlightenment (and Jenner) allows us to devise vaccines that have saved hundreds of millions of lives and will soon prevent the coronavirus pandemic from approximating the mortality rate of the Spanish Flu pandemic of 1918 or the smallpox epidemics that historians say killed at least two billion people before science found a way to defeat them.



Clay Jenkinson

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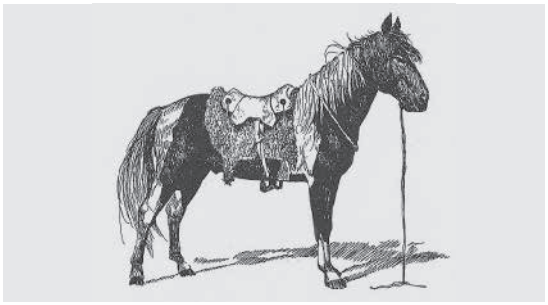

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## Covers

**Front and back:** Photograph of Haystack Rock at Cannon Beach, Oregon, by Jeff Berkes. Says Berkes: "It took me five years and three trips to finally get clear skies and tons of glow in the ocean at the same time."

***Correction:*** *In the May issue of* We Proceeded On*, the explorers issue, your editor foolishly not only attributed Everest mountaineer George Mallory's statement, "Because it's there," to Sir Edmund Hillary, but called him Edward Hillary. If embarrassment could be meted out like military discipline, you can be sure the editor gave himself 75 lashes well laid on.*


***We Proceeded On*** welcomes submissions of articles, proposals, inquiries, and letters. Writer's guidelines are available by request and can be found on our website, lewisandclark.org. Submissions should be sent to Clay S. Jenkinson, 1324 Golden Eagle Lane, Bismarck, North Dakota 58503, or by email to Clayjenkinson2010@gmail.com. 701-202-6751.

# We Proceeded On

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### Our mission:

As Keepers of the Story~Stewards of the Trail, the Lewis and Clark Trail Heritage Foundation, Inc., provides national leadership in maintaining the integrity of the Trail and its story through stewardship, scholarship, education, partnership, and cultural inclusiveness.






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# A Message from the President

LCTHF President Louis Ritten

Wow! Who knew so much could change in so short a period of time? Since my last remarks appeared in this space three months ago, we have faced the severity of the COVID-19 crisis that swept across the entire country, killing far too many, cratering the economy, throwing millions out of work, and becoming a part of everyone's personal experience. We learned all too well the meaning of "social distancing" and "shelter in place." Although we as a nation have suffered tremendously, I would propose that we can nevertheless use this tragedy to count our blessings for the heretofore ordinary gifts we have enjoyed all along but had previously taken for granted. By way of illustration, we encounter copious examples in the journals of Lewis and Clark when they took care to express gratitude for what perhaps seemed to us in the not too distant past to be mundane.

We comprehend better today just how important are the farmers, factory workers, truckers, and store clerks who produce, package, ship, and provide us the sustenance we need for our daily survival. Lewis famously penned his effusive praise for the boudin blanc made by Toussaint Charbonneau and for George Drouillard's uncanny hunting ability that kept the men of the Corps fed.

We more deeply appreciate the compassion, selflessness, and professionalism of our health care workers who dedicate themselves to our physical well-being. William Bratton was grateful when his Nez Perce hosts showed him the benefits of a sweat lodge to ease the pain in his aching back. Native American patients likewise thanked William Clark for his eyewash treatments and other medical ministrations.

We recognize the importance of entertainers that provide relief from the grim news that has invaded our lives. Three huzzahs for Pierre Cruzatte and his fiddle playing while the Corps eased their minds and danced away the toils of another grueling day.

We thank the scientific community and technology companies that have enabled us to stay in contact remotely with our friends and families and to the journalists who inform us of the latest news. We are grateful to the journal writers of the Corps of Discovery for their evocative observations that survive over two centuries later and that enable us to understand and learn from their experiences. All in all, it takes people "of a description calculated to work and go thro' those labors and fatigues which will be necessary," just as Clark wrote to Lewis about recruiting men into the Corps of Discovery. Thank goodness our nation possesses all of these folks in so many varied walks of life and in such abundance. We are truly blessed.

We realize how important human contact is to the full well-being of each one of us. Although we have been forced to cancel the LCTHF in-person Annual Meeting scheduled for Charlottesville, we were able to shift gears and put on a virtual meeting instead. Profuse thanks go out to all our staff and volunteers for pulling this off. Most especially, we must single out for praise the work of the Homefront Chapter and Sally Thomas, principal planner Malou Stark, Lewis & Clark Exploratory Center Executive Director Alexandria Searls and her coworker Becky Gildersleeve, and LCTHF Executive Director Sarah Cawley. Their ingenuity, flexibility, cooperation, and bonhomie carried the day under very trying circumstances. The National Park Service was very helpful in supporting the virtual meeting and we thank Superintendent Mark Weekley and his staff for their assistance. And thanks to you, our valued members, for your forbearance, patience, understanding, and sense of adventure in participating in this new way of gathering.

Notice that the previous paragraphs begin with the word "we." We have also realized more profoundly that all of us are tied together and that it helps to stick together emotionally, even if perhaps not physically at times. The esprit de corps developed by the participants in the expedition was a major factor in their ultimate success. Like the members of the Corps, we are all in the same boat, as it were, when it comes to threats that may cause bodily and societal harm.

As Meriwether Lewis so meticu-

lously planned for a trek through unexplored lands of indeterminate distance lasting for an unknown length of time, so have we engaged in planning that has paid off during this crisis. Over the past year, we upgraded our office systems to the level we could reasonably afford. Our internet connection, phone service, and email system have all been improved dramatically. Together with new communications software, our staff can now operate seamlessly and safely outside the office at the level of excellence to which you are accustomed. We brought Sarah Cawley aboard as executive director and she developed and executed a sensible plan for an evacuation. When the Montana governor ordered the closing of all non-essential businesses, we were ready and this plan guided us in weathering the transition to working elsewhere successfully. As I write this, we are tiptoeing back into the office gradually.

While we hope the office relocation we have been forced to undergo does not become the new normal, it certainly is comforting to know the LCTHF can function well under less than ideal conditions and we can learn from it. We are examining and discussing with chapter leaders ways we may modify our membership and chapter structures in the near future that may incorporate some aspects of the lessons we are learning, such as the efficacy of modern telecommunication tools. We are confident we can better fulfill our mission, increase membership, strengthen our chapters, and engage the public by instituting these changes. The average member of both the LCTHF and a chapter will likely see virtually no increase in fees. I urge you to give these improvements a chance to work once they are implemented.

Of course, none of this would be possible without the continued support of our loyal members. Thankfully, as I write this, we know of no member who has succumbed to or even been infected by the coronavirus. Pray that this remains the case. As Lewis wrote when the party was departing Fort Mandan for parts unknown, "The party are in excellent health and sperits, zealously attatched to the enterprise, and anxious to proceed; not a whisper of murmur or discontent to be heard among them, but all act in unison, and with the most perfect harmony." May we, members of today's Lewis and Clark Trail Heritage Foundation, stay united and resilient as we likewise journey with our fellow countrymen into the unknown.

On a separate note, I would like to thank those who responded to my recent appeal for bringing Rhode Island residents into the membership fold. We are now up to four! The new laggards are Delaware and Maine, with one member each. Who is willing to donate a gift membership to someone from the Blue Hen State and/or the Pine State to bring them up from the back of the pack? Special recognition to any member who brings in one or more from both states! We are grateful for all you do for the Lewis and Clark Trail Heritage Foundation. ∎

*Proceeding on together,*
*Lou Ritten*
*President*
*Lewis and Clark Trail Heritage Foundation*

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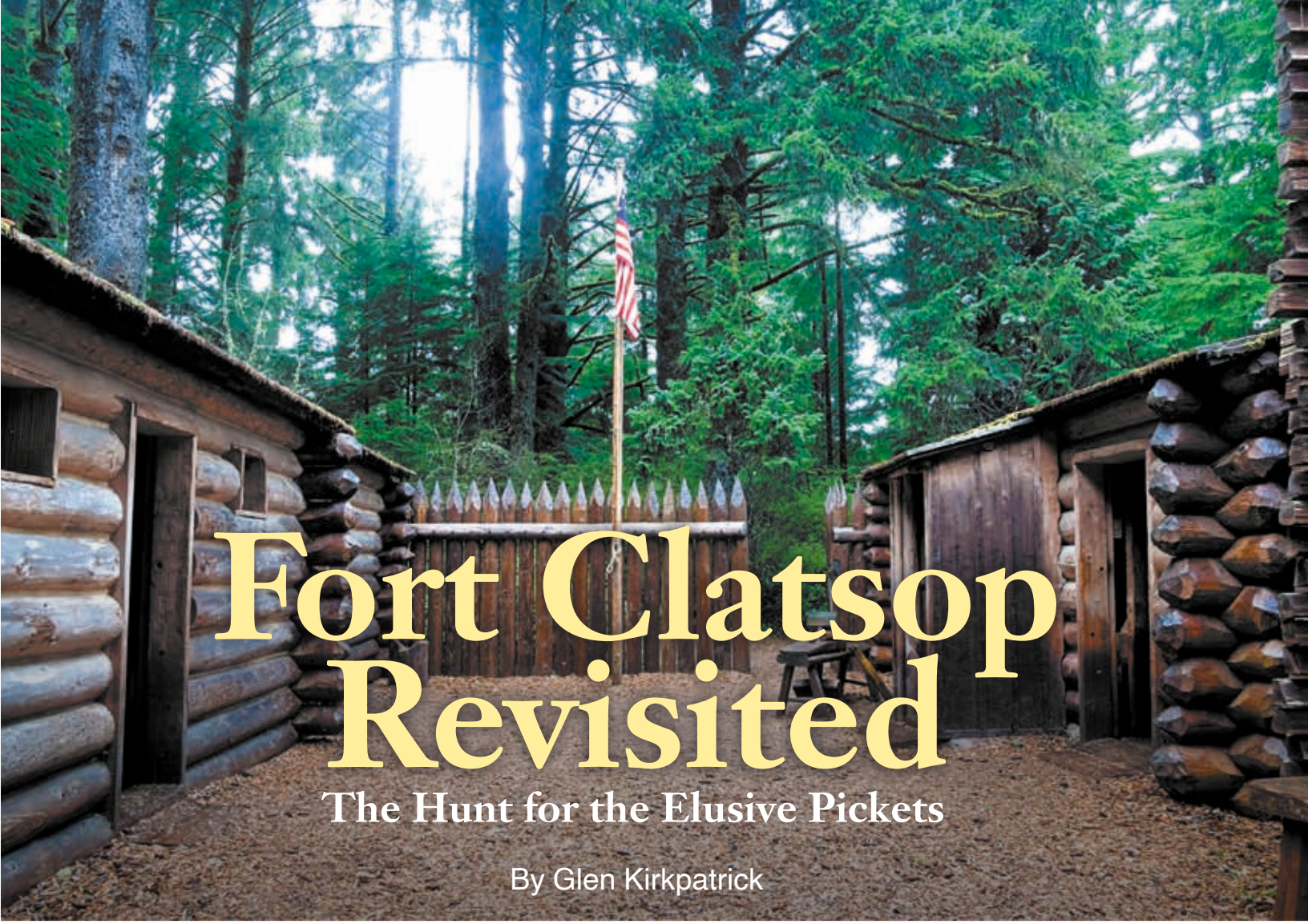
Donations to the Lewis and Clark Trail Heritage Foundation to honor individuals, activities, or the memory of a friend, family member, or colleague are deeply appreciated, and may be designated for the foundation's general fund or earmarked for a particular purpose.

Photograph of Trapper Peak, Bitterroot Mountains, Montana, courtesy of Steve Lee.



# Fort Clatsop Revisited

## The Hunt for the Elusive Pickets

By Glen Kirkpatrick

*The re-creation of Fort Clatsop. Image courtesy of Knowles Gallery.*

*The Lewis and Clark* Expedition abandoned the original Fort Clatsop on March 23, 1806, but history did not. Beginning with the arrival of the Astorians in 1811, the site of the fort was an object of interest to travelers, and remnants of the fort were still visible as late as the 1850s, when farming obliterated these last traces.[1] The Oregon Historical Society acquired the fort's site in 1901, its location based on the memories of early settlers. But in spite of at least thirteen archeological investigations, beginning in 1948, no physical evidence of the fort has been found.[2] It is possible that farming and other land uses have destroyed all traces of the fort. If any evidence still exists, it would be the remnants of the buried pickets.

The hunt for the pickets is another great mystery of the Lewis and Clark Expedition yet to be solved. This article very briefly summarizes past archeological attempts to find physical evidence of the fort and possible explanations as to why they may have failed. Using a different model for the shape of the fort based on journal entries, combined with statements from early settlers, the author identifies an area for further archeological investigation.

### Why they failed to find the fort

Figure 1 shows the location of the fort reconstruction and excavated areas.[3] In addition to the four periods of excavation at the fort shown in Figure 1, there were two magnetic surveys and two ground-penetrating radar (GPR) surveys conducted to seek physical evidence of the fort's location. In addition, the site of the replica was excavated shortly after a catastrophic fire just before the Bicentennial of the expedition. None of these efforts found evidence of the fort's location.

However, the archeological work did provide some very beneficial information. First of all, the work verified the location of the Shane and Smith homesteads (the early

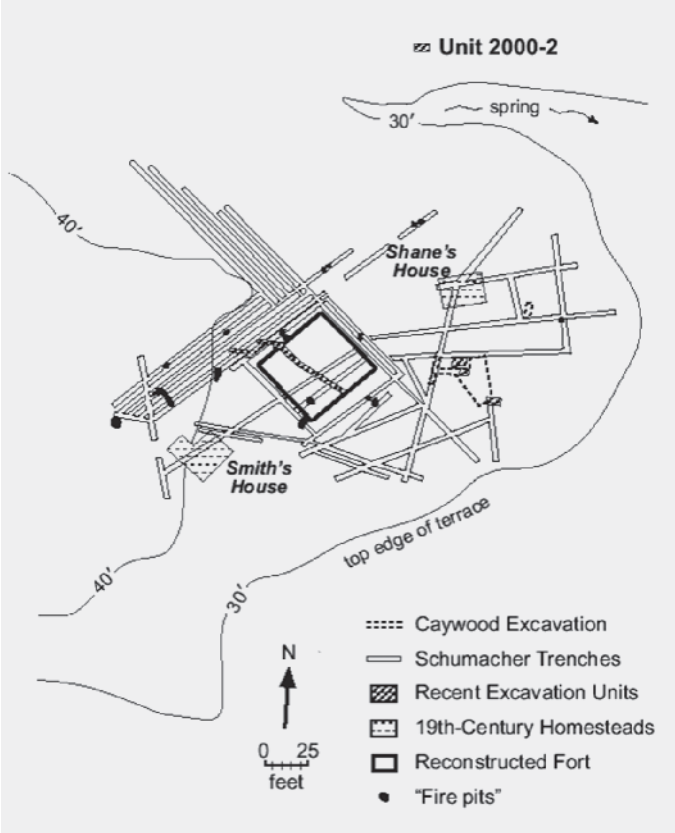



***Figure 1.*** *Stein's map of the area around Fort Clatsop, including excavations and early settlers' homes.*

settlers of the site). These house locations are important when combining the information with early eyewitness accounts of the fort. Also, the archeology established data about soil horizons, the depth of the plow zone, and how farming and other natural forces have disturbed the ground. Lastly, the work turned up two artifacts from the Federalist period that may be linked to Lewis and Clark: a cast-brass bead typically associated with the period after 1793 and before 1820, and a flattened musket ball.[4]

So why did those efforts fail? First of all, finding evidence of the fort is a difficult task. The area was greatly disturbed by farming and logging in the nineteenth and twentieth centuries. Any trace of the fort that still exists would have to be below the plow zone. All efforts to date have been centered in areas immediately surrounding the fort replica. Early efforts all found what were thought to be "fire pits" which were initially interpreted to be evidence of the fort. This misled the investigators. However, a comprehensive study conducted by Julie Stein and others indicated that the supposed "fire pits" were actually burnt-out stumps from early farmers' clearing their fields or from natural causes such as forest fires.[5]

Another reason the early investigations failed to find

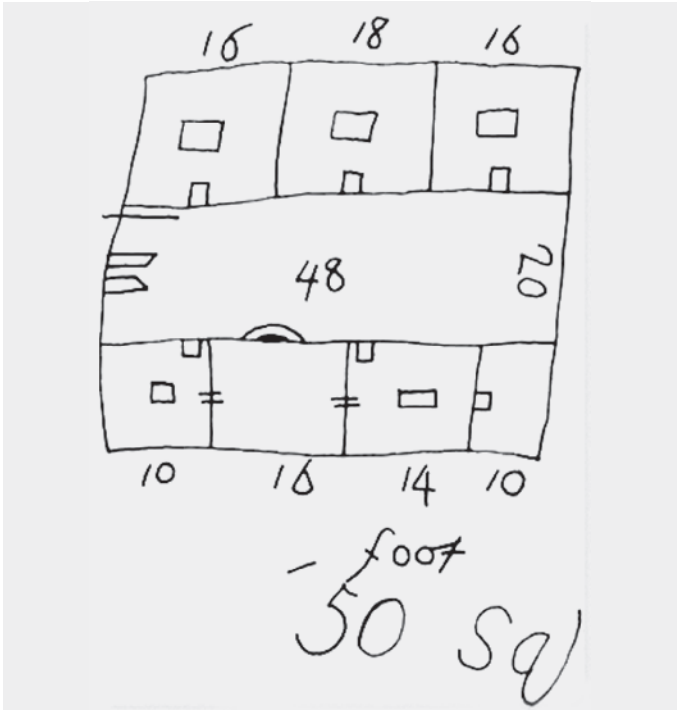



***Figure 2.*** *William Clark's pre-construction sketch of Fort Clatsop.*

the location of the fort—they were looking for a fifty-foot-square configuration with pickets at opposite ends. This was based on sketches by William Clark in his elk skin journal and his drawing on his journal entry for December 7, 1805.[6] Martin Plamondon's monumental study of *Lewis and Clark Trail Maps* makes a very compelling argument for a different configuration for the fort.[7] Plamondon argues that Clark's drawings were pre-construction plans, not as-built drawings. Figure 2 shows Clark's sketch of the fort, which compares to Figure 3, which shows the probable configuration of the fort based on three enlisted men's journal entries.

Pickets were a critical part of eighteenth and nineteenth-century frontier forts. They created the first line of defense against an attack. Typically a line of adjacent upright logs, sharpened at the top, were sunk deep into the ground around or attached to the fort. They would create an extended "fenced-in" area around a fort, like an enclosed yard, called a "stockade."

