ON THE RIVERS WITH LEWIS & CLARK
Contents

Letters: Charlottesville; astronaut; fuzzy math; bears; novel 2

From the Directors: Old words, new challenge 4

From the Bicentennial Council: L&C as a lens on history 5

Eagle Feather Goes to Washington 10

The Arikara’s journey and his untimely demise had long-term consequences for U.S.-Indian relations

By Mark Chalkley

Charlottesville Journal 13

A cold but inspiring kickoff for the L&C Bicentennial

Photo Essay by Taylor Haynes

On the Rivers with Lewis and Clark 17

The Corps of Discovery rowed, towed, paddled, poled and sailed more than 9,000 miles

By Verne Huser

Meriwether Lewis’s Ingenious Iron Boat 25

“The Experiment,” whose design owed much to the bark canoe, was a brilliant concept but a practical failure

By Mark W. Jordan

Reviews 36

Exploring Lewis and Clark; Brian Hall’s novel; Moore and Haynes; Slosberg CD. In Brief: Fincastle; L&C glossary; Hamilton’s six-volume set; Sierra Club trail guide; two new cookbooks

L&C Roundup 46

Olson moves on; extending the L&C Trail; Cathlapotle project; L&C in other publications; for the record

Passages 48

LCTHF co-founder Bill Sherman

On the cover

We chose Lewis and Clark on the Lower Columbia, painted in 1905 by Charles M. Russell, for the cover because of its obvious tie-in with “On the Rivers with Lewis and Clark,” Verne Huser’s article about the Corps of Discovery’s watercraft, which begins on page 17. (Painting courtesy the Amon Carter Museum, Fort Worth, Texas.) Russell’s depiction of the explorers’ encounter with Pacific Coast Indians is full of drama but contains errors of fact and historical interpretation. Would readers care to comment?
In January, I attended the first few days of the inaugural event of the Lewis and Clark Bicentennial, in Charlottesville, Virginia—a memorable experience.

The opening ceremonies, held in bright sunlight but bone-chilling cold at Monticello, were mercifully short. They made a strong impression despite the frigid conditions, including as they did the arresting juxtaposition of Jefferson’s neoclassical mansion and chanting drummers from the Blackfeet, Arikara, and Mandan nations. It must have been the first time such sounds were heard in that place. An especially striking touch was supplied by a color guard of Native-American veterans of the Vietnam era, who presented the flags of various tribes while the mixed crowd of Lewis and Clark enthusiasts, costumed Corps of Discovery reenactors, and media representatives looked on.

At one point I found myself in a room where I could see a braided Blackfeet or Shawnee tribesman in easy hailing distance from one of William Clark’s descendants, distinctive in his handlebar mustache.

Although everyone got along well, I sensed an underlying (and explicitly acknowledged) presence of two different and not wholly compatible “takes” on the expedition and the westward expansion that followed in its wake: the pride and enthusiasm of people (mostly European-Americans) who embrace it as a great adventure of discovery, and the concerns of many others (mostly Native Americans) who view its consequences with a great sense of loss.

For me, one of the highlights of the commemoration was seeing and hearing author William Least Heat Moon, who spoke at a morning panel on “Experiences of Writers on the Lewis and Clark Trail.” He is nearly as compelling a speaker as he is a writer. I also enjoyed the remarks of Dayton Duncan, Stephenie Ambrose Tubbs, and historical novelist James Thom, who regaled us with descriptions of his more extreme research techniques, which have included wading hip-deep in freezing swamps and eating worms.

I was also part of a large crowd that braved a cold winter night to attend a performance by the Lakota flutist Kevin Locke—a talented and charismatic musician—in a high-school gym several miles outside of town.

Assessing the overall gathering, I’d have to agree with the conclusion of a tribal chairman at the event, who said, “The Indians stole the show.”

Mark Chalkley
Baltimore, Md.

Present at the creation

The Lewis and Clark Trail Heritage Foundation’s involvement with the Lewis and Clark Bicentennial began in August 1988. President John Montague (Oregon) reported that the Board had established a Bicentennial Celebration Committee. Jerry Garrett (Missouri) served as first chairman.