Considerable evidence suggests that the fort was rectangular with pickets enclosing one end, as shown on Figure 3. Quotations from the enlisted men tell the story:

> We raised another line of our huts and began the last line of our huts forming three [sides of a] Square and 7 rooms 16 by 18 feet large. the other Square we intend to picket and have gates at the 2

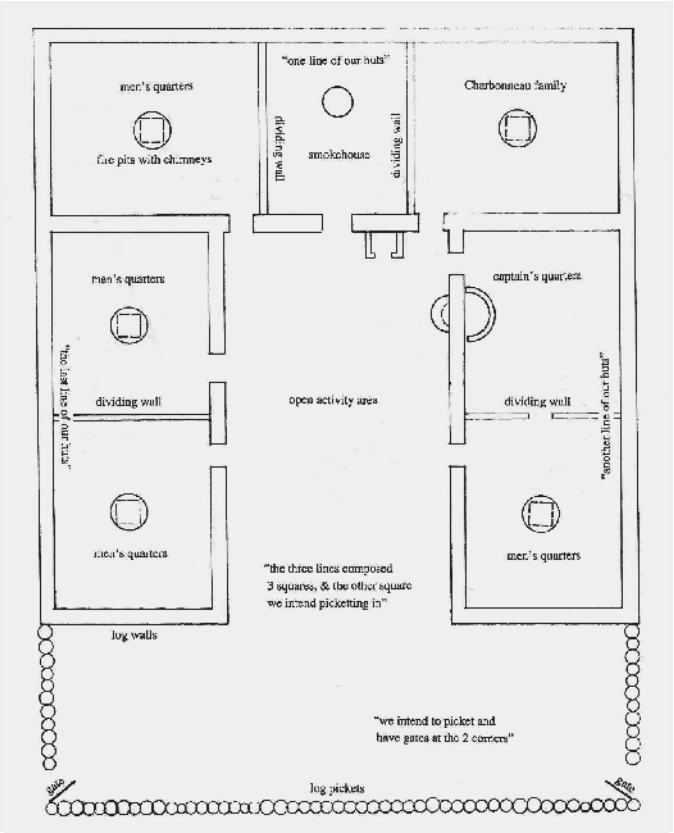



***Figure 3.*** *Conjectural plan of Fort Clatsop, derived from the enlisted men's journals. Image courtesy of Washington State University Press.*

> corners, So as to have it a defensive fort.—Ordway, December 13, 1805.[8]
>
> …the three lines composed 3 Squares, & the other square we intend picketing in, & to have two Gates at the two Corners.—Whitehouse, December 13, 1805.[9]
>
> The fort was built in the form of an oblong Square, & the front of it facing the River, was picketed in, & had a Gate on the North & one on the South side of it.—Whitehouse, March 23, 1806.[10]

***Figure 4.*** *Detail from Clark's map showing location of Fort Clatsop.*

The rectangular shape is corroborated by an enlargement of Clark's map, in Figure 4.[11] Note that the short end of the rectangle faces the river just as Whitehouse describes.

## Historical accounts of the fort and its location

Numerous accounts describing the fort or the location of the fort were recorded by early settlers throughout the nineteenth century. Lieutenant Charles Wilkes, leading the United States Exploring Expedition, visited the site in 1841; the U.S. Coast Survey marked it on an 1852 map.[12] In 1899 and 1900, the Oregon Historical Society identified the fort's site and erected a monument. As a part of this effort, settlers gave sworn depositions.[13] One of the most compelling was given by Carlos Shane, who testified:

> I came to Oregon in 1846, and in 1850 I located a donation land claim on a tract of land which included the site of Fort Clatsop; I built a house on the land in 1851 and occupied it until 1853. A few feet from where I built my house there were at that time the remains of two of the Lewis and Clark cabins. They lay east and west, parallel with each other; and ten or fifteen feet apart. Each cabin was sixteen by thirty feet. Three rounds of the south cabin and two rounds of the north cabin were then standing. Inside the south cabin stood the remains of a large stump. The location of the old stockade was indicated by second growth timber, while all around it was the original growth, or the stumps of trees which had been cut. In clearing away for my house I set fire to the remains of the old cabins and endeavored to burn them.
>
> My house has long since disappeared but I identify its site from the topography of the ground, from the sloping bank to the river toward the east, and especially from the circumstance of my having cut a large tree at the top of the bank which narrowly missed falling on the house and just reached its rear. I remember approximately the height of this tree and the spot on which it stood.

The ruins of the cabins, their size, construction in two parallel rows, and the stump are all features that have been derived from Shane's direct observation. At the time of the deposition, he would not have had any access to Clark's crude sketch or other details that are available to us today.

Shane apparently thought the buildings were surrounded by a stockade, confusing the area of second-growth timber as marking its location. The second-growth timber more likely

***Figure 5.*** *1899 photograph of the Fort Clatsop site. Silas Smith, the grandson of Chief Coboway, points to a feature. Photograph courtesy of Oregon Historical Society.*

***Figure 6.*** *View of the site from the opposite point of view, 1899. Photograph courtesy of Oregon Historical Society.*

marks the area cleared by the men of the expedition.

The Oregon Historical Society took photos when identifying the site during an 1899 expedition (Figures 5 and 6).[14]

Figure 5 shows men standing on a level terrace, which has been plowed. The trees and brush are on a slope toward the river and have not been plowed. Note the straight line at the edge of the flat terrace to the right of the tall dead tree (see arrow), which may well indicate the location of the buried pickets. Future investigations should focus on that area in search of the pickets. One possibility is to use GPR to explore this area. GPR is a non-invasive geophysical method that uses radar to image the subsurface. It may be possible to use this method to detect the disturbances created by sinking the upright logs several feet into the ground. Evidence of a linear subsurface disturbance created by the buried pickets may have survived under the plow depth for 200 years. If GPR does locate a subsurface anomaly it would then be

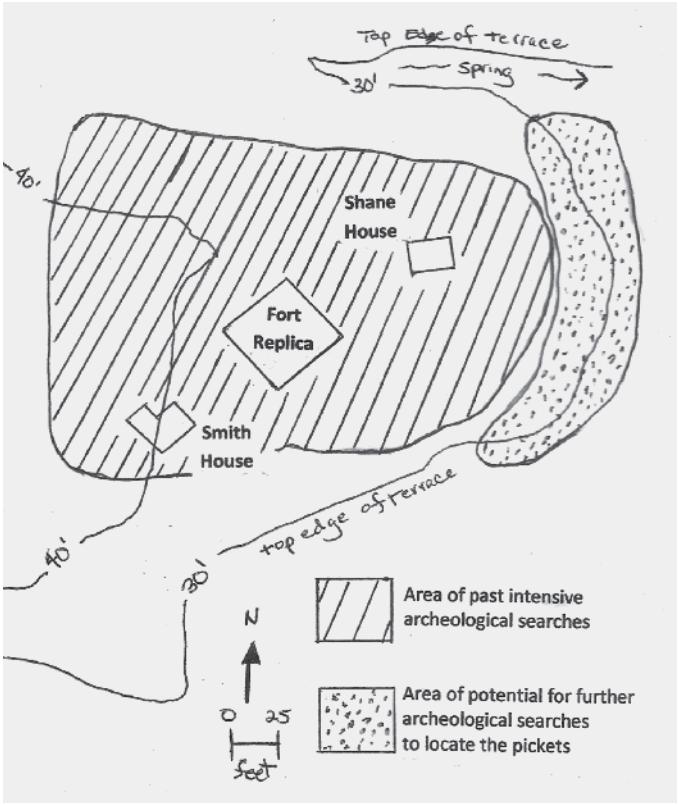



***Figure 7.*** *Diagram showing the area meriting further research in looking for the pickets.*

investigated by excavation. Conductivity of the soils will impact the depth of penetration of GPR. Previous GPR studies at the fort successfully located trenching done in 1956.[15]

The area near the edge of the flat terrace identified in Figure 7 has potential for finding the buried pickets for the following reasons:

1. While the area around the fort's replica and the Shane house has been extensively investigated with no evidence of the original fort, the area near the edge of the terrace, shown in Figure 7, has not significantly been trenched, excavated, or explored by magnetic surveys or GPR.

2. As Ordway states on December 13, 1805: "the other Square we intend to picket and have gates at the 2 corners, So as to have it a defensive fort."[16] To make a defensive fort the pickets would have to be at the

edge of the flat terrace so that an approaching enemy would be visible down the slope to the river. Also, a threat of an attack on the fort would likely come from the river. This is further corroborated by Whitehouse on March 23, 1806, stating that the fort "was built in the form of an oblong Square, & the front of it facing the River, was picketed in, & had a Gate on the North & on the south side of it."[17] It may also have been practical to put the pickets on the downslope of the terrace for proper drainage.

3. In the 1899 picture of the men who are pointing to the fort's location, they stand on the level terrace pointing to what is likely the edge of the terrace in the background, covered with trees and brush on the downward slope to the river. To make the fort defensive, it would have been logical to place the pickets on the edge of the terrace or slightly over the edge. The straight line in Figure 5 that is to the right of the tall dead tree may well be a geomorphic expression of the buried pickets.

4. The photographer (George M. Weister) of Figure 6 is at the river looking up a steep slope to the area of the tall dead tree (see arrow). He can also see the Smith house to the southwest from this location. Careful examination of the shape and topography of the terrace in Figure 7 places Mr. Weister some distance to the east of the rounded point of the terrace, allowing him to capture both the Smith house and the tall dead tree in the photograph in Figure 6. Putting it all together suggests the tall dead tree in Figures 5 and 6 is near the westward rounded nose of the terrace and within the area suggested for further exploration.

5. If the rooms formed a fifty-foot square, as Clark drew in his journal, then adding another twenty-five to thirty-foot area of pickets (as in the Plamondon design) would make the long side of the rectangle seventy-five to eighty feet long. In this case, the west end of the fort would be just a few feet from the identified location of the Shane house, just as Carlos Shane described.

While it is entirely possible that no physical evidence of the fort has survived, it is also possible that a series of west-to-east lines of GPR on the edge of the bench would locate the buried line of pickets and solve one of the great mysteries of Fort Clatsop. ∎

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## Notes

1. John A. Hussey, *Suggested Historical Area Report*, National Park Service Region Four (April 10, 1957), 2.

2. Past investigations include: Caywood (1948), Schumacher (1957), Schumacher (1961), Bell (1990), Ek (1994), Garnet (1995), Karsmizki (1996), Bell (1996), Stein (1996), Weymouth(1997), Weymouth (1998), Kiers and Stein (1998), Kiers (1999), and O'Rourke (2005).

3. Julie K. Stein, *A Geoarcheological Analysis of Fort Clatsop, Lewis and Clark National Historical Park*, University of Washington Department of Anthropology (November 2006), 13.

4. *Overview of Archaeological Excavation 1957–1958*, National Park Service publication, updated 2015.

5. Stein, *Geoarcheological Analysis*, 55.

6. Gary E. Moulton, ed., *The Journals of Lewis and Clark Expedition* (Lincoln: University of Nebraska Press, 1983–2001), 6:110–111.

7. Martin Plamondon, II, *Lewis and Clark Trail Map: A Cartographical Reconstruction* (Pullman: Washington State University Press, 2004), 3:73.

8. Moulton, ed., *Journals*, 9:260.

9. Moulton, ed., *Journals*, 11:404–405.

10. Moulton, ed., *Journals*, 11:431.

11. Moulton, ed., *Journals*, Atlas, 1: Plate 84.

12. Kenneth W. Karsmizki, "Cartographic Representations: A Controversy in Mapping Lewis and Clark's Fort Clatsop," *Oregon Historical Quarterly*, Vol. 105, No. 4 (Winter, 2004): 568–587.

13. Shane, Carlos, *Proceedings of the Oregon Historical Society, 1900* (Salem: W. Leeds, State Printer), Affidavit sworn 1900, published 1901.

14. Hussey, *Suggested Historical Area Report*, 13.

15. James W. Bell, *1996 Fort Clatsop Ground Radar Survey Preliminary Field Report* (July 29, 1996), Pacific Geophysical Surveys Report submitted to Fort Clatsop National Memorial, National Park Service, Astoria, Oregon.

16. Moulton, ed., *Journals*, 9:260.

17. Moulton, ed., *Journals*, 11:431.


***The principal explorations of the Jefferson administration. Baseline map by Chris Madiera.***

*When Americans* contemplate the exploration of the Louisiana Purchase, the names Meriwether Lewis and William Clark quickly come to mind. Their historic journey was well conceived, well executed, and well documented. It was one of the first and longest U.S. government-backed explorations of the American West. The name Zebulon Pike, for some, conjures up notions of a lost explorer who was arrested by the Spanish as an alleged American spy. Fewer still have heard of the names William Dunbar, George Hunter, Thomas Freeman, and Peter Custis. Even those who have heard of these men may be hard-pressed to identify any specifics about their lives or accomplishments.[1] During the five-year period between 1803 and 1807, Thomas Jefferson, third president of the United States, and James Wilkinson, top military general of the U.S. Army, planned half a dozen expeditions to explore the Mississippi, Missouri, Platte, Arkansas, and Red rivers—the major streams of the Louisiana Purchase.[2]

Jefferson and Wilkinson separately authorized, organized, and sponsored expeditions to ascend these principal rivers and intended to use the information the explorers acquired during these journeys of discovery to further their own aims: Jefferson's three expeditions championed scientific inquiry and commercial pursuits as the primary motivational forces, yet he clearly held imperial ambitions to create an "empire of liberty" extending between the two great oceans. Meanwhile, Wilkinson's quest for wealth and power caused him to send out Pike on two military reconnaissances

# Exploring the Louisiana Purchase and Its Borderlands:

## The Lewis and Clark, Hunter and Dunbar, Zebulon Pike, and Freeman and Custis Expeditions in Perspective.

By Jay H. Buckley

under the guise of national defense. In reality, Wilkinson's communiqués indicate that his intentions were less patriotic, whether to separate the region east of the Mississippi region from the United States, to provoke war with Spain, or to feign an American attack and then personally thwart it to have the Spanish compensate him for his services.

As the ink dried on the Louisiana Purchase treaty, signed by U.S. Ambassadors Robert Livingston and James Monroe and French politician François de Barbé-Marbois on April 30, 1803, the United States acquired 828,000 square miles from France for the tidy sum of $15 million.[3] Jefferson announced the deal to the American people on the Fourth of July. In his second inaugural address the following year, Jefferson expressed it this way: "[I]s it not better that the opposite bank of the Mississippi should be settled by our own brethren and children, than by strangers of another family? With which shall we be most likely to live in harmony and friendly intercourse?"[4] As exciting and unprecedented as doubling the nation's size was, Jefferson, Congress, and the citizenry clamored for reliable and up-to-date information regarding the vast Louisiana region. Exploration of Louisiana was necessary because the French, eager not to further alienate their Spanish allies, failed to specify clear boundaries defining the purchase area. President Jefferson and General Wilkinson immediately devised plans to explore the vast Louisiana region, a prospect that placed their exploratory ventures within the larger scope of exploration science, international rivalries, American public policy, and national expansion.

Jefferson had long been interested in acquiring practical and scientific knowledge of the trans-Mississippi region's Native inhabitants, geographical secrets, flora and fauna, and climatic, mineralogical, and other scientific data beneficial to the young American republic. During the 1780s and 1790s, he and members of the American Philosophical Society had championed several expeditions to secure that information, but for one reason or another, the proposed ventures involving George Rogers Clark, André Michaux, and John Ledyard failed to yield the desired results.[5]

While Jefferson championed the cause of Enlightenment science through observation and inquiry, he also emphasized the commercial prospects of the expeditions to garner congressional support and funding.[6] Taken together, science and commerce laid the foundation for Jefferson's imperial vision of a continental empire of independent, self-governing yeoman farmers extending to the Pacific. Agriculture and commerce went hand in hand, and the future prosperity of the nation appeared connected to the expansion of agrarian production. Farmers, spread over thousands of miles, needed rivers to import and export bulky goods, so gaining practical and useful knowledge about the western rivers was essential. Jefferson's notion of an agrarian nation of freedom-loving farmers exercising their natural rights of liberty and equality and governed by republican principles constituted the true strength of the new nation and would presumably yield peace, prosperity, and progress. Moreover, as the chief architect of the United States' public land policy after the original states voluntarily ceded their western lands to federal control in the 1780s, Jefferson devised a mathematical grid pattern to ensure orderly surveying as well as to provide an avenue for new states to join the union on an equal footing. America's westward expansion may not have been inevitable, but Jefferson's "empire of liberty was illimitable."[7]

The scientific, ethnographic, and geographic data Jefferson requested his explorers to gather served as a double-edged sword he could use to acculturate and subjugate Indigenous inhabitants and wrest control of furs and other resources from Spanish, British, and Russian competitors. Expansion also served as a defensive response to offset vulnerabilities emanating from international instability and dangerous entanglements. With foreign restrictions of American navigation on the Mississippi removed with the Louisiana Purchase, Jefferson focused his sights on advancing American claims to the Great Plains, Rocky Mountains, and the Pacific Northwest. He intended to utilize the Great Plains as an Indian reserve for tribal nations residing along the eastern seaboard that could be enticed or forced to exchange their eastern homes for lands beyond the Mississippi. For Jefferson, "civilizing" and dispossessing Indians were the only viable alternatives because his conceptualization of America held no place for Indians to remain as Indians.[8] For his exploratory plans, then, Jefferson adroitly employed commerce as the carrot to get congressional funding, stressed scientific discovery to allay Spanish and British fears of American trespassing, and informed the Native inhabitants that he was their new father figure to whom they should turn for trade and allegiance.[9]

Understanding the motives and actions of James Wilkinson presents an even greater challenge. Fourteen years younger than Jefferson, Wilkinson was born in Maryland in 1757 and obtained an education befitting a planter's son. Like Jefferson, Wilkinson lost his father while in his youth, which helps explain the time these leaders devoted to mentoring their respective protégés, Meriwether Lewis and Zebulon Pike. Wilkinson exhibited considerable aptitude in medicine but, following the outbreak of the Revolutionary War, he opted for serving under George Washington, Nathaniel Greene, and Benedict Arnold (a capable general best remembered for defecting from the American to the British side). Perhaps coincidentally, the ambitious Wilkinson repeatedly found himself embroiled in schemes designed to bring down superior military officers, notably George Washington and Anthony Wayne, but he somehow escaped unscathed and ultimately ascended to become the U.S. Army's top-ranking general. Remarkably, all the while, the duplicitous Wilkinson operated as a Spanish confidant, divulging military secrets and swearing an oath of allegiance to Spain in exchange for trading privileges on the Mississippi, land in the Yazoo strip, and monetary considerations. Twice forced to resign his military commission, Wilkinson—never one to let a lost battle or a court-martial depress him—reinvented himself to live another day.

In contrast with Jefferson's imperial vision, Wilkinson's vision for America emanated from his personal ambitions for self-aggrandizement. He schemed to separate the western United States, either to have it join Spain or to become its own country; fostered enmity between Kentuckians and the United States; and chose to follow whatever course seemed most likely to advance his fame and fortune. He convinced Spanish governor Esteban Rodríguez Miró to grant him trading privileges at New Orleans and a hefty pension in

exchange for military intelligence and his oath of allegiance to Spain. Between 1789 and 1796, Spanish officials in Louisiana paid Wilkinson—code-named Agent 13—pension payments, loans, and other considerations totaling nearly $30,000. During the following decade, there is plausible evidence suggesting that Wilkinson encouraged and supported a scheme involving Aaron Burr to separate from America the land bordered by the Appalachian and Allegheny Mountains, the Ohio and Mississippi rivers, and the Gulf of Mexico.[10]

The nefarious Wilkinson understood that to advance his plans he needed to acquire intelligence about the rivers of the West. Acting in his military capacity, he received the keys to the city of New Orleans on behalf of the United States on December 20, 1803, as the French *drapeau tricolore* was lowered and replaced by the American stars and stripes. Wilkinson retained his position as commander of the western army when he accepted Jefferson's commission as governor of Upper Louisiana Territory in the spring of 1805. While wearing both civilian and military hats, Wilkinson carefully initiated correspondence with Aaron Burr, a friend who had served with him under Benedict Arnold during the invasion of Canada but also a decided foe of Jefferson's administration. Burr, whose political career was destroyed as a consequence of his duel with Alexander Hamilton in July 1804, journeyed to the Ohio River Valley in April 1805 and raised a regiment of several hundred men, either to lead a filibuster into Spanish territory or, alternatively, to join with Wilkinson's army if war with Spain broke out. Burr met with Wilkinson on several occasions and appears to have conspired to separate the trans-Allegheny area by theft, stratagem, or military might. Wilkinson also carefully laid out his plans for exploring the Mississippi River and its southern tributaries.[11]

*Portrait of the notorious General James Wilkinson by Charles Willson Peale. Image courtesy of Independence National Historical Park Collection, Philadelphia, PA.*

In the early 1800s, President Jefferson and his subordinate General Wilkinson found themselves embroiled in an intense geopolitical struggle to claim North America's valuable fur resources, an important prelude to acquiring and possessing the region. Between 1790 and 1810, each of the contesting powers dispatched governmental and private expeditions for the purpose of probing the continental interior and searching for routes and furs. For centuries, Spanish and French traders traveled throughout the continent largely unnoticed. Philip Nolan, Zenon Trudeau, Jacques D'Eglise, Jean Baptiste Truteau, Jacques Clamorgan, Manuel de Lisa, James Mackay, John Evans, and members of the Chouteau clan undertook similar ventures well into the nineteenth century.[12]

Although his expedition to the Pacific via Canada occurred in the 1790s, Nor'wester Alexander Mackenzie's *Voyages from Montreal to the Pacific* was finally published in 1801, serving notice to the world of British designs in North America and detailing a plan for a British monopoly of the North American fur trade. Jefferson read the book with great interest, realizing that American explorers would have to get into the field soon or any pretensions to an American presence in the Pacific Northwest would be lost. Meanwhile, George Vancouver and North West Company men such as Alexander Henry the younger, Simon Frazier, and David Thompson followed Mackenzie's lead by further exploring the Pacific Coast, the Canadian Rockies, and the northern fringes of Louisiana.[13]

The Russians, too, increased their involvement in the scramble for North America. Between 1803 and 1806, Russian captain Ivan Kruzenshtern and naval officer Iurii Lisianski completed their circumnavigation of the globe. In 1799, Tsar Paul I chartered the Russian American Company and gave it monopoly status in Alaska's fur trade. Company leader Aleksandr Baranov established his headquarters in Novoarkhangelsk (New Archangel, now Sitka), and the

Russians began eyeing the Pacific Northwest as an agricultural breadbasket for their Alaskan empire.[14]

Hence, Jefferson and Wilkinson found themselves as major players in an international struggle between rival European nations seeking to possess the heart of the continent. Both understood that to stake America's claims in the contested region and protect the young republic's vital economic, commercial, and geopolitical interests, they would have to explore and chronicle the rivers of empire and uncover the geographical secrets of the Great Plains, Rocky Mountains, and Pacific Northwest. With the Spaniards blocking American expansion in the lower Mississippi Valley and the British checking American penetration into the Northwest, Jefferson and Wilkinson sought to overcome these obstacles by acquiring the necessary information regarding Louisiana that would aid the expansion of America's domain.[15]

## Lewis and Clark Explore the Missouri

The Lewis and Clark Expedition was not the earliest exploratory venture authorized by Jefferson, but it was the first to embark. After becoming president, Jefferson asked fellow Virginian Meriwether Lewis to be his private secretary. Lewis' military position as ensign and quartermaster had given him occasion to meet most of the military leaders of the country, and Jefferson wanted to have Lewis help him pare down the nation's officer corps—along Republican party lines. After the military downsizing was completed, Jefferson mentored his protégé by writing letters of introduction to his associates in Philadelphia, many of them members of the American Philosophical Society, who agreed to tutor Lewis in mathematics, astronomy, and science in preparation for a western reconnaissance. Buried in a confidential message regarding the establishment of government trading houses in late 1802 was a request by Jefferson for Congress to appropriate $2,500 for a military expedition comprising an officer and a dozen soldiers to explore the western rivers to the Pacific to gather information regarding the fur trade even before the acquisition of Louisiana transpired.[16]

After the purchase was finalized, Jefferson expanded his instructions for Lewis (Jefferson considered it the Lewis expedition) to include commercial, geopolitical, and scientific goals: the "object of your mission is to explore the Missouri river, & such principal streams of it, as, by its course and communication with the waters of the Pacific ocean, whether the Columbia, Oregan, Colorado or any other river may offer the most direct & practicable water communication across this continent for the purposes of commerce."[17]

Jefferson told Lewis to avoid the Spanish and to inform British traders that they were no longer welcome in the area now that the United States had purchased the "right of discovery" from France. Lewis should learn all he could about the Native inhabitants, including their customs, trading practices, lifestyles, numbers, medicinal practices, and any other useful knowledge. After making contact, he was to inform them of American intentions and distribute emblems of empire such as peace medals with Jefferson's likeness on the front, U.S. flags, and friendship certificates. Above all, he was to seek peace and establish trading alliances and to promise that fur traders would return to their villages with goods to exchange for pelts and hides. Finally, he was to gather scientific data on geology, geography, zoology, and botany and make celestial observations that would be useful to know about the area.[18]

To accomplish his mission, Lewis invited his former commanding officer and fellow Virginian William Clark to manage the day-to-day operations while Lewis engaged in his scientific inquiries. The expedition set off in a fifty-five-foot keelboat and two pirogues (small boats) on May 14, 1804, with around fifty men, including soldiers, interpreters, civilian hunters, and seven or eight French voyageurs or boatmen. After wintering at Fort Mandan, a small group returned to St. Louis via the keelboat in April 1805. The permanent party—consisting of thirty-three people, including Clark's slave York, Toussaint Charbonneau, and his wife Sacagawea and son Jean Baptiste—continued toward the headwaters of the Missouri. After several crossings of the Continental Divide, they finally descended the tributaries of the Columbia and in November arrived at the Pacific Ocean, where they erected Fort Clatsop during the winter of 1805-1806. By establishing a military post, flying the flag, and exploring and mapping the region, they strengthened America's claims to the Pacific Northwest under the doctrine of discovery.[19]

The commercial route via the Missouri and Columbia rivers required a much longer and more difficult portage than they had hoped. It necessitated a strong bond with the Nez Percé and Flathead (Salish) Indians because they occupied the region and possessed large horse herds that made mountain portages possible. Most of the tribes they met welcomed American trade. Two powerful middlemen who already had access to British goods—the Lakota confederacy and the Blackfeet confederacy—were not happy about the

possibility that their traditional tribal enemies might gain access to American goods and armament, however, and took measures to waylay the explorers.[20]

On their return journey, the party retraced their route to the Continental Divide, where they divided their forces. Lewis and four men explored the headwaters of the Marias River, while Clark took a group and descended the Yellowstone River. Meanwhile, other contingents traveled down the Missouri and dug up supplies cached on the outbound journey. All the groups rendezvoused near the confluence of the Missouri and Yellowstone rivers in August before continuing to St. Louis, arriving on September 23, 1806.[21]

With Lewis and Clark ascending the Missouri and exploring the northern and western boundaries of the Louisiana Purchase, Jefferson selected Scottish-born scientist Sir William Dunbar and Philadelphia chemist George Hunter to explore the Purchase's southern boundary in present-day Louisiana and Texas. The proposed Grand Expedition or Excursion into the Southwest was an ambitious undertaking on a scale similar to Lewis and Clark's trip up the Missouri. The president tasked Dunbar and Hunter with exploring the headwaters and courses of the Red and Arkansas rivers by ascending the Red, portaging across the mountains, and descending the Arkansas.

Dunbar, owner of The Forest plantation nine miles south of Natchez, was an experienced surveyor who had traded with Indians and had surveyed the Spanish-U.S. border and lower Mississippi Valley in 1798. After becoming a U.S. citizen, he received the honor of being named surveyor general of Mississippi and made meteorological observations of the region. An acquaintance of Jefferson through the American Philosophical Society, Dunbar constructed an observatory at his plantation equipped with the best astronomical instruments available. He also conducted extensive scientific research on chemically treating soils, increasing crop yields, and developing and improving agricultural machinery such as the cotton baler. He was also skilled in mathematics, botany, zoology, ethnology, meteorology, and other sciences.[22]

George Hunter, like Dunbar born in Scotland, was one of the finest chemists in early American history. He journeyed west in 1796 and 1802 to explore the Ohio and Mississippi valleys. His trips provided opportunities for him to visit mining operations, salt licks, and other interesting phenomena before he returned to Philadelphia, where he worked as a druggist and doctor. After the purchase, Hunter expressed an interest, and Jefferson appointed him co-leader of the Red River expedition. Subsequently, his widely circulated accounts of the southern portions of the Louisiana Purchase gained general acceptance.[23]

Hunter arrived at Dunbar's plantation in late July 1804. Jefferson initially wanted to dispatch the expedition earlier, but Spain's unwillingness to issue passports and Osage Chief Great Track's threat to kill Americans who invaded Osage land forced them to reconsider their plans. Jefferson, who had requested and received a $3,000 appropriation for the venture, thought it best to exercise caution. To avoid possible trouble with the Osages and Spaniards, Dunbar suggested they pursue an alternative reconnaissance up the Ouachita River, one of the major tributaries along the lower Red, pointing out there were many "curiosities" along that route. Jefferson consented to the change.[24]

On October 16, 1804, Hunter and his teenaged son, along with Dunbar, his two slaves and a servant, and thirteen soldiers, set out from St. Catherine's Landing on the Mississippi River. During the autumn and winter of 1804, they ascended the Ouachita. Hunter's and Dunbar's journals contain excellent descriptions of flora, fauna, and soils, as well as accurate thermometer readings and astronomical tabulations. Dunbar utilized a pocket chronometer, a circle of reflection, a compass, and an artificial horizon to take latitudinal and longitudinal readings to make as accurate a map as possible.

*William Dunbar was Jefferson's Enlightenment ally in Natchez.*

Unfortunately, the boat that Hunter had designed and brought down from Pittsburgh did not work as well in inland waterways because its draft was too deep. At Fort Miro (renamed Ouachita Post, now Monroe, Louisiana), Dunbar employed guide Samuel Blazier and, to proceed onward, secured a flatboat with a cabin on deck. On November 22, while cleaning his gun, Hunter accidentally shot himself, wounding his hand and his head, and burning his eyes. Despite the mishap, they proceeded on their journey, strenuously working up the rapids, or "chutes," caused by the Ozark Mountains, before arriving in the hot springs area of present-day Arkansas. They spent nearly a month studying the 150-degree water, geological features, and plant and animal life of the area before continuing their journey. By January 8, cold temperatures and shallow water had turned them back, and while floating downstream they encountered an entourage of Quapaw Indians, who provided them with valuable geographical information. After stopping briefly at Fort Miro, they arrived in Natchez on January 27, 1805.[25]

Both men presumed that their follow-up excursion up the Red would occur in 1805, but personal circumstances, advancing age (both men were in their fifties), new congressional and War Department directives, and the difficulties of their winter journey up the Ouachita persuaded them not to volunteer for the potentially more hazardous Grand Excursion up the Red River. Continued Osage resistance to American interlopers along the Arkansas and the expected difficulties of a mountain portage further compromised Jefferson's proposal for a team to ascend the Red and cross over and descend the Arkansas. The duo recommended instead that the next expedition should focus solely on the Red, and Jefferson concurred in May 1805. With the new plan in place, Jefferson continued corresponding with Dunbar who, along with Hunter, began recruiting replacements to lead a party up the Red.[26]

## Pike Explores the Mississippi

While Jefferson dispatched his personal secretary Lewis to explore the Missouri and his scientist friend Dunbar to explore the Ouachita, General Wilkinson formulated exploration plans of his own, turning to Zebulon Montgomery Pike—a New Jersey soldier raised as an army brat and Wilkinson's protégé. Pike enlisted in the army at age fifteen and by 1799 had risen to the rank of first lieutenant and was stationed at Fort Kaskaskia, located on the Mississippi River some fifty miles south of St. Louis, where he served under Wilkinson. Pike was there during the first week of December in 1803 when Lewis and Clark came to the fort to recruit a dozen soldiers for their expedition. Because they were not seeking officers, however, he was not a candidate to accompany them.

Unlike Jefferson, Wilkinson did not solicit congressional approval or funding prior to sending forth his own expedition. Acting under his own prerogative as military commander, he conveyed army merchandise and supplies to Pike to cover the expedition's expenses. Wilkinson's instructions to Pike, issued in St. Louis, directed him to proceed "up the Mississippi with all possible diligence . . . until you reach the source of it" while charting the river's course, soil types, and climatic information. Wilkinson told him to seek out the Native Americans, noting populations, fur-trading preferences, tribal territory, and information on their neighbors—vital information that could be used to the United States' advantage in controlling and occupying the region. The winter expedition was also an excellent time to check on the fur trade and warn British traders they trespassed on U.S. soil. Finally, Wilkinson admonished Pike to keep a diary of all his observations.[27]

Pike set out from Fort Bellefontaine on August 9, 1805, with twenty enlisted men in a seventy-foot keelboat. They proceeded upriver while Pike made scientific observations, recorded journal entries, and compiled maps. After they reached present-day Minnesota, shallow water forced them to use smaller boats. Establishing winter quarters and leaving Sergeant Kennerman in charge, Pike set out on December 10 with eleven others pulling two sleds and two canoes across the snow and ice. On February 1, 1806, Pike incorrectly identified Leech Lake (instead of Lake Itasca, some twenty-five miles distant) as the source of the Mississippi, 2,320 miles from New Orleans.

Pike met with Hugh McGillis of the British North West Fur Company, who treated him with great hospitality and a veritable feast. To McGillis's dismay, Pike told him to lower the Union Jack and replace it with the stars and stripes, asserting U.S. sovereignty. Pike tried, unsuccessfully, to have an Indian delegation return home with him. He was, however, able to parley with a party of Sioux (Dakota), offering them $2,000 in wares for a nine-mile tract of land to be used for a U.S. military post (site of future Fort Snelling). Upon returning to his winter camp, he found that Sergeant Kennerman had presumed the worst and had rifled through Pike's personal belongings, emptied the larder,

and consumed all the whiskey. Instead of shooting him, Pike demoted him to a private and, in late February, the party began its homeward journey. After traveling nearly 5,000 miles in nine months, Pike arrived back in St. Louis on April 30, 1806. He immediately went to work to compile his reports, observations, and journals.[28]

## Freeman and Custis Explore the Red

Dunbar and Hunter were the first American-launched expedition to report on Louisiana. Their personal journals informed Jefferson about the southern fringe of the Louisiana Purchase, and a condensed report found its way into official congressional minutes and ran as a serial feature in the *National Intelligencer*. Their report only whetted Jefferson's appetite for more knowledge about Louisiana's southern fringe, but their four-month journey was enough for Congress to authorize an additional $5,000 appropriation (twice the amount initially approved for Lewis and Clark) to fund a follow-up venture.[29]

Jefferson focused his attention on a reconnaissance along the Red River, which he hoped would become the southern boundary line of the purchase, but Spanish officials insisted that Louisiana did not extend beyond New Orleans. Jefferson's instructions for the Red River Expedition called for finding the headwaters of the Red, negotiating a peace and opening trade with Native American nations, and conducting scientific inquiry into plant and animal life, geography, and the natural world, which made it a virtual southern counterpart to the Lewis and Clark Expedition.[30]

Jefferson, Hunter, and Dunbar had some difficulty finding a replacement explorer to lead the Red River excursion, but with their sixth candidate, they finally found their man. Irishman Thomas Freeman immigrated to America in 1784 and worked as a civil engineer, helping lay out the grid system for Washington City. An experienced astronomer and surveyor, Freeman helped Andrew Ellicott survey the boundary between Spain and the United States in 1796, but a misunderstanding with his partner prevented Freeman from completing his assignment. Once Freeman had been cleared of any wrongdoing, Philadelphia mathematician Robert Patterson (who had recently tutored Meriwether Lewis for his expedition) recommended that the Irishman be assigned to conduct the southwestern expedition. Following a mid-November dinner at the White House, Jefferson tapped Freeman to lead his "Grand Excursion" in the Southwest.

Peter Custis, a medical student from Virginia who studied natural history at the University of Pennsylvania with the acclaimed naturalist Benjamin Smith Barton, was picked to join Freeman once more-prominent candidates, including Alexander Wilson, William Bartram, and Constantine Samuel Rafinesque, ruled themselves out. Custis was strong in academic book learning but light on field experience. Nevertheless, Jefferson had selected the first scientifically trained naturalist and ethnographer to accompany an American exploring expedition. Custis received his appointment from Secretary of War Henry Dearborn in February 1806 and agreed to the terms of three dollars a day plus expenses.

Freeman and Custis, Captain Richard Sparks, Lieutenant Enoch Humphreys, thirty-three soldiers, and one slave embarked from Fort Adams on the Mississippi River in two specially constructed flatboats on May 2, 1806, with plans to be away for about one year. Freeman was the designated leader, and Captain Sparks, a Virginian, served as the ranking military officer. Because Freeman and Custis both kept journals, the venture has typically been called the Freeman and Custis expedition. With instructions in hand, the civilian scientists ventured forth in search of a commercial water route to Santa Fe and to establish friendly tribal relations.[31]

After arriving in Natchitoches, Louisiana, on June 2 they had the good fortune to meet Indian agent Dr. John Sibley, who outfitted the expedition with additional trade goods to supply Native nations upstream. The addition of another dozen military men, along with some French and Caddo guides, rounded the party out to around fifty persons. After leaving the last American settlement on the river, they continued their scientific survey along the Red River in present-day Louisiana, Arkansas, and Texas, making extensive notations of flora, fauna, minerals, and meteorological observations. They met with Caddos, Wichitas, Comanches, and Kiowas, promising friendship and seeking to establish commercial ties that might lure the Natives away from Spanish traders in Santa Fe and San Antonio. They kept detailed records of Indian languages and other ethnographic data and distributed trade items and American tokens of sovereignty. They also carried state-of-the-art scientific equipment (telescopes, chronometers, sextants) and made good use of these instruments in recording daily air and water temperatures, noting latitude and longitude, and collecting plant and animal specimens.