On Saturday, January 18, 2003, the long-dreamed-of, three-year bicentennial commemoration began on the West Lawn at Monticello. In the audience that afternoon were four members of the Foundation’s original Bicentennial Committee: Garrett, Bob Gatten (North Carolina), Ruth Backer (New Jersey), and Ron Laycock (Minnesota).

Other members of the original committee were David Boyd (Maryland), Ray Breun (Missouri), Dan Chatfield (Missouri), John Montague (Oregon), Kathryn and Chet Robinson (Texas), and Eleanor Ward (California).

Jerry Garrett
St. Louis, Mo.

L&C inspired astronaut

When Meriwether Lewis and William Clark set out to explore the western half of the North American continent in 1804, they could not imagine that two hundred years later a young woman born thousands of miles from the United States would find courage from their example to join a very different kind of exploratory mission—one in outer space.

Astronaut Kalpana Chawla’s journey began far from American soil. She was born in India on July 1, 1961. Thousands of miles of oceans and continents separated her from the United States, where
the seeds of her childhood dreams would develop and mature. Since her youth, dark-haired, dark-eyed Chawla had yearned to fly. At first, space exploration did not even enter her mind—she just wanted to design aircraft. After graduating from college in India, she emigrated to the United States, became a citizen in 1986, and “proceeded on” to a Ph.D. in aerospace engineering.

In 1995, Chawla joined NASA and two years later became the first Indian-American woman to be blasted into space. A mission specialist, she took her maiden voyage aboard the space shuttle Columbia on its 24th flight. During a preflight interview before a second Columbia mission, Chawla named Lewis and Clark among the explorers who inspired her with their courage and perseverance. On her first mission Chawla flew over 6.5 million miles—quite a few more than those logged by her heroes.

Sadly, Chawla’s journey ended abruptly on February 1. She was among the crew of the ill-fated Columbia, which following a 16-day science mission broke apart at 200,000 feet during re-entry. There were no survivors. The nation mourns her and the six other brave astronauts who perished with her.

DAVETTE C. PITTMAN
St. Clair, Mich.

Lewis’s fuzzy math
Anyone who has read the Lewis and Clark journals has undoubtedly been impressed by Meriwether Lewis’s luminous intelligence. It comes through in the exquisitely detailed technical passages as well as in his often lyrical descriptions of the countryside through which the Corps of Discovery passed. And yet, for all that, Lewis apparently was no math whiz.

This assessment is prompted by Lewis’s vivid description of that fateful confrontation of July 27, 1806, with eight Blackfeet warriors on the Two Medicine river, in which his math goes curiously awry. Near the end of his dramatic narration of the encounter and its aftermath, Lewis attempts to account for the whereabouts of all eight of his recent adversaries: “[T]he Fieldses told me that three of the Indians whom they pursued swam the river,” I had pursued into a nitch one lay dead near the camp and the eighth we could not account for but suppose that he ran off early in the contest."

Lewis laments his inability to account for the “eighth” warrior. But he should not have lacerated himself. He had miscalculated. Count ‘em: three “swam the river,” two “ascended the hill,” two were “pursued into a nitch,” and one “lay dead near the camp.” A total of eight. Though long gone, they were all accounted for.

Was this a case of shaky math? Or was Lewis just discommodated by the fracas and the ensuing pell-mell flight across the Montana countryside?

H. CARL CAMP
Omaha, Neb.

Bear facts
I was pleased to see Albert Furtwangler’s affirmative review of my recent book, Lewis and Clark among the Grizzlies. Dr. Furtwangler’s book, Acts of Discovery, was very helpful to me, and I appreciate his approval.

I would elaborate on a couple points in his review. He says I omit mention of the young grizzly bears exhibited by Charles Willson Peale in his Philadelphia museum in 1803 and again in 1807. Dr. Furtwangler believes that because of these bears “the idea of grizzly ferocity was thus well advertised in the East before 1810.” I doubt this. These captive bears were all subadults, and the local damage that two of them did when they escaped could not have provided more than a faint hint of the power of the quarter-ton, unhabituated grizzly bears encountered by Lewis and Clark on the upper Missouri. Besides, the lore of grizzly ferocity is readily traced to the expedition journals, to many writings based on those journals, and to subsequent publications by other writers about wild grizzly bears.

But I did not omit the delicious little episode of the Peale bears from my book. Because it was only peripheral to the story I was telling, I chose to relegate it to a long footnote on page 211.

Dr. Furtwangler also wishes I had discussed William Faulkner’s classic story “The Bear,” a haunting tale from Faulkner’s fictional Yoknapatawpha County, Mississippi. I agree that it is one of the

The mission of the LCCTHF is to stimulate public appreciation of the Lewis and Clark Expedition’s contributions to America’s heritage and to support education, research, development, and preservation of the Lewis and Clark experience.

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Letters (cont.)

The greatest contributions to bear literature. But, as Dr. Furtwangler correctly suspects, I regarded it as well beyond the scope of my book (it’s about a black bear in the lower Mississippi Valley). For those interested, I consider the historical antecedents of the story-telling tradition so magnificently honored by Faulkner’s tale in my book The Bear Hunter’s Century (1988).

Americans have published literally thousands of bear stories since the time of Lewis and Clark, and they are, to many of us at least, irresistible. This is my seventh book about bears, and the biggest challenge in writing it may have been sticking to the stories that really mattered.

Paul Schullery
Yellowstone Park, Wyo.

Review of novel ignores theme

A competent book review accurately describes the theme of the work under consideration so a reader may understand what the book is about. I was startled to read in the February WPO a review of my novel Eclipse which manages to ignore or conceal its central theme, the anguished struggle of Meriwether Lewis against the neurosyphilis that was destroying his mind at a breathtaking pace.

My theme was drawn from the brilliant medical research of Dr. Thorolf Ravenholt, who presented his paper “Trail’s End for Meriwether Lewis” to the American Academy of Forensic Sciences.

Equally startling was the condemnation of York’s alleged minstrel-show dialogue, as in “Yas, mastuhr.” The reviewer would be hard put to find that precise spelling anywhere in my novel because it doesn’t exist there.

The reviewer seems offended that I depict York as sullen and angry after his return, but there is historical evidence that he was exactly that, resenting his return to slavery after the joyous near-freedom of the expedition. William Clark dealt harshly with him.

Richard S. Wheeler
Livingston, Mont.

From the Directors

Old words, new challenge

Another quarter has passed—they seem to go more quickly for me of late, and I suspect that is true for most of us. The first three months of the L&C Bicentennial have been hectic, historic, and deeply rewarding. The involvement of the Foundation and Home Front Chapter with the kickoff event, held in January at Monticello and Charlottesville, was a great experience, and I am extremely proud of the many contributions made by our board, staff, and general membership. There are many signature events to come, and this first one set the tone and the standard. We will be reaping the good will and educational dividends for years to come.

Speaking of signature events, the next one (of a total of 15) will be held October 14-26 in Louisville, Kentucky. We are encouraging everyone to think of these events as local and regional opportunities to move ahead on our planned-giving efforts in support of the Foundation’s endowment.

Wilbur Werner’s challenge

Don Nell, a past president of the Foundation, recently shared with me a copy of a speech by my friend and mentor, Wilbur Werner, delivered at the Foundation’s annual meeting in Great Falls in 1976. As outgoing president, Werner noted the membership had doubled in just a year—a surge due largely to the U.S. bicentennial. “Notwithstanding,” Werner added, “there is a constant, rising, surging current of interest in the ‘Corps of Discovery.’” Werner urged those present to build on that momentum so “it can be proudly reported in the year 2004 that this Foundation … has faithfully carried out the purposes and trust of those who had the vision and foresight to found it.”

The Foundation rose to the challenge. Now, with 2004 approaching, our membership stands at 3,200—an eightfold increase since 1976. And that is only one of many accomplishments in the years since Werner’s address. We now have more than three dozen chapters and a magazine (WPO) that has become the leading journal of L&C scholarship. We have a library in Great Falls devoted to Lewis and Clark studies, and the book collections of several members have been donated to educational institutions for the benefit of L&C teaching and scholarship. We have established a Sovereign Nations Committee to encourage Native-American perspectives on the L&C story. Thanks to the generous support of members, we now make research grants to students and independent scholars. In these and other ways we are living our motto as “Keepers of the story and stewards of the trail.”