Wilkinson's tantalizing letters to Jefferson—replete with references to mountains of silver, salt licks, and mysterious

unicorn-like animals—encouraged the president to proceed with the expedition. Concurrently, the double-dealing general warned Spanish officials such as Nemesio de Salcedo, commandant general of the Interior Provinces of New Spain (1802-1813), of the impending American trespass. The Spaniards refused to grant passports for expedition members and took the added step of sending Spanish forces to intercept the Americans and prevent them from initiating contact with the Comanches. Freeman and Custis had traveled about 615 miles up the Red River when Francisco Viana's force of 212 Spanish dragoons compelled them to stop near present-day Spanish Bluff, Bowie County, Texas, on July 29. Jefferson had instructed Freeman that if confronted by an opposing military force, he should not risk his life but turn back to preserve the information he had gathered.[32]

Outnumbered four to one, the Americans parleyed for two days but eventually agreed to abandon their trek. The trip downstream took nearly a month. On their outbound journey, Freeman and Custis endured nearly three weeks of backbreaking work negotiating their seven boats through the Great Raft, a hundred-mile logjam that created what was known as the Great Swamp, before the Red River resumed its course. On the return trip, they borrowed some Native horses to skirt around the swamp, arriving back at Natchitoches, where they resumed traveling by water to Fort Adams, which they reached on September 8, 1806.[33]

Their four-month journey failed to reveal whether the Red provided a commercially viable water route to Santa Fe, but it did demonstrate Spain's determination to prevent American penetration into the region.[34] Wilkinson was disappointed that the confrontation had not precipitated the international incident he and Burr had hoped would lead to war and provide them with legal cover for leading a filibustering expedition into the region. In late October, Burr told Wilkinson he was ready to act against Spain. Wilkinson decided that the plan was not going to work, so he revealed Burr's "deep, dark, wicked, and widespread conspiracy. . . to seize New Orleans, revolutionize the territory, and carry an expedition against Mexico" in a letter to President Jefferson. When word reached Burr that Jefferson was determined to arrest him for treason, the former vice president fled to Alabama where federal officials arrested him on February 19, 1807. The "Burr Conspiracy" was a political embarrassment to Jefferson and a political fiasco that precluded him from sending a proposed expedition up the Arkansas River in 1807. Nevertheless, the uproar did cause the Spaniards to accept the 1806 Neutral Ground Agreement, a modest concession that permitted limited American trading enterprises along the border.[35]

*From Zebulon Pike's Notebook of Maps, Traverse Tables, and Meteorological Observations; Records of the Adjutant General's Office, 1780s-1917, Record Group 94; National Archives.*

## Pike Explores the Southwestern Boundary and Beyond

Several months before the Burr conspiracy imploded, Wilkinson embarked upon another one of his schemes while two of Jefferson's exploring teams remained in the field: Freeman and Custis were on their way up the Red River about to be turned back by the Spanish; Lewis and Clark were in Montana on their return journey. It was time for Wilkinson to act. During the spring and summer of 1806, Burr assembled his private army for a filibuster while the general gathered military intelligence and sought ways to provoke the Spanish to declare war. Pike, who was probably not privy to Burr and Wilkinson's intrigues, received word that Wilkinson had given him a new assignment—to explore the central and southern Great Plains to the Continental Divide to help define the southern limits of the Louisiana Purchase boundary between the United States and Spain.[36]

For this expedition, Wilkinson instructed Pike to perform several tasks. First, as his primary objective, he was to deliver fifty-one Osage men, women, and children back to their village. Then, he was to broker peace between the Kansa and Osage nations and to meet with other tribes such as the Pawnees and, especially, the Comanches, to open discourse and trade with them. Because Pike's journeys would likely take him to "the Head Branches of the Arkansaw, and Red Rivers" near the "settlements of New Mexico," Wilkin-

son cautioned him to avoid Spanish contact to "prevent alarm or offence." Finally, in his spare time, Pike was to collect geographical and scientific information and to ascertain the navigability of the Arkansas and Red rivers.[37]

In a follow-up letter, Wilkinson authorized Pike to arrest "any unlicensed traders in your route . . . without a proper licence or passport" and to confiscate their property. On July 15, 1806, just six weeks after returning from exploring the Mississippi, Lieutenant Pike (whom Jefferson promoted to captain a few months later while Pike was on his Southwestern expedition) left Fort Bellefontaine in two river boats, escorted by twenty soldiers, interpreter Antoine Baronet Vasquez, surgeon John Robertson, and the general's son, Lieutenant James Biddle Wilkinson. Most of the men with him, a group Pike once referred to as a "Dam'd set of Rascals," had accompanied him up the Mississippi.[38]

After dropping off the Osages in present-day Kansas, Pike continued to the Pawnee villages, convincing them to take down their Spanish flag and raise an American one. Pike's party then turned south, traveling via horseback to the Arkansas. The party divided; Lieutenant Wilkinson took five men and descended the Arkansas River, while Pike and fifteen others ascended the Arkansas to the Colorado Front Range of the Rocky Mountains. Leaving his men in base camp in late November, Pike and three others attempted to climb what later became known as Pike's Peak, but they were unable to do so because of the wintery conditions and deep snow. Pike contented himself with exploring the headwaters of the South Platte and Arkansas rivers. With a dozen of his men suffering from frostbite, on January 14, 1807, Pike set out with those who could travel and, seeking the headwaters of the Red, crossed the Sangre de Cristo Mountains through a terrible blizzard and waist-deep snow. Pike built a small stockade on the Conejos River (a tributary of the Rio Grande near present-day Alamosa, Colorado), which he may have mistakenly thought was the Red. He granted permission for Dr. John Robinson to travel to the Spanish settlements. Alerted to the Americans' presence by the arrival of Robinson, Facundo Melgares led a Spanish patrol who found and arrested Pike and his men on February 28, 1807, and escorted his American prisoners to Santa Fe, where Joaquín del Real Alencaster confiscated Pike's papers.[39]

The Spanish treated Pike relatively well and marched him and his men to Chihuahua for questioning by General Nemesio de Salcedo. Then, traveling along the Old San Antonio Road through Coahuila, Pike finally arrived at Natchitoches on July 1, 1807. Whether or not Wilkinson intended for Pike to spy on the Spanish, Pike's tour of the Spanish provinces in northern Mexico nonetheless provided Wilkinson with important details about the towns and their defenses. Although Jefferson and the War Department approved Pike's exploration retroactively, to Pike's great disappointment, he did not receive the hero's welcome accorded Lewis and Clark, and neither he nor the members of his expedition received extra pay nor land as rewards for their efforts, because Congress suspected his complicity with Wilkinson and Burr.[40]

## Aborted and Obscure Expeditions

Jefferson and Wilkinson both planned other expeditions that left few sources to document their purposes or their outcomes. While Jefferson was corresponding with Dunbar regarding the Hunter-Dunbar expedition on the Red, he confided to Dunbar that he expected Congress to authorize his other proposed explorations of western rivers: "[O]ne party up the Panis river [Platte and North Platte], thence along the highlands to the source of the Padoucass river [South Platte] and down to its mouth. Another party up the Arcansa [Arkansas] to its source, thence along the highlands to the source of the Red river, & down that to its mouth." Jefferson concluded by telling Dunbar he was confident that these surveys would "enable us to prepare a map of La. [Louisiana] which in its contour and main waters will be perfectly correct."[41]

Fear of Spanish opposition and the distractions occasioned by the Burr conspiracy apparently scuttled any such ventures. Jefferson acknowledged as much in an 1808 letter to adventurer Anthony Bettay of Vincennes. Bettay's claim that he had found a silver mine 1,700 miles up the Platte had prompted Jefferson to inquire about Bettay's travels. "I should be glad of a copy of any sketch or account you have made of the river Platte," Jefferson wrote. He indicated that Bettay's journey was probably among "the first exploring journeys" undertaken after the settlement with Spain and could prove useful since "we wish to become acquainted with all the advantageous water connections across our Continent."[42]

Meanwhile, Wilkinson apparently sent soldier-turned-trader John McClallen westward in the summer of 1806. Captain McClallen resigned his commission and, with Wilkinson's support and encouragement, outfitted a commercial trading venture destined for Santa Fe. McClallen carried a message to the Indians written by Wilkinson, along with presents designed to secure the protection

of his party and support for his trading mission with the "Spanish Settlements within the Louisiana Territory." Instead of following Pike's route as he originally planned, McClallen altered his course and ascended the Missouri River, following Lewis and Clark's route. On September 17, 1806, he met the captains as they descended the river on their way back to St. Louis. Clark recorded that "at 11 A.M. we met Captain McClellin late a Capt. of Artily [Artillery] of the U States Army assending in a large boat." Lewis knew McClallen, who seemed astonished and overjoyed to meet them. McClallen informed the captains that the people of the country had given up on them and even the president was worried. After exchanging information until midnight, McClallen told them he was on "a speculative expedition to the confines of New Spain" and his plan was to proceed up to the mouth of the Platte to trade with the Pawnees and Otoes before continuing on to Santa Fe. McClallen continued up the Missouri to western Montana, apparently discovering a route connecting the upper Missouri with the Columbia superior to the one Lewis and Clark had followed.[43] ∎

## End of Part One

Note: Part Two of Jay Buckley's article on explorations of the Louisiana Purchase region will appear in the February 2021 issue of WPO.

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## Notes

1. The author thanks Julie H. Adams and Loren Smith for their research assistance, the Charles Redd Center for Western Studies at Brigham Young University, Provo, Utah, for providing funding, and Matt L. Harris, William E. Foley, and Philippa Newfield for their helpful suggestions. I thank managing editor Steven Baker at the University of Oklahoma Press for allowing me to modify, update, and republish this essay, a version of which appeared as "Jeffersonian Explorers in the Trans-Mississippi West: Zebulon Pike in Perspective," in Matthew L. Harris and Jay H. Buckley, eds., *Zebulon Pike, Thomas Jefferson, and the Opening of the American West* (Norman: University of Oklahoma Press, 2012), 101-38.

2. Jon Kukla, *A Wilderness So Immense: The Louisiana Purchase and the Destiny of America* (New York: Alfred A. Knoft, 2003); and Peter J. Kastor, *The Nation's Crucible: The Louisiana Purchase and the Creation of America* (New Haven: Yale University Press, 2004). The best general reference is Junius P. Rodriguez, ed., *The Louisiana Purchase: A Historical and Geographical Encyclopedia* (Santa Barbara: ABC-CLIO, 2002).

3. Although some federalists opposed the acquisition as unconstitutional and too expensive, the Senate ratified the treaty by a 24-7 vote, and Congress allocated the funding. Twenty-five years later in *American Insurance Company v. Canter* (1828), Chief Justice John Marshall asserted the federal government's legal right to acquire new territory under the treaty-making clause of the Constitution, affirming the constitutionality of Jefferson's purchase. Congress divided the Purchase into two territories: north of the 33rd parallel was upper Louisiana Territory; south of the line was Orleans Territory. Thomas Jefferson, "The Limits and Bounds of Louisiana," in *Documents Relating to the Purchase and Exploration of Louisiana* (Boston: Houghton Mifflin, 1904), 1-45.

4. Jefferson's second inaugural address, March 4, 1805, quoted in D. W. Meinig, *Continental America, 1800-1867*, vol. 2 of *The Shaping of America: A Geographical Perspective on 500 Years of History* (New Haven: Yale University Press, 1993), 2:14.

5. James P. Ronda, "Exploring the American West in the Age of Jefferson," in *North American Exploration*, vol. 3, *A Continent Comprehended*, John Logan Allen, ed. (Lincoln: University of Nebraska Press, 1997), 9-74.

6. Alan Taylor, "Jefferson's Pacific: The Science of Distant Empire, 1767-1811," in *Across the Continent: Lewis and Clark and the Making of America*, Douglas Seefeldt, Jeffrey Hantman, and Peter Onuf, eds. (Charlottesville: University of Virginia Press, 2005), 39.

7. Jefferson authored the Land Ordinance (1785) and the Northwest Ordinance (1787), the two principal successes achieved under the Articles of Confederation. Peter S. Onuf, *Jefferson's Empire: The Language of Nationhood* (Charlottesville: University of Virginia Press, 2000), 1; William H. Goetzmann, *Exploration and Empire: The Explorer and the Scientist in the Winning of the American West* (New York: Alfred Knopf, 1966).

8. Anthony F. C. Wallace, *Jefferson and the Indians: The Tragic Fate of the First Americans* (Cambridge: Harvard University Press, 1999).

9. Peter S. Onuf, *The Mind of Thomas Jefferson* (Charlottesville: University of Virginia Press, 2007); William E. Foley, "Lewis and Clark's American Travels: The View from Britain," *Western Historical Quarterly* 34, no. 3 (Autumn 2003): 301-24.

10. The money trail is briefly chronicled in James R. Jacobs, *Tarnished Warrior: Major General James Wilkinson* (New York: Macmillan, 1938), 152; Buckner F. Melton, Jr., *Aaron Burr: Conspiracy to Treason* (New York: John Wiley and Sons, 2002). In 1804, the Spanish paid Wilkinson another $12,000 for military intelligence. Nancy Isenberg, *Fallen Founder: The Life of Aaron Burr* (New York: Viking, 2007), 282-83, 288-89.

11. James Wilkinson to James Madison, April 7, 1805, in Clarence E. Carter, ed., *The Territorial Papers of the United States*, vol. 13, *The Territory of Louisiana-Missouri, 1803-1806* (Washington, D.C.: Government Printing Office, 1948), 114-15. See, William E. Foley, "James A. Wilkinson: Territorial Governor." *Bulletin of the Missouri Historical Society* 25 (October 1968): 3-17.

12. W. Raymond Wood, *Prologue to Lewis and Clark: The Mackay and Evans Expedition* (Norman: University of Oklahoma Press, 2003); Abraham Nasatir, ed., *Before Lewis and Clark: Documents Illustrating the History of the Missouri, 1785-1804*, 2 vols. (Lincoln: University of Nebraska Press, 1990); John F. McDermott, ed., *The Spanish in the Mississippi Valley, 1762-1804* (Urbana: University of Illinois Press, 1974).

13. Mackenzie's *Voyages from Montreal on the River St. Lawrence through the Continent of North America, to the Frozen and Pacific Oceans: In the Years 1789 and 1793* has been reprinted numerous times. A useful edition is W. Kaye Lamb, ed., *The Journals and Letters of Sir Alexander Mackenzie* (Cambridge: Published for the Hakluyt Society at the Cambridge University Press, 1970). See also, D'Arcy Jenish, *Epic Wanderer: David Thompson and the Mapping of the Canadian West* (Lincoln: University of Nebraska Press, 2003); and, Richard S. Mackie, *Trading beyond the Mountains: The British Fur Trade on the Pacific, 1793-1843* (Vancouver: University of British Columbia Press, 1997).

14. In 1806 Baranov sent one of his best officers, Nikolai Rezanov, to negotiate with the Spanish in San Francisco Bay to open trade. Although the Spanish were reticent and resistant to foreign trade, by 1812 Russian Ivan Kuskov had established Fort Ross on a bluff a dozen miles up the coast from the confluence of the Russian River and the Pacific Ocean and Russians conducted limited trade with the missions in Alta California. See James R. Gibson, *Imperial Russia in Frontier America* (New York: Oxford University Press, 1976); Gibson, *Otter Skins, Boston Ships, and China Goods: The Maritime Fur Trade of the Northwest Coast, 1785-1841* (Seattle: University of Washington Press, 1992); Penny Rennick, ed., "Russian America," special issue, *Alaska Geographic* 26, no. 4 (1999).

15. Donald Jackson, *Thomas Jefferson and the Stony Mountains: Exploring the West from Monticello* (Norman: University of Oklahoma Press, 1993); James P. Ronda. "A Moment in Time: The West, September 1806," *Montana* 44, no. 4 (1994): 2-15.

16. Jefferson's Message to Congress, January 18, 1803, in Donald Jackson, ed., *Letters of the Lewis and Clark Expedition with Related Documents, 1783-1854* (2nd ed.; Urbana: University of Illinois Press, 1978), 1:10-13. As governmental proj-

ects sometimes do, the thirteen-person figure swelled to four dozen, and the congressional allocation of $2,500 soon ran a tab of $38,000. The price tag for Louisiana likewise climbed from $15 million to $23,313,567.73.

17. Jefferson's instructions to Lewis, June 20, 1803, in Jackson, *Letters of Lewis and Clark*, 1:61-66.

18. John Logan Allen, *Passage through the Garden* (1975), reissued as *Lewis and Clark and the Image of the American Northwest* (New York: Dover, 1991).

19. Robert J. Miller, *Native America, Discovered and Conquered: Thomas Jefferson, Lewis and Clark, and Manifest Destiny* (2006; repr., Lincoln: University of Nebraska Press, 2008).

20. For information regarding their interactions with the Lakotas, see: James P. Ronda, *Lewis and Clark among the Indians* (Lincoln: University of Nebraska Press, 1984); James P. Ronda, "Tough Times at the Bad: Ignorant of Plains Politics, Lewis and Clark Barely Averted Disaster in Their Encounter with Black Buffalo's People," *We Proceeded On* 28, no. 2 (May 2002): 12-21; Brad Tennant, "Reading Between the Lines: A Look at What Lewis and Clark Did Not Write About Their Encounter with the Teton Sioux May Offer More Information than Their Journals," *We Proceeded On* 35, no. 1 (January 2007): 6-11.

The First Nations comprising the Blackfeet Confederacy included the plains Algonquian-speaking Siksikas (Blackfoot Proper), Kainahs (Bloods), and Piegan (Northern Piegan in Canada and Southern Piegan/Blackfeet in Montana). For an understanding of the Blackfeet Confederacy's interaction with Lewis and Clark see Jay H. Buckley, "Short Tempers and Long Knives: Hostilities between the Blackfeet Confederacy and American Fur Trappers from 1806 to 1840." *We Proceeded On* 39, no. 2 (May 2013): 8-18.

21. Gary E. Moulton, ed., *The Journals of the Lewis and Clark Expedition*, 13 vols. (Lincoln: University of Nebraska Press, 1983-2001).

22. 21. Arthur H. DeRosier, Jr., *William Dunbar: Scientific Pioneer of the Old Southwest* (Lexington: University Press of Kentucky, 2007).
23. Hunter kept four extensive journals of his western trips and observations of the Ohio and Mississippi valleys. John F. McDermott, ed., *The Western Journals of Dr. George Hunter, 1796–1805* (Philadelphia: American Philosophical Society, 1963).

24. For correspondence between Dunbar and Jefferson, see Eron Rowland, comp., *Life, Letters, and Papers of William Dunbar* (Jackson: Press of the Mississippi Historical Society, 1930). Dunbar's journal for the trip up the Ouachita and other correspondence and material are in the William Dunbar Collection, Riley-Hickingbotham Library, Ouachita Baptist University, Arkadelphia, Arkansas. The "boiling springs" are present-day Hot Springs National Park. Jefferson had reason to be cautious with exploring Spanish-contested areas. Philip Nolan, a Wilkinson protégé, had tried operating a contraband- and horse-trading network among the Comanches and Taovayas in Spanish Texas. Operating out of Natchez, he explored the Red River country before being captured and killed for spying in central Texas in 1801.

25. Trey Berry, Pam Beasley, and Jeanne Clements, eds., *The Forgotten Expedition: The Louisiana Purchase Journals of Dunbar and Hunter, 1804–1805* (Baton Rouge: Louisiana State University Press, 2006); Trey Berry, "The Expedition of William Dunbar and George Hunter along the Ouachita River, 1804-1805," *Arkansas Historical Quarterly* 62, no. 4 (2003): 386-403.