There is still much to do. The challenge now is to strengthen our long-term funding capability by enhancing the Foundation’s existing, but modest, endowment. This is crucial, because the government support we now enjoy in the form of cost-sharing grants from the National Park Service will not last beyond the bicentennial. I wrote to many of you in December asking for your support and am encouraged by the response, especially in this troubled economy. With careful estate planning you can safeguard your financial future while supporting the Foundation in perpetuity. For more information, please call our executive director, Carol Bronson, at 888-701-3434.

Remembering Bill Sherman

Recently I was privileged to attend a memorial service in Helena for Bill Sherman, who died March 5. Bill was a major benefactor of the Foundation (which he served as president) and of many of other worthy causes. He was also the last living member of the seven visionaries who, way back in 1969, founded our organization. (A tribute to Bill by Bob Doerk appears on page 48.) Bill’s commitment is an inspiration for us all as we move ahead.

Larry Epstein
President, LCTHF
On a recent Monday morning, I received a phone call from a journalist in Washington, D.C., wanting to interview me about Lewis and Clark. Such requests are not uncommon and are becoming more and more frequent as the interest surrounding the L&C Bicentennial continues to grow. I was prepared to recite a litany of historic facts about the Corps of Discovery or to describe the events surrounding the bicentennial but was surprised when the voice on the other end of the line introduced herself, explained the nature of her call, and the focus of her article.

Two days earlier, the space shuttle Columbia had exploded upon its re-entry into the Earth’s atmosphere before the television cameras, and hence before our very eyes. This reporter was seeking insight into the pioneering spirit of Americans from Meriwether Lewis and William Clark to the space-shuttle astronauts who had lost their lives just the day before. The focus of her story struck me as provocative and particularly poignant notion in the immediate aftermath of the shuttle crew’s demise, so I took a few moments to gather my thoughts, anxious to come up with something appropriately profound.

“It’s about what’s over the next hill,” I told the reporter on the other end of the line. From the times of the earliest human societies, when one brave soul began to wonder about the world over the next hill or beyond the mountain range or downstream from the river that formed the boundaries of his world, and decided to venture out in exploration of new lands, a fervent desire to know what is unknown has spurred many of the triumphs as well as the tragedies of human civilization.

When we commemorate the Lewis and Clark Expedition two hundred years later, we are doing much more than paying tribute to the Corps of Discovery and its accomplishments, as remarkable as they were. We are, in a sense, simultaneously celebrating and mourning that universal, eternal, and yet essential aspect of the human condition that urges us to explore the world beyond our own.

For this commemoration is really about those of us who convened on Monticello this past January. It is about those of you planning National Heritage Signature Events along the trail that Lewis and Clark traversed two centuries ago. It is about those who draw inspiration from Stephen Ambrose’s Undaunted Courage. It is about those eagerly planning their own expeditions along the trail with their families and friends. It is about those participating in the many Lewis and Clark–themed reenactments, exhibits, festivals, lectures, parades, conferences, and theater and musical performances in the years to come. It is about those of you reading this magazine.

Our commemoration of Lewis and Clark’s historic feat will provide more insight into who we are than it ever will tell us about who Lewis and Clark were. The intense interest of Americans and, indeed people everywhere, in this two-century-old story is not so much about the peoples and happenings of this land in 1803-06 as it is about those of us who inhabit it today. The fusion of stories of the past with concerns of the present and anxieties about the future is exactly what history is all about. The truly wondrous and quite marvelous aspect of our study of the past is that the comparisons and contrasts that we automatically draw between ourselves and those who have gone before encourage empathy and enable us to see ourselves in all people across space and time.

First Lady joins team
It is my great pleasure to announce that Mrs. Laura Bush, First Lady of the United States, has graciously accepted the invitation to serve as honorary chair of the Lewis and Clark Bicentennial. The participation of Mrs. Bush will certainly elevate the importance and impact of the bicentennial commemoration. Mrs. Bush’s involvement will encourage greater numbers of Americans to participate in the bicentennial and share in this unique opportunity to reinforce those “mystic chords of memory” that bind us together as Americans.