26. John F. McDermott, ed., "The Western Journals of George Hunter, 1796-1805," special issue, *Proceedings, American Philosophical Society* 103, no. 5 (1959). Reprint, Philadelphia: American Philosophical Society, 1963.

27. Wilkinson to Pike, July 30, 1805, in Donald Jackson, ed., *The Journals of Zebulon Montgomery Pike, with Letters and Related Documents.* 2 vols. (Norman: University of Oklahoma Press, 1966), 1:3-4. Historians estimate the expedition's expenses at around $2,000. Biographies include W. Eugene Hollon, *The Lost Pathfinder: Zebulon Montgomery Pike* (Norman: University of Oklahoma Press, 1949); John Upton Terrell, *Zebulon Pike: The Life and Times of an Adventurer* (New York: Weybright and Talley, 1968); John M. Hutchins, *Lieutenant Zebulon M. Pike Climbs His First Peak: The U.S. Army Expedition to the Sources of the Mississippi, 1805-1806* (Lakewood, Colo.: Vrooman-Apfelgold Press, 2006); Matthew L. Harris and Jay H. Buckley, *Zebulon Pike, Thomas Jefferson, and the Opening of the American West* (Norman: University of Oklahoma Press, 2012); Jared Orsi, *Citizen Explorer: The Life of Zebulon Pike* (New York: Oxford University Press, 2017).

28. Pike, "Journal of the Mississippi River Expedition," in Donald Jackson, ed. *The Journals of Zebulon Montogomery Pike: With Letters and Related Documents* (Norman: University of Oklahoma Press, 1966),1:5-131. In early July, Pike informed Wilkinson that he had completed the task of finishing his reports. Pike to Wilkinson, July 2, 1806, in ibid., 280.

29. The total expenditure for the second Red River Expedition ended up at $8,700. Dan L. Flores, "A Very Different Story: Exploring the Southwest from Monticello with the Freeman and Custis Expedition of 1806," *Montana: The Magazine of Western History* 50, no. 1 (Spring 2000): 2-17.

30. Dan L. Flores, ed., *Jefferson and Southwestern Exploration: The Freeman and Custis Accounts of the Red River Expedition of 1806* (1984), reissued as *Southern Counterpart to Lewis and Clark: The Freeman and Custis Expedition of 1806* (Norman: University of Oklahoma Press, 2002).

31. Dan L. Flores, "Red River Expedition," *Handbook of Texas Online*, http://www.tshaonline.org/handbook/online/articles/RR/upr2.html.

32. A six-hundred-man force commanded by Lieutenant Facundo Melgares left Santa Fe in case Viana missed Freeman and Custis in Texas. Dan Sturdevant and Jay H. Buckley, "Spanish Attempts to Apprehend Lewis and Clark," *We Proceeded On* 45, no. 1 (February 2019): 18-25.

33. For an excellent study of the fort see Louis N. Ritten, *Fort Adams: Wilkinson County, Mississippi: Forgotten Lynchpin of the Lower Mississippi Valley* (N.p.: Louis N. Ritten, 2013).

34. Jefferson insisted that the Rio Grande was the southern boundary of the Louisiana Purchase; Spain insisted it was the Sabine River, thence north to the Missouri. Not until 1819 did the two nations settle on a transcontinental boundary compromise, along the Red River. With Mexican Independence in 1821, the trickle of American traders venturing to Santa Fe and settlers moving into Texas turned into a stream.

35. Wilkinson to Jefferson, October 21, 1806, in James Wilkinson, *Memoirs of My Own Times.* 3 vols. (Philadelphia: Abraham Small, 1816), 2: appendix, xcv. Burr's trial ended when John Marshall's court acquitted him. After a short European exile, Burr returned to New York and his law practice before his death on September 14, 1836.

36. It is unclear whether Wilkinson directed Pike to deliberately trespass on Spanish territory in order to be arrested so that Pike could have an opportunity to observe Spanish military strength. Certainly, that would have been critical information for a Wilkinson-Burr plot to invade Spain. William E. Foley, "James Wilkinson: Pike's Mentor and Jefferson's Capricious Point Man in the West," in *Zebulon Pike, Thomas Jefferson, and the Opening of the American West*, 185-225.

37. Wilkinson to Pike, June 24, 1806, in Jackson, *Journals of Pike*, 1:285-87. The Colorado Springs Pioneer Museum contains many of Donald Jackson's research notes and papers and is especially rich in Lewis and Clark and Pike material. I am grateful to Matt Mayberry, Leah Davis Witherow, and Kelly Murphy for their assistance in accessing the museum's collections. Incidentally, the museum hosted Pike's World: Exploration and Empire in the Greater Southwest, a magnificent Pike Bicentennial exhibit in 2006.

38. Wilkinson to Pike, July 12, 1806, in Jackson, *Journals of Pike*, 1:288-89. Pike's journal of the western expedition commences on page 290 and concludes on page 448. Jay H. Buckley, "Pike as a Forgotten and Misunderstood Explorer," in *Zebulon Pike, Thomas Jefferson, and the Opening of the American West*, 21-59.

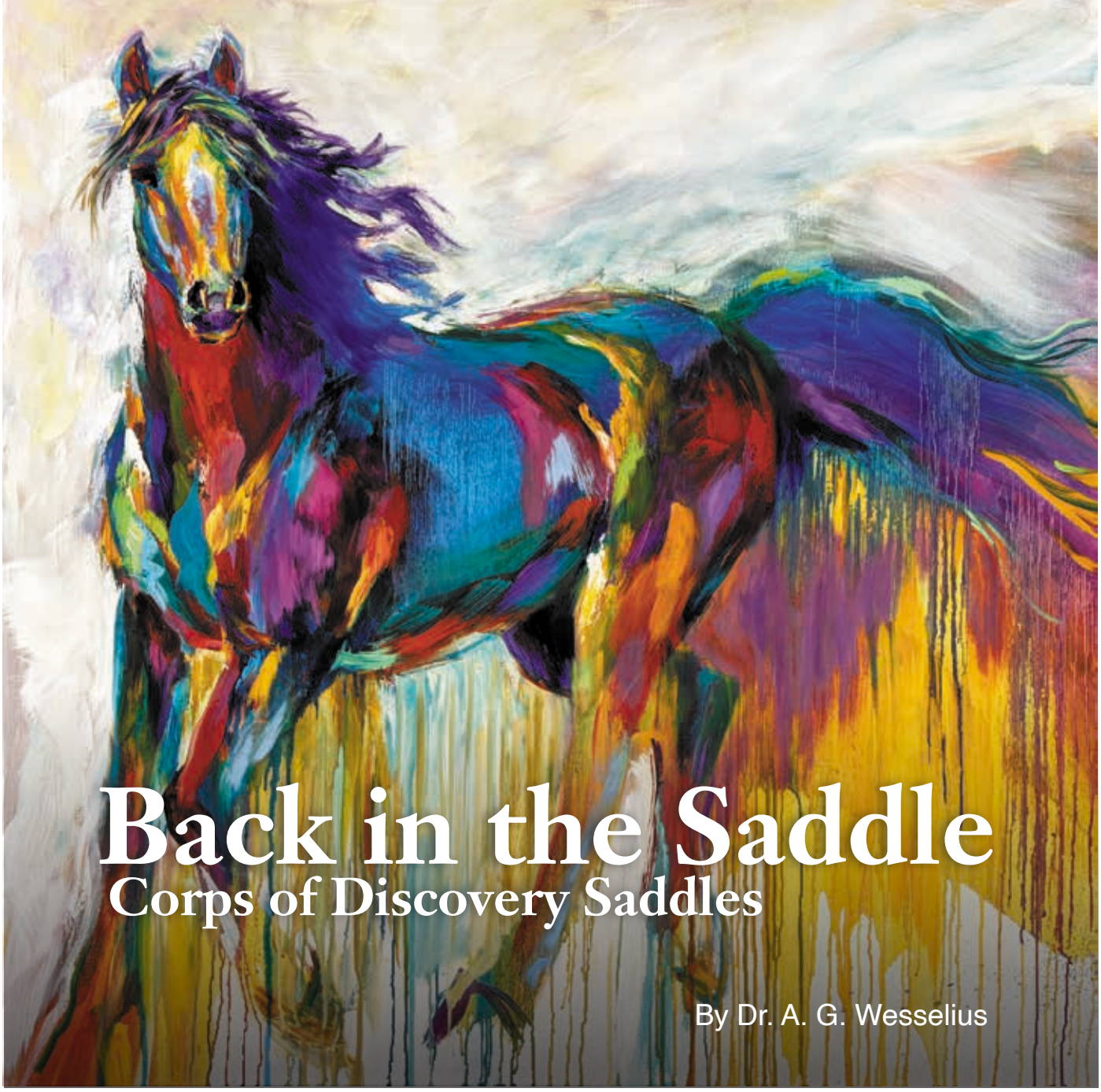
39. Pike's notes and papers were discovered in the Mexican archives by Herbert Eugene Bolton, who published them in the *American Historical Review* in 1908. Herbert E. Bolton, ed. "Papers of Zebulon M. Pike, 1806-1807." *American Historical Review* 13 (July 1908): 798-827. They have since been republished. The Mexican government later relinquished Pike's papers, and they were delivered to the Archives Division of the Adjutant General's Office.

40. Current information (unless new evidence surfaces to the contrary) indicates that Pike did not know of Wilkinson and Burr's plot and remained a loyal American patriot.

41. Jefferson to Dunbar, March 13, 1804, in Jackson, *Jefferson and the Stony Mountains*, 236n1.

42. Jefferson to Bettay, February 18, 1808, ibid., 241n28.

43. William Clark, September 17, 1806, in Moulton, ed., *Journals of Lewis and Clark*, 8:362-64. Gary Moulton speculates that Wilkinson may have been a secret backer of McClallen's enterprise and that even a few of Lewis and Clark's men quickly returned from St. Louis to join McClallen (364n2). No one knows John McClallen's fate. He simply faded into history. No extant journals or maps are known to exist. John C. Jackson, *By Honor and Right: How One Man Boldly Defined the Destiny of a Nation* (Amherst, N.Y.: Prometheus Books, 2010). See also Harry M. Majors, "John McClellan in the Montana Rockies, 1807," *Northwest Discovery: The Journal of Northwest History and Natural History* 2, no. 9 (November/December 1981): 554-630.



# Back in the Saddle

## Corps of Discovery Saddles

By Dr. A. G. Wesselius

*"In Moving Color 2," oil on canvas by Barbara Meikle, MeikleFineArt.com*

*This study draws upon* research from the journals of the Corps of Discovery to determine the equestrian saddles used by the expedition after it crossed the Continental Divide and continued its quest to reach the Pacific Ocean.[1] The primary aim of the study is to provide evidence from the corpsmen's journals that describes the probable pack and riding saddles employed by the expedition. Expedition members recorded minimal passages in their journals pertaining to their saddles. Horse transport at the beginning of the nineteenth century was so customary that the journalists often omitted details that would clarify many of today's questions on particulars pertaining to the expedition's packing and riding paraphernalia.

### Commencement

In August of 1805 the Corps of Discovery crossed the Continental Divide and was confronted with a range of mountains still to the west that was covered with snow. A traditional portage from a navigable drainage with a short overland transport of cargo to a navigable watershed did not exist. Reconnaissance of the western watershed revealed the necessity for horse transport to continue the mission

overland. The co-captains, Meriwether Lewis and William Clark, had to make plans to transition from waterborne transport of cargo to equestrian transport.

Pre-expeditionary planning for the mission did not foresee any compelling need for horses, riding saddles, or pack saddles. President Jefferson, assuming an easy portage, had written detailed instructions for the expedition but did not include horses in his document to Lewis.[2] Lewis also compiled a list of expedition requirements; however, he only purchased "Horsemans Cloths" (saddle blankets).[3] Lewis made arrangements to ship his saddle and bridle but there is no documented evidence that his riding tack was included in the cargo or used on the expedition until the saddle was reported missing from a washed-out cache on the 1806 homeward journey.[4]

*A Revolutionary War-era officer's plantation saddle.*

American army officers brought their own saddle and bridle for military service during the Revolutionary War and late eighteenth century. Little is known about early American saddles and bridles except that their design was of English derivation. The Revolutionary War-era officer's plantation saddle epitomizes the saddle ridden by military officers during the period.[5]

A documented description of Lewis' saddle is not available. Historians can only speculate on his horse tack. There is also no documentation to suggest that Clark brought his own horse tack for the expedition. A complete record of the Corps' saddles would have provided interesting information, were it only available. Instead, conjectural analysis has to suffice for the description of pack and riding saddles constructed and bought for the Corps' transport.

## Pack saddles

After meeting a small band of Shoshone Indians, Lewis made arrangements with the leader to obtain help with the portage across the mountains. Lewis was escorted by warriors, plus a number of women, to regroup with Clark and the main party. After an hour of uncomfortable riding double with a Shoshone Indian horseman, Lewis elected to walk instead of continuing without stirrups. Clark was offered a Shoshone mule with a Spanish saddle during a reconnaissance sojourn. Both instances tell of coming impediments to the Corps' transportation requirements as it transitioned to equestrian transport.

*Shoshone woman's saddle.*

In addition to purchasing horses, Lewis improvised the manufacture of packing gear to transport their cargo and determined the amount of consignment for the remainder of the mission. He directed the manufacture of rawhide "parcels" (panniers) and thongs to lash loads onto pack horses, stating that he was familiar with their production. An 1801 military document sheds some light on horse packing during the era plus dimensions for pack boxes—"Quarter Master Genl. Will be so good as to furnish three Pack

Horses, two packsaddles complete with girths and croopers, four temporary boxes (2 feet long, 1 foot 2 inches wide, and 1 foot eight inches deep) and (blank space) lbs. of rope."[6]

Lewis also directed the manufacture of "harness" (rigging) for the pack horses.[7] Lacking nails and boards, the captains had the pack saddles fashioned from cut off "blades of our oars" and box boards lashed together with rawhide thongs.[8] On the 1806 homeward journey, after threatening to burn their paddles, Lewis again supervised the making of pack saddles. He also ordered the fabrication of elk skin harnesses when the corps again transitioned from waterborne transportation to equestrian conveyance.[9] There are no details in the journals about how the corpsmen may have stabilized their pack loads with leather rope (lash rope).

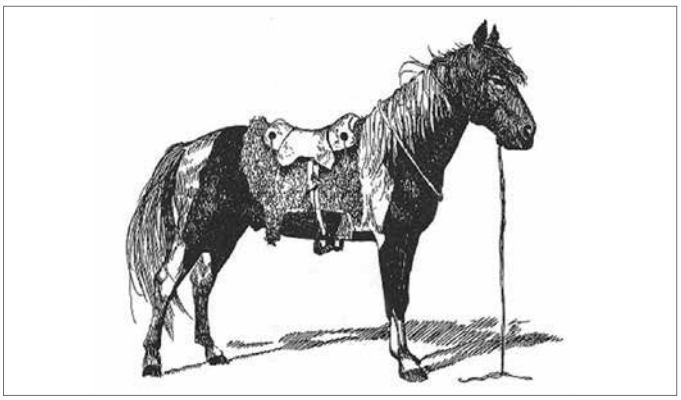
*Early twentieth-century pack saddle. Wesselius collection.*

The improvised packing gear employed during the expedition reflected the style and manufacture of the Northern Plains Native Americans. By the start of the nineteenth century horses had, in a very short period, completely changed the centuries old hunter–gatherer culture. Horses from Spanish settlements in the Southwest had grown into large herds owned by nomadic tribes. Early Native American riding paraphernalia was occasionally supplemented with Spanish-style saddles. The majority of riding gear was manufactured from available resources. Influenced by Spanish horse tack, Northern Plains Native Americans developed a comprehensive array of horse gear.[10]

In addition to noting Spanish bits and stirrups, Lewis documented Shoshone Indian packing and riding paraphernalia.[11] The Moorish-style women's saddle was constructed for conveyance of baggage and/or a rider. It was made from two flat pieces of soft wood (bars) placed on each side of the horse's back and separated to provide clearance to the exposed backbone to prevent injury from saddle pressure. The bars were held in place by two forked hardwood pieces (forks) cut from the fork of a tree. The fork on the front was placed over the horse's shoulder (pommel fork), slightly angled forward, and rose to a height of eight to ten inches above the withers. The fork on the rear of the saddle (cantle fork) fit over the lower part of the horse's back, slightly angled to the rear and usually not as high as the pommel fork. Both forks terminated in flat horizontal points extending outward at an angle or a short bend at the end. The forks served to fasten bags for the transport of cargo, with or without a rider.

The bars on pack and ridding saddles were about four to five inches in width and fifteen to sixteen inches in length. The wooden pieces were held firmly in place with leather thongs and the whole structure covered with stitched-on rawhide, thus forming a saddle that weighed sixteen to eighteen pounds. The rawhide was initially sewed on wet with rawhide lace; as it dried it shrank and pulled the joints of the structure together. For a cinch strap, both pack and riding saddles were secured to the horse with simple leather straps about four inches wide. This was passed over the saddle and tied in a knot under the horse's chest.[12]

A piece of dressed buffalo hide, with the hair on it, was placed underneath the pack saddle to protect the back of the horse from injury. For the rider's comfort, an animal hide with its hair was thrown over the Moorish-style pack saddle when it was ridden by women or elderly men. Sometimes stirrups fashioned from cottonwood or poplar branches were attached to pack and riding saddles. A branch, one foot in length, was bent in a U shape, attached to a flat wooden base to form an equilateral triangle, and covered with stitched-on rawhide to create a stirrup. Two strong strips of buffalo hide were used to attach the stirrups to the saddle.[13]



*Pack saddle with animal hide blanket. Image courtesy of Thomas E. Mails,* The Mystic Warriors of the Plains.

Unfortunately, the captains did not write about the design and number of pack saddles or riding saddles made for either the Corps' westbound or eastbound excursions. Appreciation of their dimensions is only an educated guess. The pack saddles were probably similar in structure to today's sawbuck pack saddle. The sawbuck pack saddle was so named because it resembled a woodcutter's sawbuck. Modeled after French and Spanish pack saddles, the sawbuck pack saddle was a variation of the camel pack saddle of the Middle East. Four one-foot-long hardwood branches, one to one-and-one-half inches in diameter, would have been mounted on the bars and crossed to form the pommel crossbuck and cantle crossbuck. The crossbucks were slightly angled to the front and rear of the saddle and rose to a height of six to seven inches above the back of the horse. Leather sacks (panniers) and wooden boxes with straps would have been hung from the pack saddle's crossbucks. The joints of the pack saddle were held together with leather thongs. It is doubtful that the corpsmen had time to wrap their pack saddles in stitched-on-wet rawhide. The journals also did not note if a breast collar and/or a britchen were employed for the pack saddle rigging. They did mention, however, that their loads were covered with dressed skins (mantie) to protect the cargo from rain and snow.