I am also pleased to report that we have secured a leadership grant from the William and Flora Hewlett Foundation in the amount of $2 million over four years to support the National Council. This funding will make a crucial difference in the commemoration of the L&C Bicentennial, providing us with timely seed money for programming and coordination, two interactive grassroots public-awareness campaigns, and a single-point portal Web site for all bicentennial events, programs, and activities.

The commitment from the Hewlett Foundation will be instrumental in funding vital infrastructure to support the smooth coordination and integration of core commemorative programs, including Corps of Discovery II, the National Heritage Signature Events, and the Ad Council–sponsored Public Awareness Campaign. Also, the dedicated funding will ensure that three significant outreach projects—the American Indian Awareness Campaign, the Trail Stewardship Campaign, and redevelopment of the National Council’s Web site—are implemented on a national scale.

—Robert R. Archibald
President, Bicentennial Council

May 2003  We Proceeded On  5
Eagle Feather Goes to Washington

At the invitation of Meriwether Lewis, an Arikara chief journeyed to the nation’s capital in 1805. His demise there had long-term consequences for U.S.-Indian relations

by Mark Chalkley

The trans-Mississippi West that Meriwether Lewis and William Clark entered in 1804 may have been a lawless place in many ways, but the law of unintended consequences was in full force. For their part, the two explorers intended to convince the native peoples of the “Missouri country” to submit to, and cooperate with, the United States’ new sovereignty over the territory. To this end, as they ascended the Missouri, they invited tribal chiefs to visit Washington in order to impress upon them the power and wealth of the young nation that had sent the expedition and to meet with its president, Thomas Jefferson. Little did the captains realize how the chain of circumstances they set in motion would ultimately affect their own lives and that of several subordinates, especially Private George Shannon. At the heart of this unforeseen sequence of events would be the untimely death of an influential Arikara leader known as Eagle Feather.

Eagle Feather was one of many chiefs of the Arikaras, who then lived in what is now northern South Dakota. According to General James Wilkinson, who got to know Eagle Feather in St. Louis in 1805, the chief was well traveled and spoke 11 Native-American tongues, besides being “Master of the Language of Arms, Hands, & Fingers.” Most of Eagle Feather’s people opposed his trip to the white man’s country, but as a seasoned diplomat among the plains tribes, he appears to have been unconcerned about the long trip and mingling with a strange new people.

The chief first met Clark and Lewis in October 1804, when they visited the Arikara villages (near present-day Mobridge, South Dakota) on their way upriver. The Arikaras had suffered large losses in a recent smallpox epidemic, but they were still a numerous and important tribe. Although Lewis and Clark

No known portrait of Eagle Feather exists, but this painting of an Arikara by Karl Bodmer shows how he may have dressed.
wrote specifically of three villages in the neighborhood they visited, Loren Yellow Bird, a contemporary Arikara, informs this writer that there were six villages in that area at the time.2

Given their location on the Missouri between the Mandans and Teton Sioux, the “Ricaras” (as the captains called them)3 were strategically important. The Arikaras and Mandans were at war at the time, and the explorers hoped to make peace between them, thereby isolating the warlike Sioux and helping to open the river for navigation by Americans.

But the captains did not fully understand the complexities of intertribal relations. In this particular case, they labored under the misapprehension that the settled, agricultural Arikaras were oppressed by the roving, martial Sioux.4 In reality, the relationship was more symbiotic. The Arikaras supplied the Sioux and other nomadic tribes with corn, beans, and squash, while the hunters brought their more sedentary neighbors buffalo meat and skins.5

Despite their misconceptions, the visit by Lewis and Clark to the Arikaras was mostly friendly and productive. With the help of the traders Joseph Gravelines and Antoine Tabeau, who were at the village when the explorers stopped there, the captains held frank and open talks with the chiefs of the prairie nation.6 The chiefs were hospitable to the visitors and accepted complacently their pronouncements about a “new father” in Washington, but refused offers of whiskey. The captains talked up the importance of the Missouri tribes living in harmony. The Arikaras expressed openness to the idea of peace with the Mandans, but only one chief was willing to visit the Great Father in the East. This was Eagle Feather—or Piahito, as he was called in his own tongue.7

In the interest of intertribal diplomacy, Eagle Feather also agreed to accompany the Corps of Discovery to the Mandan villages, where he and Gravelines (serving as translator) stayed about a week before returning home. Early in the trip upriver, Eagle Feather witnessed the whipping of Private John Newman for “mutinous expressions.” The Arikara expressed shock at the incident, explaining to Clark that his tribe might execute a man but would never humiliate him in such a manner.8

In the spring of 1805, when Corporal Richard Warfington returned from the Mandan villages bound for St. Louis, he stopped the expedition’s keelboat at the Arikara villages and picked up Eagle Feather for the trip to Washington. Once again, Gravelines accompanied him. Farther downstream, Warfington’s party took on board the Oto chief Petit Voleur, or Little Thief, who had also accepted Lewis and Clark’s invitation to visit Washington.

It was in St. Louis that problems began. The fur trader Pierre Chouteau, who took charge of the tribal leaders on their arrival in May, judged that “the warm season” was “very dangerous for these Indians” to travel in. With the permission of Indiana territorial governor William Henry Harrison (at the time the closest U.S. authority), Chouteau decided to keep the Arikara and Oto chiefs in St. Louis until the fall.9

In early October, a large delegation of Missouri River chiefs arrived in St. Louis. They too were on their way to Washington. But Eagle Feather could not join them; on October 8, the new territorial governor, James Wilkinson, wrote that “the Ricara chief” had become “dangerously ill.”10

Eagle Feather said he wanted to go home, and Wilkinson agreed to return him to his people. Unfortunately, while ascending the Missouri with a military escort, the boat carrying Eagle Feather was attacked by hostile Kansas Indians and obliged to return to St. Louis.

ON TO WASHINGTON

Back in the territorial capital, Eagle Feather eventually felt healthy enough to change his mind about the trip east. On December 23, 1805, some eight months after leaving his tribe, he set out for Washington accompanied by Eli Clemson, an army lieutenant.
The chief and his escort reached the capital in mid-February 1806, bearing a letter of introduction from Governor Wilkinson, who praised Eagle Feather in strong terms and pointed out his potential value as an ally: “The bold adventure, long absence & observation of this chief, during his travels in the United States, and his presumed knowledge of and influence over the Nations of the Upper Missouri, may I think enable us to convert him into an important Instrument of Humanity & of Policy.”

Wilkinson added his opinion that the chief “should be returned as early as possible ... and sent up to his Nation by a Military Escort loaded with presents.”

If the tribal leader had impressed Wilkinson, he made just as strong an impact on the general’s superior in Washington. Secretary of War Henry Dearborn observed that “The Ricardi chief is an interesting character;—and we shall not fail of sending him away particularly satisfied.”

William Dunlap, a playwright and portrait painter, visited the chief in the capital and found him “seated cross-legg’d on a mattress scraping Guinea-hen feathers ... He had rings in his ears and a blue cotton handkerchief, tied about his head in the French manner with a buckle disposed in front. He is a large old man & nearly as dark as an American-born negro, but with light hazle colored [eyes].”

Dunlap gave further evidence of the old chief’s remarkable communication skills. “His sign for speaking the truth & the contrary is very expressive, he draws a line with his finger from his heart to his mouth & thence straight to the auditor or spectator; for falsehood the line comes crooked from any part of the abdomen & in issuing from the lips splits, diverges & crosses in every direction.”

**EAGLE FEATHER’S DEATH**

According to the scanty records of the time, the “Ricara chief” not only met President Jefferson and Secretary Dearborn in Washington, but went on to visit Baltimore and Philadelphia. Perhaps in his travels Eagle Feather was exposed to a new virus he had no resistance to; or maybe the changeable weather of the mid-Atlantic spring was his downfall. Whatever the cause, the tribal delegate fell gravely ill, and on April 7, 1806, he died in Washington, far from his home and loved ones.

Whatever emotions they felt or failed to feel at this turn of events, the government officials in the capital knew they had a difficult situation on their hands. They responded with a series of measures that today would be described as “damage control.”