Clark was concerned about the load-weight capacity of the "indifferent" Shoshone Indian horses. He did not note the cargo contents or the load weights on the pack stock. His concern about the load weights for the acquired pack horses was astute considering the condition of the Shoshone Indian horses and the terrain challenging the Corps. A rule of thumb for calculating load weight for a pack animal is "twenty percent of its body weight." Maximum weight load for the smaller Shoshone Indian horse would have been approximately 140 pounds of cargo and tack. With only twenty-eight pack horses the Corps' cargo probably did not exceed two tons.[14]

A week after leaving the Shoshone Indians, the captains purchased additional horses and traded worn-out horses for sound Flathead Indian horses. A dozen pack saddles and lash ropes were also purchased for the new pack horses. Joseph Whitehouse provided some additional information on the policy for controlling the bigger remuda. In addition to the two riding horses, four horses were assigned to hunters and some corpsmen were consigned to lead two pack horses. On the homeward journey, with a much larger herd, Clark's records provided a clue on the management of pack stock on the trail. Instead of having several pack horses tied head to tail in tandem and led by a mounted rider in the contemporary fashion, the Corps' pack string with their loads were driven along the trail.

## Riding saddles

The Corps left the Shoshone Indian camp with a caravan consisting of twenty-eight pack stock, and riding horses for Lewis and Sacagawea. It is documented that Lewis was mounted, in all probability using his riding saddle, but there is no record that Clark or the Shoshone Indian guides had horses to ride. Compassionately, Lewis had given Charbonneau merchandise to purchase a horse for his wife and baby. The journal keepers did not elaborate on Sacagawea's riding paraphernalia, but perhaps she rode a pad

### *Lewis, August 16, 1805:*

*… on the arrival of the young man to learn that he had come to inform us that one of the whitemen had killed a deer. in an instant they all gave their horses the whip and I was taken nearly a mile before I could learn what were the tidings; as I was without tirrups and an Indian behind me the jostling was disagreeable I therefore reigned up my horse and forbid the indian to whip him who had given him the lash at every jum for a mile fearing he should loose a part of the feast. the fellow was so uneasy that he left me the horse dismounted and ran on foot at full speed, I am confident a mile. when they arrived where the deer was which was in view of me they dismounted and ran in tumbling over each other like a parcel of famished dogs each seizing and tearing away a part of the intestens which had been previously thrown out by Drewyer who killed it; the seen was such when I arrived that had I not have had a pretty keen appetite myself I am confident I should not have taisted any part of the venison shortly. . . some were eating the kidnies the melt and liver and the blood runing from the corners of their mouths . . . one of the last who attacted my attention particularly had been fortunate in his allotment or reather active in the division, he had provided himself with about nine feet of the small guts one end of which he was chewing on while with his hands he was squezzing the contents out at the other. I really did not untill now think that human nature ever presented itself in a shape so nearly allyed to the brute creation. I viewed these poor starved divils with pity and compassion I directed McNeal to skin the deer and reserved a quarter, the ballance I gave the Chief to be divided among his people; they devoured the whole of it nearly without cooking.*

saddle styled in the fashion of her Shoshone Indian brethren. A pad saddle was a light-weight riding saddle, usually about twenty inches wide and sixteen inches long: basically, a leather cushion filled with grass or animal hair. The pad was stitched down the middle to divide it into two halves to fit on each side of the horse. It was secured with a simple leather strap about four inches wide which passed over the pad and tied in a knot under the horse's chest. Sometimes wooden stirrups were attached to the pad.[15] There is no record that the captains or Charbonneau purchased a Moorish-style Shoshone Indian women's saddle or the gifting of such to Sacagawea. Consequently, only speculation will suffice for the inclusion of her transport. She may have ridden with a pad saddle or simply an animal hide for her comfort. On the homeward journey corpsmen had time to construct pad saddles for themselves and were sent out to purchase goat hair, presumably for stuffing.

Native Americans occasionally used a crosscut-style pack saddle for a riding saddle, covering it with an animal skin for the comfort of the rider. Sometimes only a single sentence in the journals provides a clue on possible riding tack the Corps may have used. Eastbound, Clark recounted the escape of Charbonneau's horse and the loss of his saddle and robe under it. Apparently, Charbonneau, a professional trader, either purchased a wooden riding saddle or acquired a pad saddle for his comfort.

Clark's riding arrangements were neglected in most of the journey's narrative. The journal keepers did not record if he acquired a horse to ride when the extra Flathead Indian horses were obtained. Later in the Bitterroot Mountains, he was on horseback when he led a detachment of six mounted corpsmen to find a way out of the highlands.[16] The only record of his horsemanship skills recounts riding a frisky mount that threw him off three times while ascending a steep hillside. Not to be deterred, he caught a Nez Perce Indian horse and continued riding.[17] A few other accounts indicate that Clark sometimes employed horses for his transport on the homeward trip but do not reveal his riding accoutrements.

On the eastbound trek two "nags" were purchased for the captains to ride, but again there was no mention of their riding paraphernalia. A major benefit of a sufficient number of pack horses to haul the Corps' cargo was that the corpsmen's packs (backpacks) for their personal baggage were now carried on pack horses. Clark also recorded the horse he used on the westbound journey was returned after being wintered at the Nez Perce Indian's camp.[18] Apparently, he rode the same horse for the remainder of the eastbound journey until it was stolen.

During an extended stay at the Corps' Clearwater River camp, preparing for the homeward journey, the corpsmen would have had time to construct riding saddles, either wooden or pad saddles. When the expedition left the riverine camp the remuda inventoried sixty-seven head. There were ample horses to transport the Corps' cargo and a horse for every corpsman to ride. For the first time the excursion could be regarded as a cavalcade. All corpsmen were back in the saddle. ∎

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## Notes

1. All journal citations are from Gary E. Moulton, ed. *The Journals of the Lewis and Clark Expedition*, 13 vol. (Lincoln: University of Nebraska Press, 1983-2001).

2. Donald Jackson, ed., *Letters of the Lewis and Clark Expedition 1783-1854* (Urbana: University of Illinois Press, 1962), 1:61-66.

3. Jackson, ed., *Letters*, 1:92.

4. Moulton, ed., *Journals*, 7:245.

5. Kenneth L. McPheeters and R. Stephen Dorsey, *The American Military Saddle, 1776-1945*, (Eugene: Collectors Library, 1999), 2.

6. Jackson, ed, *Letters*, 1:4n. "Girth" (cinch today) is a strap positioned around the animal's chest to stabilize a riding or pack saddle. "Cropper" (or crupper) is a circular rolled leather strap that fits under the tail and around the horse's tail head. It is attached to the pack saddle with a leather strap. It is used for light loads.

7. "Harness" (rigging today) includes a cropper or a britchen, breast collar, cinch, and their attachments to a pack saddle. A britchen is a flat leather strap that fits around the hips and rump of a horse. It is attached to the pack saddle with leather straps on each side of the pack horse. It is used for heavy loads. A breast collar is a flat leather strap that fits around the chest of a horse and is attached to the pack saddle with leather straps on each side of the pack horse.

8. Moulton, ed., *Journals*, 5:425.

9. Moulton, ed., *Journals*, 7:126; 7:130.

10. Francis Haines, "Where Did the Plains Indians Get their Horses? *The American Anthropologist*, Vol. 40, no. 1 (January-March, 1938), 112–117. Thomas E. Mails, *The Mystic Warriors of the Plains* (Garden City: Doubleday & Company, 1972), 215-217.

11. Moulton, ed., *Journals*, 5:161

12. Mails, *Mystic Warriors*, 40.

13. Mails, *Mystic Warriors*, 40.

14. The Corps' cargo weight has been overestimated. Ken Karsmizki, *Cargo–Equipment and Supplies of the Lewis and Clark Expedition: May 2004-September 2006* (The Dalles, OR: Wasco County Historical Museum Press, 2005), 24-25, has thirty-nine pack animals with each carrying 200 pounds of cargo, a total of 7,800 pounds of cargo and tack. Overestimating the weight-load capacity of smaller Shoshone Indian horses combined with an error in tallying the number of pack animals resulted in Karsmizki's overestimation of the Corps' cargo weight.

15. Mails, *Mystic Warriors*, 40.

16. Moulton, ed., *Journals*, 5:23.

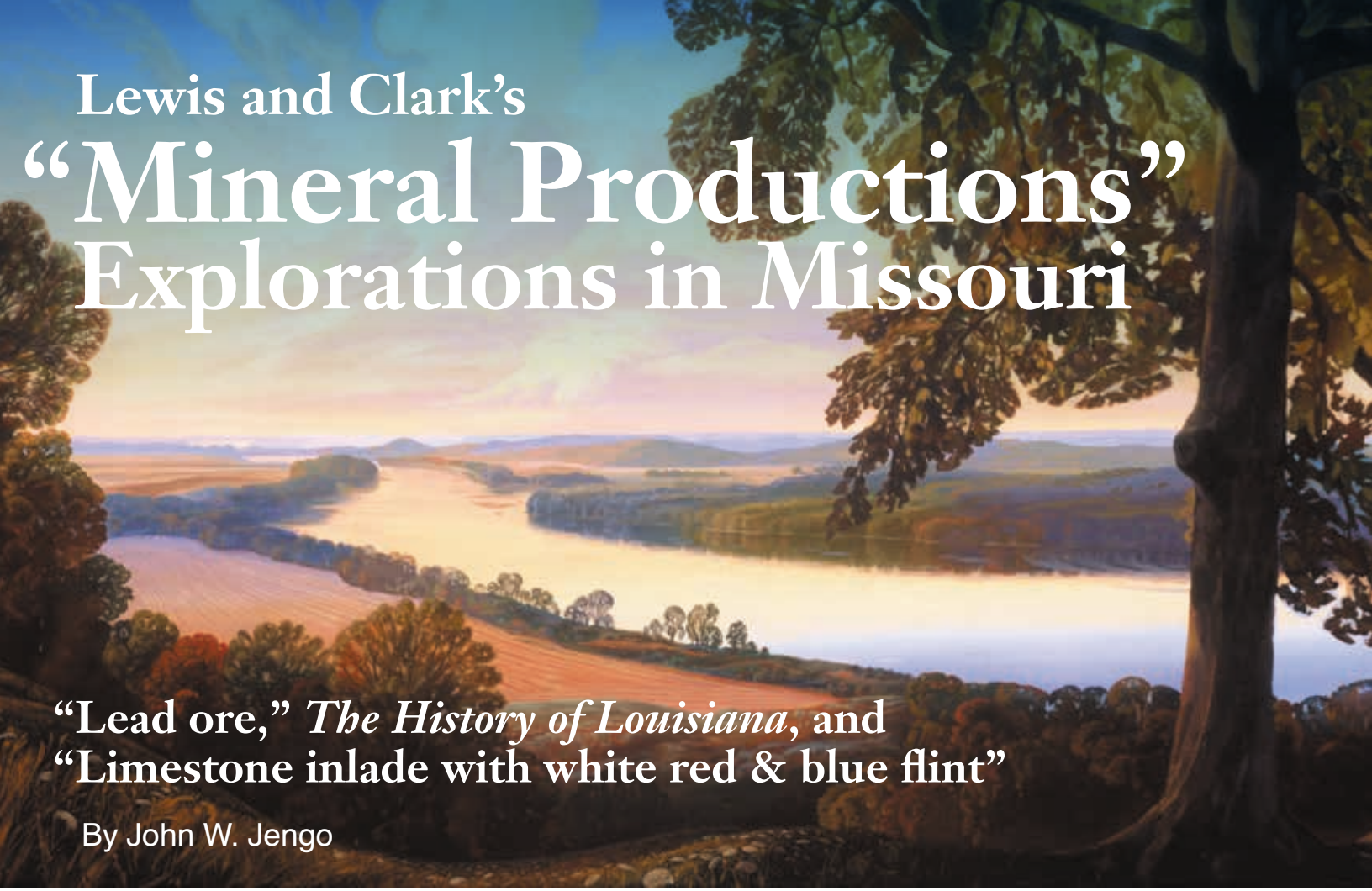
17. Moulton, ed., *Journals*, 7:12.

18. Moulton, ed., *Journals*, 5:229

# Lewis and Clark's "Mineral Productions" Explorations in Missouri

## "Lead ore," *The History of Louisiana*, and "Limestone inlade with white red & blue flint"

By John W. Jengo



*Painting of the bluff above Tavern Cave on Missouri River by Bryan Haynes. Courtesy Bryan Haynes.*

The Lewis and Clark Expedition route from June 4 to 7, 1804, in the vicinity of present-day Jefferson City through Rocheport, Missouri, was typical of the Corps of Volunteers for North Western Discovery's long struggle against the unrelenting current of the Missouri River. They were exasperated at the commencement of this reach by the fracturing of the keelboat mast, for which Sergeant John Ordway readily admitted responsibility.[1] The physical geography of the route was dominated by carbonate formations with embedded chert deposits, and outwardly similar to the expedition's November 24 to 28, 1803, course along the Mississippi River from Cape Girardeau to Kaskaskia.[2] There were some striking attributes of these rock resources that would bestow upon this Mississippi River Valley region a singular importance in the history of pre-Columbian America and subsequent European settlement of Upper Louisiana. To examine this, we must proceed on without a daily journal by Meriwether Lewis and rely upon William Clark and the other journal keepers to document the occurrences of

*Limestone-dominated terrain, including the Big Manitou Bluffs, seen here downriver of present-day Rocheport, Missouri. All photos by John Jengo.*

"the mineral productions of every kind; but more particularly metals," as Thomas Jefferson framed it in his pre-expeditionary instructions to Lewis.[3]

## The Search for Lead at Mine Hill

In the afternoon of June 4, 1804, William Clark decided to investigate the purported occurrence of lead in the vicinity of a rather unique prominence he named "Mine Hill,"[4] but which is known today as Sugar Loaf Rock. This feature, located in northwestern Cole County upstream of Jefferson City between present-day Workman Creek and Meadows Creek, is a rather anomalous tower of middle to late Ordovician-age St. Peter Sandstone in the midst of the early Ordovician-age Cotter-Jefferson City Dolomite.[5] Unlike the geologic formations the expedition encountered along the Mississippi River, these rocks were considerably older and part of a continent-sized paleodepositional setting now referred as the Great American Carbonate Bank.[6] Exceptionally pure quartz (crystalline silica) sand filled in a large solution cavity in the Cotter-Jefferson City Dolomite some fifteen to twenty million years[7] after the dolomite was deposited. Those sands formed the St. Peter Sandstone, which proved to be more erosion-resistant over time; thus, it emerged to form a chimney-shaped prominence as the more soluble dolomite eroded around it. Clark encountered the hill after walking about a mile "on the L Sd. thro a Charming Bottom of rich Land"[8] on the south side of the river:

> then I assended a hill of about 170 foot on the top of which is a Moun and about 100 acres of Land of Dead timber on this hill one of the party says he has found Lead ore.[9] [Field Notes]

> assended a hill of about 170 foot to a place where the french report that Lead ore has been found, I saw no mineral of that description.[10] [Notebook Journal]

These journal entries suggest the report of lead ore did not occur during the expedition, but rather was an anecdote related to Clark by one of the engagés. This search for lead was important enough to document its lack of success, as Lewis did in his "Summary view of the Rivers and Creeks"[11] of the Missouri River (Codex O) composed sometime during the winter of 1804 to 1805 at Fort Mandan:

> the Missouri washes the base of a high hill which is said to contain lead ore, our surch for this ore however pruved unsuccessfull and if it does contain ore of any kind, it must be concealed.[12]

The captains were not mistaken in reconnoitering this locale for lead occurrences. This area is on the northeast fringe of the Central Mining District, and although it would be the least productive of Missouri's world famous lead districts,[13] it contributed to Missouri's standing as the leading producer of lead in the United States.[14] It is not coincidental that lead (in the form of the mineral galena) along with zinc (in the form of the mineral sphalerite) and other metal-sulfide mineral deposits were so closely associated with the state-wide occurrences of limestone and dolomite, because those carbonate deposits were essential to the emplacement of these ores.[15]

*A superlative example of lead (in the form of the mineral galena) and zinc (in the form of the mineral sphalerite) in a calcite matrix from one of Missouri's world famous lead districts.*

Lewis' disappointment in failing to find lead at Mine Hill was probably tempered by the knowledge that he had energetically fulfilled Jefferson's instructions earlier in St. Louis, in part by drawing upon one of the most useful books in the expedition's traveling library, the 1774 edition of Antoine Simon Le Page du Pratz's *The History of Louisiana*.[16]

## The History of Louisiana

Antoine Simon Le Page du Pratz's *The History of Louisiana* (1774) was originally published in French as *Histoire de la Louisiane* in 1758 (three volumes), but was translated into English in a two volume edition in 1763 and a single volume edition in 1774. Du Pratz, believed to be a Netherlands native who closely identified himself with the French, had some training in architecture and hydraulic engineering. Du Pratz spent the years between 1718 through 1734 in the lower Mississippi River valley running a plantation

and engaging in other entrepreneurial ventures. *The History of Louisiana* can be read as a practical guidebook describing the land forms, climate, agriculture, natural resources, flora, and fauna of Louisiana, but the book is largely acclaimed for its perceptive, non-judgmental, and sympathetic observations of the Natchez Indian culture, ethics, and social organization prior to the obliteration of the Natchez by the French.[17] The fame of this particular volume in Lewis and Clark circles is based in part on the fact that it survived the transcontinental journey intact and was returned to its owner Benjamin Smith Barton. Lewis' gracious inscription on the flyleaf (May 9, 1807) thanks Barton for the four-year loan of the book.[18]

For the most part, *The History of Louisiana* described the region's economic geology and mineralogical resources in fairly general, but roughly serviceable, terms. For example, du Pratz discussed the occurrence of various minerals he encountered in his forays throughout the lower Mississippi River Valley, with an emphasis on clays, "plaster," gypsum, pit-coal, salts, saltpeter, and stones for building.[19] In addition, a map that accompanied *The History of Louisiana*, entitled "*A Map of Louisiana, with the course of the Missisipi, and the adjacent Rivers, the Nations of the Natives, the French Establishments and the Mines; By the Author of ye History of that Colony. 1757,*" depicted locations of a salt pit and iron, lead, silver, and gold mines, by which du Pratz meant deposits and not necessarily active mining operations.

Du Pratz appeared to have particularly enjoyed searching for and discovering mineral ores, especially lead deposits. Upon completing a fruitful search for lead, he exclaimed, "I was highly pleased at this discovery, which was that of a lead-ore. I had also the satisfaction to find my perseverance recompensed; but in particular I was ravished with admiration, on seeing this wonderful production, and the power of the soil of this province, constraining, as it were, the minerals to disclose themselves."[20] Most intriguing for the purposes of ascertaining the source of Lewis and Clark's inquiries regarding the mineral resources of Louisiana, du Pratz opined, "the land which lies between the Missisippi and the river St. Francis…contain several mines: some of them have been assayed; among the rest, the mine of Marameg, on the little river of that name….There are some lead mines, and others of copper, as is pretended."[21] Although Lewis and Clark may have found the mineralogical information in *The History of Louisiana* useful, to the extent it provided a preview of what the lands of the lower Missouri River Valley might contain, du Pratz's identification of lead and other mines proximal to the St. Francis and Meramec Rivers may have prompted Lewis' inquiries about the current status and production of the lead mining during the time he was in St. Louis making final preparations for the expedition. Lewis apparently circulated a census/survey form letter in early January 1804 to the leading merchants and citizens of St. Louis inquiring about populations, demographics, imports and exports, and natural resources, including specific questions involving lead and other mining operations:

> 11. What are your mines and minerals? Have you lead, iron, copper, pewter, gypsum, salts, salines, or other mineral waters, nitre, stone-coal, marble, lime-stone, or any other mineral substance? Where are they situated, and in what quantities found?
> 12. Which of those mines or salt springs are worked? and what quantity of metal or salt is annually produced?[22]

## Glossary

**Brachiopod:** solitary marine invertebrates with bilaterally symmetrical valves of unequal shape and shape that distinguishes them from bivalves.

**Bryozoan:** aquatic colonial invertebrates with calcareous skeletons such as today's moss animals that superficially resemble corals.

**Carbonate:** sedimentary rocks composed primarily of minerals containing the carbonate ion; the two major types of carbonate rocks are limestone and dolomite.

**Chert:** a dense and very hard microcrystalline sedimentary rock composed of interlocking crystals of quartz (silicon dioxide or silica) less than thirty microns in diameter.

**Dolomite:** rock composed of calcium-magnesium carbonate.

**Crinoid:** echinoderms that live attached to the sea floor via a stalk similar to today's species of sea lilies.

**Lithologies:** the general physical characteristics of rocks in a particular area.

**Ordovician:** A period of Earth's geological history that began approximately 485.4 million years ago and ended approximately 443.8 million years ago.

**Paleodepositional:** the physical, chemical, and biological environment associated with the deposition of particular types of sediments in the distant geologic past.

**Solution cavity:** opening formed in carbonate rocks, such as limestone, where portions have been dissolved by naturally acidic percolating waters.

These inquiries yielded at least fourteen donated mineralogical specimens that Lewis relayed to Jefferson on May 18, 1804, nine of which were "Specimens of led oar from the Mine of Berton, situate on the Marimec River, now more extensively wrought than any other led Mine in <*Upper*> Louisiana."[23] There is no mention of a "Mine of Berton" or more correctly the "Mine à Breton," in *The History of Louisiana* because it was not until 1774 that François Azor dit Breton discovered rich lead deposits at a site approximately sixty miles southwest of St. Louis in the environs of present-day Potosi, Missouri.[24]

A year later, Lewis would enclose two additional Mine à Breton lead specimens in the shipment of minerals sent back East from Fort Mandan, a "Specimen of lead ore of Bertons mine on the Marimeg River" (Fort Mandan mineralogical specimen No. 27) and a "Specimen of the lead ore of Bertons' mine on the Marrimic River Upper Louisiana" (Fort Mandan mineralogical specimen No. 29).[25] Why Lewis sent these specimens from the Upper Missouri is uncertain, given he had already provided Jefferson with nine essentially equivalent specimens in the aforementioned mineral shipment of May 18, 1804. The author speculates these additions were intended to compensate for not locating lead ore deposits along the lower Missouri River,[26] including the unproductive June 4, 1804, exploration of Mine Hill.

## Roche Percée – "hole thro' the rock"

The expedition journal keepers did not comment upon anything of geological interest on June 5, 1804, but did see a Manitou pictograph[27] as noted by Sergeant Ordway: "we passed a high Clifts of Rocks on which was painted the pickture of the Devil on South Side of the River."[28] Over the next two days, the salient features documented by the Corps of Discovery would be along the north bank.

On June 6, 1804, Clark noted:

> passed a place in the projecting rock Called the *hole* thro' the rock, a ⟨Small⟩ round Cave pass thro the Pt. of rock's.[29] [Field Notes]
>
> Split rock Creek at 5 ms. on the S. S…this Creek takes its name, [from] a projecting rock with a hole thro:[30] [Notebook Journal]

Clark and Sergeant John Ordway, who also mentioned the "projecting Rock the hole of the Split Rock River" in his journal,[31] used the "Split Rock" nomenclature from the Indian Office Map of 1797.[32] This arch feature, composed of Mississippian-age Burlington-Keokuk Limestone,[33] is still visible at Katy Trail[34] mile 166.9 and was known to French voyageurs and engagés as "Roche Percée" or Pierced Rock. The Burlington-Keokuk Limestone is millions of years younger than the carbonate rocks passed by the expedition downriver near Sugar Loaf Rock, but they were deposited in a similar warm, shallow marine shelf setting offshore of an ancient continental land mass. In the area of Roche Percée, the Burlington-Keokuk Limestone is a medium- to coarse-crystalline, light gray to white limestone, although colors ranging from tan to peach are evident.[35]

*On June 6, 1804, William Clark noted the expedition "passed a place in the projecting rock Called the* hole *thro' the rock," known as Roche Percée or Pierced Rock, which is composed of Mississippian-age Burlington-Keokuk Limestone.*

The Roche Percée arch formed as a consequence of vertical linear joints or fractures that developed roughly parallel to the bluff face. These zones of weakness were exploited by slightly acidic rainwater (caused by atmospheric carbon dioxide) that dissolved the calcium carbonate matrix and eventually created an exposed "fin" of rock. The base of the fin was then perforated, and the arch was enlarged through continued erosion, including frost action as a result of the higher moisture prevalent at ground level. The Burlington-Keokuk Limestone is known to have numerous caves and other solution cavity features. The author reconnoitered the middle to upper section of the Big Manitou Bluffs along the Missouri

River between Roche Percée and McBaine [mile 169.5] and found a series of solution cavities at mile 168.25 and a smaller arch feature at mile 168.6.

## Big Moniteau Rock Art Site Pictographs

On the morning of June 7, 1804, as the expedition proceeded upstream, only Sergeants John Ordway and Charles Floyd took note of a large spring on the north bank of the river:

> passed high Clifts & a fine large Spring which Run from under the clifts of Rocks.[36] *Ordway*

> past Som [s]prings Comes out of Clifte.[37] *Floyd*

When Ordway and Floyd spoke of the spring running "from under" and "out of" the cliffs, they were alluding to a rivulet emerging from a roughly forty-foot wide cavern (now designated as Lewis and Clark Cave). Only Ordway and Floyd recorded the presence of the spring (present-day Torbett Spring), which was quite noticeable because of its proximity to the Missouri River (it discharges from the cavern roughly seventy feet from the north bank of the river) and the clarity of its cascading waters is in marked contrast to the turbid waters of the Missouri River.

Just to the left (west) of the cavern and about halfway up the cliff face, there is a linear series of red pigment pictographs. Some early accounts of this location, now referred to as the Big Moniteau Rock Art Site,[38] attribute their discovery to the Lewis and Clark Expedition. For instance, the *History of Boone County* (1882) stated:

> Who the artists were that sketched these pictures, and what (if anything) they represent, cannot now but be conjectured. They have existed since the first white men told of this country. The first printed mention of them is made by Lewis and Clark, who saw them in 1804. Doubtless they are the work of the mound builders, or of some other race akin to them.[39]

The *History of Boone County*'s attribution to Lewis and Clark for the original documentation of these pictographs is erroneous because none of the journal keepers mention the pictographs,[40] and it would another fifteen years before they were sighted by Major Stephen H. Long.[41] A close examination of the site was conducted by Charles Teubner of Jefferson City, Missouri, in the fall of 1881 and Teubner's

*The expedition journal keepers did not note the pictographs at the Big Moniteau Rock Art Site on June 7, 1804. These red pigment motifs, including some that have eroded away since the 1800s, have occasionally been confused with Clark's subsequent description of "Several Courious Paintings and Carveing" that were formerly located just upriver near present-day Rocheport, Missouri.*

account was subsequently published in August 1882 in *The Kansas City Review of Science and Industry*.[42] Of interest to us is Teubner's description of what he deemed Group No. I, the linear random grouping of individual pictographs directly above the spring:

> The face of the cliff from the outlet of this spring extends upward nearly one hundred feet, the top overhanging six or eight feet, giving the whole a concave appearance, which accounts for the preservation of the pictographs. At the height of forty-five feet, immediately over the spring, is the largest group of pictographs (No. I).[43]

Teubner then provided measurements and a very detailed sketch of the ten figures he identified. Given the height of the pictographs (estimated to be 45 feet above the spring), these exacting dimensions suggest Teubner climbed up and crossed over the "narrow ledge [that] extends along the cliff which served as a foothold for the artists" to measure the figures directly. Teubner provided only rudimentary interpretations of the Group No. I figures, but his sketches are invaluable as the best known representation of the pictographs before erosion removed several of the images and faded the remainder.

The aforementioned *History of Boone County* description of the pictographs appears to be primarily a paraphrase of Teubner's account in *The Kansas City Review of Science and Industry* because it is organized in a similar manner and in certain sections it repeats almost verbatim Teubner's physical description of the area. This paraphrasing, however, did include an

expanded description of the figures Teubner observed:

> This comprises, among other pictures and hieroglyphs, two rudely executed drawings of human figures, perhaps twenty inches in height, with arms extended; one small human figure with a staff in its hand; numerous circles, with dots and crosses in the centre; spots within semi-circles, half resembling the human eye, etc.

Today, of the ten Group No. I red pigment motifs sketched by Teubner, only the crescent motif with an oval (one of the "spots within semi-circles") remains relatively unchanged (no trace of the second crescent motif with an oval was observed by the author). One of the human figures (possibly a pregnant woman) is gone, but the outline of the largest anthropomorphic figure (the arms and torso particularly) and the third small human figure (possibly holding a staff or snake) are still visible. Faded traces of the quartered or spinning cross-in-circle and two other circle motifs are also evident. It has been suggested that perhaps the pictographs were not here at the time of the Lewis and Clark's passage, thus accounting for the absence of any description of this feature in the expedition journals. However, it seems more likely the Corps of Discovery's attention was focused on noting the presence of Torbett Spring while passing this locale and there is no indication the expedition stopped here, which would have afforded the best opportunity to observe and describe the pictographs.

## "White red & blue flint, of a verry good quallity"

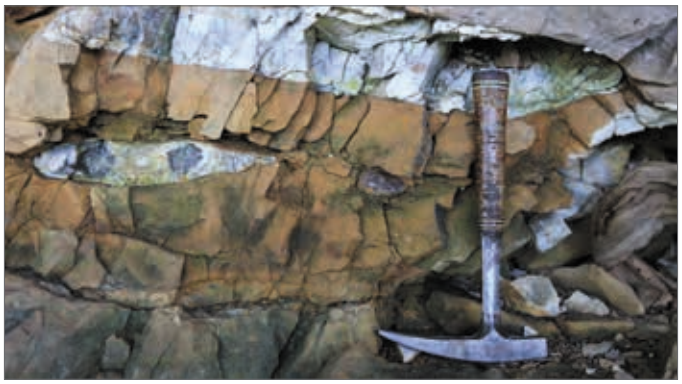
Upon reaching Moniteau Creek on June 7, 1804 (just west of present-day Rocheport), Clark noted:

> a Short distance above the mouth of this Creek, is Several Courious Paintings and Carveing in the projecting rock of Limestone inlade with white red & blue flint, of a verry good quallity, the Indians have taken of this flint great quantities. [Notebook Journal]

The term "flint" can be technically synonymous with chert, a dense and very hard microcrystalline sedimentary rock composed of interlocking crystals of quartz (silicon dioxide or silica). The gray to dark gray, medium- to coarse-crystalline limestone upriver of Moniteau Creek is the same formation observed at Roche Percée (Burlington-Keokuk Limestone). The author found a high density of embedded chert along the

*Upriver of Moniteau Creek, there are exposures of the Burlington-Keokuk Limestone where the rock matrix is dominated by embedded chert similar to Meriwether Lewis' description of flint occurrences: "in this solid and massive rock, are inclosed stones…of bulbous and indeterminate shapes, from an ounce to ten or twelve pounds weight." The scale of the outcrop is indicated by the one-foot long rock hammer.*

2.5-miles of limestone cliffs northwest of Rocheport, although a complete assessment of relative chert density as compared to exposures downriver was hampered by the preponderance of multiple varieties of ivy and other vegetation shrouding the riverside cliffs. At Katy Trail mile 179.37, the author uncov-ered a ten-foot wide by seven-foot high exposure of the Burl-ington-Keokuk Limestone to find the rock matrix dominated by mottled milky white to a smoky medium light gray chert possessing just a tincture of coloration. There were several lo-cations, particularly upriver in the vicinity of Katy Trail mile 181.07 and also at mile 175.8 west of the Big Moniteau Rock Art Site, which have occurrences of chert that unequivocally fit Clark's "white red & blue" description. Within a primarily white nodular matrix, various shadings of very dusky red, gray-ish red, blackish red to dusky yellowish brown, pale brown, and very pale blue are evident, caused by the inclusions of organic matter and metal oxides and hydroxides such as iron oxide.



*A Burlington-Keokuk Limestone chert exposure that accurately matches William Clark's June 7, 1804, description of a "Limestone inlade with white red & blue flint, of a verry good quallity." The head of the rock hammer is seven inches long.*

Clark's comment regarding Native Americans availing themselves of this chert in "great quantities" is very interesting. It is not known if Clark observed evidence of active quarrying or was just making a general observation of the use of this chert by local Native populations. The author surmises these chert deposits were too distant or less desirable for extraction by the Mississippian peoples in the great religious cultural center of Cahokia in present-day Illinois. Interpretive displays and artifacts inside the excellent Cahokia Mounds Interpretive Center indicate that eighty percent of the tools uncovered thus far were crafted from the Crescent Hills chert quarried from ridges just south of the Meramec River only thirty miles west-southwest of Cahokia. (Material derived from southern Illinois was another prime source of chert for hoes, knives, arrow points, and ceremonial objects). Perhaps the Crescent Hills chert was more desirable in its quality or propensity for clean conchoidal fracturing, but on a practical basis, it was also more than 100 miles closer to Cahokia than the Big Manitou Bluff chert deposits.

This Rocheport section of the Burlington-Keokuk Limestone is quite fossiliferous, primarily dominated by crinoids, but also containing brachiopods and bryozoans. These occurrences escaped the notice of the June 1804 journal keepers, but similar instances downriver were not missed by the expedition's chief naturalist. In his "Summary view of the Rivers and Creeks," Lewis brought together a series of observations, some of which were not found in Clark's, the enlisted men's, or even Lewis' brief Mississippi River journal, summarizing the limestone lithologies up to the confluence of the Missouri and Gasconade Rivers:

> whenever the river washes the base of the hills on either side, it discloses large quarries of this [lime] stone, lying in horizontal stratas, from ten to 40 feet in thickness. this stone is of light brown colour, with a smal tint of blue; fracture imperfect conchoidal; when broken it presents the appearance of a variety of small shells and other marine substances, of which it seems to be entirely composed. in this solid and massive rock, are inclosed stones of yellowish bron flint, of bulbous and indeterminate shapes, from an ounce to ten or twelve pounds weight.

The mention of "small shells and other marine substances" is an indication that Lewis adeptly noted the fossiliferous content of these lower Missouri River limestones while also

*Meriwether Lewis: "this stone is of light brown colour, with a smal tint of blue; fracture imperfect conchoidal; when broken it presents the appearance of a variety of small shells and other marine substances, of which it seems to be entirely composed."*

accurately summarizing their predominant colors, fracture tendencies, and the prevalent occurrences of chert deposits.

The combined efforts of Meriwether Lewis and William Clark in describing the limestone-dominated terrain along the Mississippi River and lower Missouri River rank as one of the expedition's best geological reconnaissance efforts. Unbeknownst to them at the time, both men would have future roles in the development of this region known as the St. Genevieve District, including its lead resources. As territorial governor, Lewis would be burdened with the nearly impossible task of handling an avalanche of petitions from private individuals who were granted the right to mine lead under the former Spanish land grant and concession system. Lewis attempted to reconcile those claims with the new Federal leasing program for lead mining that seques-

### *William Clark, August 22, 1804:*

*… Bluff Contained alum, Copperas, Cobalt, Pyrites; a alum rock Soft & Sand Stone. Capt. Lewis in proveing the quality of those minerals was near poisoning himself by the fumes & task of the Cabalt which had the appearance of Soft Isonglass— Copperas & alum is verry pure . . . <Eight> Seven miles above is a Clift of Allom Stone of a Dark Brown Colr. Containing also in crusted in the Crevices & Shelves of the rock great qts. of Cabalt, Semented Shels & a red earth. from this the (3) river bends to the East and is within 3 or 4 miles of the River Soues at the place where that river . . .Capt Lewis took a Dost of salts to work off the effects of the Arsenic, we Camped on the S. S.*

tered those same lands for leasing under the public domain. Clark, following his move to St. Louis in 1808, often touted the prospects and economic opportunities of lead mining in Missouri as evinced by several letters to his brother Jonathan. This could be considered a convincing fulfillment not only of Jefferson's instructions to Lewis but also of Jefferson's directives to the French botanist André Michaux in April 1793, when Jefferson sought information on the "productions animal, vegetable, & mineral so far as they may be new to us & may also be useful or very curious." The resources of limestone, chert, and lead remain both "very curious" to geologists and also exceptionally "useful" to the continued development of the vibrant rock resource economy of the State of Missouri.

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*John W. Jengo is a professional geologist and Licensed Site Remediation Professional who works for an environmental consulting firm in Pennsylvania, specializing in refinery and coal power plant closures and contamination cleanups, and low-head dam removals to restore migratory fish passage on the East Coast. He has published numerous articles in* We Proceeded On *since 2002 on the subject of Lewis and Clark's mineral collection and the significance and scientific influence of their geological discoveries.*

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## Notes

1. Gary E. Moulton, ed., *The Journals of the Lewis and Clark Expedition*, 13 vols. (Lincoln, Nebraska: University of Nebraska Press, 1983-2001), 9:9-10. William Clark journal quotations for June 1804 are from volume 2, by date. All *Atlas* citations in the ensuing text are from volume 1, by map number. Sergeant John Ordway and Sergeant Charles Floyd journal quotations are from volume 9, by date.

2. See John W. Jengo, "*'it is a Limestone principally'* – Lewis and Clark's Initial 'Mineral Productions' Observations," *We Proceeded On*, 45:3 (August 2019): 24-33 for an explanation of the various processes by which limestone (calcium carbonate), dolomite (calcium-magnesium carbonate), and chert (silicon dioxide or silica) can form.

3. Donald Jackson, ed., *Letters of the Lewis and Clark Expedition with Related Documents, 1783-1854*, 2nd ed., 2 vols. (Urbana, Illinois: University of Illinois Press, 1978), 1:63.

4. Moulton, ed., *Journals*, 2:276.

5. Michael A. Siemens, *Bedrock Geologic Map of the Hartsburg 7.5' Quadrangle, Boone and Cole Counties, Missouri*, Missouri Department of Natural Resources, Missouri Geological Survey, OFM-2015-661-GS, 2015, scale 1:24,000. The Ordovician Period was approximately 490.9 to 443.4 million years (Ma) ago per Peter M. Sadler, Roger A. Cooper, and Michael Melchin, "High-Resolution, Early Paleozoic (Ordovician-Silurian) Time Scales," *Geological Society of America Bulletin*, 121:5/6 (May/June 2009): 887-906. To determine the age dates or time gaps between various formations for this article, the author had to cross-reference numerous technical papers to determine which biostratigraphic (fossil) zone a particular lithostratigraphic formation occupies, then correlate that biostratigraphic zone to a local North American chronostratigraphic stage and series, then correlate that designation to age date charts that include international chronostratigraphic units with assigned global geochronological age ranges such as K.M. Cohen, S.C. Finney, P.L. Gibbard, and J.-X. Fan, *The International Commission on Stratigraphy (ICS) International Chronostratigraphic Chart v2019/05* (2013; updated May 2019), Episodes 36: 199-204. The *ICS International Chronostratigraphic Chart* has the Ordovician Period as occurring approximately 485.4 to 443.8 Ma ago. The cited age dates in this article are approximate because work continues on refining the boundaries of virtually every chronostratigraphic (rock) and geochronological (age) unit in the geological record.

6. The Great American Carbonate Bank is a sequence of primarily carbonate rocks deposited in relatively shallow seas on and surrounding the Laurentian paleocontinent during the Cambrian to earliest middle Ordovician periods when this enormous area (extending roughly 1,860 miles from present-day Nevada to Tennessee and 930 miles from present-day Texas to Minnesota) was located within 30 degrees of the paleoequator. See James R. Derby, Robert J. Raine, M. Paul Smith, and Anthony C. Runkel, "Paleogeography of the Great American Carbonate Bank of Laurentia in the Earliest Ordovician (Early Tremadocian): The Stonehenge Transgression," 5-13, and William A. Morgan, "Sequence Stratigraphy of the Great American Carbonate Bank," 37-82, in James Derby, Richard Fritz, Susan Longacre, William Morgan, and Charles Sternbach, eds., *The Great American Carbonate Bank: The Geology and Economic Resources of the Cambrian-Ordovician Sauk Megasequence of Laurentia, AAPG Memoir 98* (Tulsa, Oklahoma: The American Association of Petroleum Geologists, 2012).

7. Derived from interpretations of Raymond L. Ethington, John E. Repetski, and James R. Derby, "Ordovician of the Sauk Megasequence in the Ozark Region of Northern Arkansas and Parts of Missouri and Adjacent States," 275-300, and John F. Taylor, John E. Repetski, James D. Loch, and Stephen A. Leslie, "Biostratigraphy and Chronostratigraphy of the Cambrian-Ordovician Great American Carbonate Bank," 15-35, in Derby, et al., eds., *Great American Carbonate Bank*.

8. Moulton, ed., *Journals*, 2:275.

9. Moulton, ed., *Journals*, 2:275.

10. Moulton, ed., *Journals*, 2:276.

11. Moulton, ed., *Journals*, 3:336.

12. Moulton, ed., *Journals*, 3:341.

13. The others being the Tri-State District in southwest Missouri, which also includes parts of Kansas and Oklahoma, and the world-famous Southeast Missouri Lead District, including the Viburnum Trend, Mine La Motte-Fredericktown, and the Old Lead Belt subdistricts, the latter from which Lewis would obtain samples while in St. Louis.

14. Cheryl M. Seeger, "History of Mining in the Southeast Missouri Lead District and Description of Mine Processes, Regulatory Controls, Environmental Effects, and Mine Facilities in the Viburnum Trend Subdistrict," in Michael J. Kleeschulte, ed., *Hydrologic Investigations Concerning Lead Mining Issues in Southeastern Missouri*, U.S. Geological Survey Scientific Investigations Report 2008-5140, 2008, 5-33.

15. In an exceptionally complex tectonic and geochemical synergy that occurred after the deposition of the carbonate rocks, most of these Mississippi Valley-Type lead-zinc deposits were emplaced during later Paleozoic time, including during the late Mississippian (~330 Ma) to middle Permian (~265 Ma) tectonic plate collisions that formed the Ouachita Mountains. These intense tectonic events and continual uplifts resulted in high groundwater temperatures (75 to 200°C), a steep topographic gradient, and groundwater flow velocities conducive to the leaching of lead from older granite/rhyolite basement rocks and transport of these seawater-infused metal-enriched fluids northward into the host carbonate rocks in present-day Missouri. This process is technically referred as "topographically-driven gravitational fluid flow." Geochemical mixing with other fluids and changes in pH allowed the metals to precipitate out of solution and either replace the carbonate rock or fill void spaces typically found in limestone and dolomite. For more details, see David L. Leach, Ryan D. Taylor, David L. Fey, Sharon F. Diehl, and Richard W. Saltus, "A Deposit Model for Mississippi Valley-Type Lead-Zinc Ores," Chapter A of *Mineral Deposit Models for Resource Assessment*, U.S. Geological Survey Scientific Investigations Report 2010-5070-A, 2010, 52 p.

16. Antoine Simon Le Page du Pratz, *The History of Louisiana, or of the Western Parts of Virginia and Carolina: Containing a Description of the Countries that lie on both Sides of the River Missisipi: With an Account of the Settlements, Inhabitants, Soil, Climate, and Products*, Translated from the French of M. Le Page du Pratz; with some Notes and Observations relating to our Colonies, A New Edition (London, England: Printed for T. Becket, Corner of the Adelphi, in the Strand, 1774).

17. Joseph G. Tregle, Jr., ed., *The History of Louisiana*, Translated from the French of M. Le Page du Pratz (Baton Rouge, Louisiana: Louisiana State University Press, 1975) [a facsimile reproduction of the 1774 edition]. It was the observations during the time du Pratz spent with the Natchez between 1720 and 1728 and his reporting of the Natchez Massacre of 1729 that have made *The History of Louisiana* an invaluable ethnological document.

18. The inscription is reproduced twice in Paul Russell Cutright, *Contributions of Philadelphia to Lewis and Clark History* (West Conshohocken, Pennsylvania: Philadelphia Chapter, Lewis and Clark Trail Heritage Foundation, James-Allan Printing and Design Group, LLC, 2001, *with site maps by* Frank Muhly), 14, 24. Curiously, Cutright did not mention it was the 1774 edition

Lewis borrowed. Donald Jackson surmised correctly back in 1959 that the captains were "most likely [using] the 1774 translation;" see Donald D. Jackson, "Some Books Carried by Lewis and Clark," *Bulletin of the Missouri Historical Society* 16 (October 1959): 9.

19. Du Pratz, *The History of Louisiana*, 131, 138-139, 149, 159-160, 162, 164, 167, and 171-172.

20. Du Pratz, *The History of Louisiana*, 147.

21. Du Pratz, *The History of Louisiana*, 177. The St. Francis River, which debouches into the Mississippi River south of Memphis, Tennessee, roughly parallels the Mississippi River from northern Arkansas into southeastern Missouri up to Farmington, Missouri. The Meramec River is located southwest of St. Louis.

22. Jackson, ed., *Letters*, 1:162.

23. Jackson, ed., *Letters*, 1:192. These samples of lead ore were presented by Nicholas Boilvin and Peter Chouteau. The Mine à Breton is not situated on the Meramec River, which has complicated the author's efforts in determining the true attribution of these lead samples, but the mines were located in the Meramec River *watershed* by virtue of being adjacent to Mine à Breton Creek (now Breton Creek), a tributary of Mineral Fork, which flows into the Big River, a major tributary of the Meramec River. The various spellings of the Meramec River by Meriwether Lewis in the historical record (such as Marimec, Marimeg, and Marrimic) was another factor to reconcile in the author's research.

24. Walter A. Schroeder, *Opening the Ozarks: A Historical Geography of Missouri's Ste. Genevieve District 1760-1830* (Columbia, Missouri: University of Missouri Press, 2002), 284-285. According to Schroeder, Mine à Breton (also rendered as Mine au Breton) was also called Burton, or using Lewis' spelling, Berton.

25. For details on the three separate mineral collections Meriwether Lewis assembled during the expedition, see John W. Jengo, "'Specimine of the Stone': The Fate of Lewis and Clark's Mineralogical Specimens," *We Proceeded On*, 31:3 (August 2005): 17-26. Any reference to a mineral specimen in the narrative prefaced by "Fort Mandan mineralogical specimen" refers to those minerals sent back East from Fort Mandan in April 1805 as outlined in Moulton, ed., *Journals*, 3:473-478.

26. Of the "Mine River" (present day Lamine River) passed on June 8, 1804, Lewis wrote in his "Summary view" of another thwarted inquiry: "*Mine river*…derives it's name from some lead mines which are said to have been discoved on it, tho' the local situation, quality, or quantity of this ore, I could never learn." Moulton, ed., *Journals*, 3:342.

27. "Manitou" is the French adaptation of an Ojibwe, Ojibwa, or Chippewa and other Algonquian-speaking native word for a supernatural spirit, in addition to representing a much broader manifestation of primeval, transcendental forces in nature.

28. Moulton, ed., *Journals*, 9:10.

29. Moulton, ed., *Journals*, 2:281.

30. Moulton, ed., *Journals*, 2:282.

31. Moulton, ed., *Journals*, 9:10.

32. Moulton, ed., *Atlas*, Map 5.

33. Trevor Ellis, *Bedrock Geologic Map of the Jamestown 7.5' Quadrangle, Boone and Moniteau Counties, Missouri*, Missouri Department of Natural Resources, Missouri Geological Survey, OFM-2015-657-GS, 2015, scale 1:24,000. These two formations, mapped as a single unit because of their similar lithologies, were deposited in early to middle Mississippian time (351.3-341 Ma), part of the Paleozoic era within the Carboniferous Period. This age date was derived from M. Menning, Alexander S. Alekseev, et al., "Global Time Scale and Regional Stratigraphic Reference Scales of Central and West Europe, East Europe, Tethys, South China, and North America as used in the Devonian-Carboniferous-Permian Correlation Chart 2003 (DCP 2003)," *Palaeogeography, Palaeoclimatology, Palaeoecology*, 240:1-2 (October 2006): 318-372.

34. The carbonate outcrops discussed in this article were observed along the Katy Trail, a rails-to-trails railbanking park that was developed along the former corridor of the Missouri-Kansas-Texas Railroad (MKT or Katy). Milepost markers placed at every mile were adopted from the historic railroad mileage system. The author measured distances between the signed mileposts to estimate the trail mileage location for the geological features discussed herein.

35. Close examination of these outcrops by the author indicated the published description of "tan to peach" can be more technically described as light brown, light yellowish gray, grayish orange, to grayish orange pink.

36. Moulton, ed., *Journals*, 9:11.

37. Moulton, ed., *Journals*, 9:378.

38. The Big Moniteau Rock Art Site, also referred to as the Torbett Spring-Rocheport site, has a Smithsonian archaeological identifier trinomial designation of 23BO476. The site can be viewed at Katy Trail mile 174.4.

39. *History of Boone County, Missouri, written and complied from the Most Authentic Official and Private Source; including a History of its Townships, Towns and Villages* (St. Louis, Missouri: Western Historical Company, 1882), Chapter XX, Missouri Township, Remarkable Natural Features, The Pictured Rocks, 976-978.

40. The Lewis and Clark Expedition Across Missouri interpretive sign at the Big Moniteau Rock Art Site correctly notes this. The author has noted that the "*Several Courious Paintings and Carveing*" described by Clark on June 7, 1804 (Moulton, ed., *Journals*, 2:284), just above "big Monetou" (now Moniteau) Creek (which appear to have been destroyed during construction of the Katy Railroad and MKT tunnel just west of Rocheport) have often been conflated with the pictographs here at the Big Moniteau Rock Art Site. Given the proximity of these pictograph sites, this has been a consistent cause of confusion over the years.

41. For a review of the later sightings of these pictographs, including on July 6, 1819, by Stephen H. Long, and those of the "*Several Courious Paintings and Carveing*" pictographs just above Moniteau Creek near Rocheport originally described by William Clark, see Carol Diaz-Granadoes and James R. Duncan, *The Petroglyphs and Pictographs of Missouri* (Tuscaloosa, Alabama: The University of Alabama Press, 2000), 9-10.

42. Charles Teubner, "Indian Pictographs in Missouri," in Theodore S. Case, ed., *The Kansas City Review of Science and Industry*, 6:4 (August 1882): 208-210.

43. Teubner, "Indian Pictographs," 210. The author would defer to professional archaeologists whether the original motifs were a linear sequential group conveying some type of a story as opposed to a random grouping of individual pictographs.

44. For instance, Teubner in *The Kansas City Review of Science and Industry* (p. 210) described the springs as "Coming out of a cave-like opening, it rushes in a series of zigzag leaps over moss-covered rocks into the river. The volume of water is large enough to drive a good sized flouring mill" while the *History of Boone County* (p. 977) stated "Coming out of a cavernous opening, it rushes in a series of tortuous leaps over moss-covered rocks into the river. The volume of water discharged would drive an ordinary mill."

45. *History of Boone County*, 977.

46. Moulton, ed., *Journals*, 2:284.

47. Molly A. Starkey, *Bedrock Geologic Map of the Rocheport 7.5' Quadrangle, Boone, Cooper, Howard, and Moniteau Counties, Missouri*, Missouri Department of Natural Resources, Missouri Geological Survey OFM-2014-645-GS, 2014, scale 1:24,000.

48. Cahokia Mounds, located seven miles east-northeast of St. Louis, was the largest pre-Columbian Native American settlement/chiefdom in the present-day United States. This Mississippian culture, a mound building Native American civilization (800 Common Era [CE] to 1600 CE, depending on region), reached its zenith at Cahokia between 1050 and 1200 CE. This Mississippian cultural period should not be confused with the geological Mississippian Subperiod that occurred between 358.9 and 323.2 Ma.

49. Crinoids are echinoderms that live attached to the sea floor via a stalk similar to today's species of sea lilies, brachiopods are solitary marine invertebrates with bilaterally symmetrical valves of unequal shape and shape which distinguishes them from bivalves, and bryozoans are aquatic colonial invertebrates with calcareous skeletons such as today's moss animals that superficially resemble corals.

50. Moulton, *Journals*, 3:336.

51. Moulton, *Journals*, 3:339.

52. For a superb and cogent explanation of this controversial problem, see Schroeder, *Opening the Ozarks*, 135-145.

53. See James J. Holmberg, ed., *Dear Brother, Letters of William Clark to Jonathan Clark* (New Haven, Connecticut: Yale University Press in association with The Filson Historical Society, 2002), 153, 161, 167. The author surmises the "verry valuable Lead mine" Clark referenced in his November 24, 1808, letter (p. 167) that "has been descovered nearly west of this place about 60 miles" could be affiliated with the very same Mine à Breton region from which Lewis obtained donated lead samples for Jefferson in 1804.

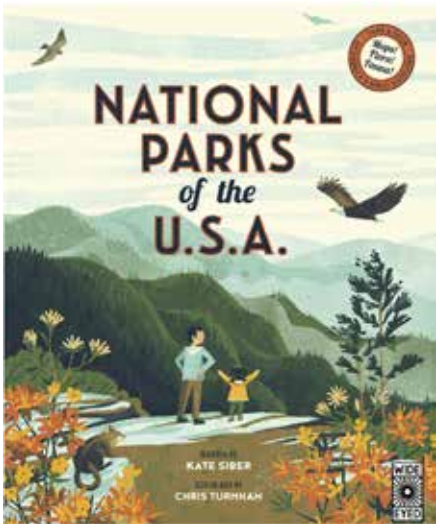
54. Jackson, ed., *Letters*, 2:670. The Michaux instructions have been read as the rough draft of Jefferson's instructions to Meriwether Lewis a decade later.

# Reviews

## *National Parks of the U.S.A.*

By Kate Siber
Illustrated by Chris Turnham
London: Wide-Eyed Editions, an imprint of the Quarto Publishing Group, 2018, 112 pp.
Hardcover $25.00.

Reviewed by Barb Kubik




***National Parks of the U.S.A.***, colorful and beautifully illustrated, is a great read and a great gift for your children, your grandchildren, your nieces and nephews, and your local library.

The author, Kate Siber, has written a vibrant and imaginative book for young readers six to ten years of age about some of our national parks. Siber divides the nation into seven regions, East, Central, Rocky Mountains, Southwest, West, Alaska, and Tropics, and highlights national parks in each region. No matter what your interests—natural history, geology, tribal cultures, or waterways—or which region you plan to visit, there is a park for you. There are underwater parks, parks which are an island in and of themselves, parks in the desert and in the swamps, parks in the mountains and on the prairies.

Each park has a two-page introduction plus two pages of factual information. Included are a simple map and important facts such as the park's size and the date it was established, as well as information about some of the park's most interesting features to "explore"—geology, natural history, flora and fauna, tribal cultures, and historic sites. Chris Turnham's engaging illustrations offer delightful details limned in a broad spectrum of the appropriate natural colors.

Siber's book speaks to the things Lewis and Clark Trail Heritage Foundation and Lewis and Clark National Historic Trail staff, members, and volunteers value—exploration, natural history, human history, cultural respect, and site stewardship. With every page, Siber and Turnham encourage us to explore the parks, enjoy the wildlife, and learn about our natural and human environment.

***National Parks of the U.S.A.*** has received a number of education and science awards, one reviewer calling the book a *"feast for the eyes."* While no national parks specific to the trail of the Corps of Discovery or the tribal stories of the journey are included in this book, there are many parks on the periphery of the Lewis and Clark National Historic Trail and the story. If I were to offer the author any suggestions, it would be these: present a stronger stewardship message and include each park's website. ∎

The book is available at national park stores, Barnes and Noble, Target, and Amazon for $25.00 (new), as well as online from the publisher, Wide-Eyed Editions in the United Kingdom, for about £17.99 (~$21.00).

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*Barb Kubik has lived and worked along the Pacific Northwest portion of the Lewis and Clark National Historic Trail for fourty-plus years. Barb is a historian, author, and educator, and a long-time member of the Lewis and Clark Trail Heritage Foundation's Board of Directors and of several committees—Archives and Library, Meeting Planning, the Editorial Board and Education and Scholarship. In her work as a historian, she has carefully explored the lives of members of the Corps, including John Colter and all three members of the Charbonneau family, the Corps' scientific observations of condors and mosquitoes, and the concept of volunteers and of "voting" in the Corps of Discovery. She lives in Vancouver, Washington.*

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*One of the superb illustrations by Chris Turnham.*

# Letter to the Editor

Letters to the Editor used to be one of my favorite features of WPO. Are members not sending them anymore, or is it just a service that has been dropped in the recent format changes? Anyway. . .

Thank you for running the fifty-year retrospective on the Lewis and Clark Trail Heritage Foundation in this year's February issue. I'm certain many people saw things in many different ways, but there is at least one factual error to correct. On page nineteen toward the bottom of the second column, there is a listing of chapters formed between 1994 and 2007. In the sentence on non-trail states, "Reaching the Rockies (Colorado, 2002)," is listed at the end. A chapter by that title was formed in 2002 and quickly got used to being "at the end," of lists, but in Montana not Colorado. Its formation had nothing to do with the Bicentennial and everything to do with filling a major L&C history gap between Great Falls and Helena.

A Montana Department of Transportation "FOR SALE" sign posted in 2000 unwittingly prompted eventual formation of a canyon chapter. A large parcel of land was up for public auction, but later became a state park midway between Cascade and Craig. It is now listed on the National Register of Historic Places. It was named Tower Rock in 1805 by Captain Meriwether Lewis.

LCTHF's archives substantiate that there was a Reaching The Rockies Chapter—with an emphasis on a capitalized T—and that Montanans formed it in 2002.

— Cheryl Hutchinson
Cascade, Montana

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**Editor's note:** We love letters to the editor, and encourage readers to write to correct, clarify, praise, quibble, suggest, rebuke, or just to call our attention to things that we might otherwise fail to observe. The more the merrier.

Lewis & Clark
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