Two days after Eagle Feather’s death, Dearborn wrote again to Wilkinson, advising him of the return of the Missouri chiefs’ delegation that had visited Washington the preceding Christmas. “Several have died,” he stated, “but what is more to be regretted is the death of the very respectable and amiable Ricara chief.” Dearborn recommended that Gravelines, accompanied by a Pawnee chief and a “sober and discreet Sergeant & four faithful sober soldiers,” be sent to break the news. To soften the blow, Dearborn advised that presents “to the amount of from two to three hundred Dollars” be taken to the late chief’s wives and children. Further, a musket should be given for each of the dead man’s nine sons, “to be put into the hands of their uncles for them as they become able to use them.”

The next day, Jefferson himself prepared a message to the Arikaras in which he attempted to explain the circumstances of their chief’s death, while assuring them that “we buried him among our own deceased friends and relatives.”

Despite all this solicitude, the Arikaras were outraged by the loss of their beloved chief. They were hostile to Gravelines when he finally reached them with the news in September, and their anger remained fresh for a long time afterward.
“Untoward Circumstances”

The Escort under my command for the reconveyance of the Mandan Chief to his nation has been compelled to return to St. Louis without accomplishing that object. You will expect to be informed of the untoward circumstances which have contributed to this failure.

—Nathaniel Pryor to William Clark October 16, 1807

In June 1807, William Clark, now superintendent for Indian affairs of Louisiana Territory, sent Ensign Nathaniel Pryor, a veteran of the Corps of Discovery, to escort the Mandan chief Sheheke back to his village on the upper Missouri. Sheheke had also made the trip to Washington at the behest of Lewis and Clark, and upon his return to St. Louis had remained there for some months awaiting transportation home.

The Pryor expedition arrived at the lower Arikara villages on the morning of September 9, where they were met by hundreds of well armed and hostile Arikara and Sioux warriors. Though Pryor attempted to parley with the Arikaras, the situation rapidly degenerated into a skirmish between the whites and natives, and the expedition was obliged to retreat. Three French-Canadian boatmen were killed, and another, mortally wounded, died soon after. None of the soldiers were killed, but George Shannon, another veteran of the Corps of Discovery, received a wound that resulted in the amputation of one of his legs. It was not until 1809 that an expedition from St. Louis succeeded in taking Sheheke past the Arikara villages. Although empowered by Lewis (by now the territorial governor) to “extirpate” the Arikaras if necessary, Pierre Chouteau, who led the party, succeeded in negotiating a safe, bloodless passage.

If Eagle Feather had lived and been reunited with his people, the Arikaras would probably have remained friendly, and Pryor’s party would have returned Sheheke to the Mandans on the first attempt without incident. This in turn would have obviated the need for a second expedition under Chouteau, which Lewis paid for out of his own pocket. Lewis’s financial arrangements struck authorities in Washington as a questionable use of public credit. When the War Department refused to honor his “drafts” to Chouteau, it ruined the governor’s personal credit in St. Louis and resulted in his fateful decision to travel to Washington to clear up the matter. Lewis died, probably by his own hand, while en route.

On a positive note, the leg wound sustained by George Shannon on the Pryor expedition led to his discharge from the army and an end to his western adventuring. The man subsequently known as “Peg-Leg” Shannon took up law and went on to a successful career that included service as a Kentucky circuit judge and legislator and a U.S. district attorney in Missouri.

The most negative consequences of these events fell upon the Arikaras. The tensions between them and white authorities reached a tragic climax in 1823, when a combined force of fur trappers and army regulars commanded by Colonel Henry Leavenworth fought another bloody battle with the Arikaras and forced them from their villages. It was many years before the fortunes of the Arikara nation would begin to recover.

Eagle Feather’s untimely death affected the lives of Lewis and others and caused misunderstanding and grief. Ultimately, however, it weighed lightly in the balance of history, for the social, political, and economic forces behind the clash of American expansion and native resistance were larger than the fate of any individual, government, or tribe.

Foundation member Mark Chalkley lives in Baltimore, Maryland. He wrote about Lewis and Clark editor Paul Allen in
the August 2002 WPO. His observations on the kickoff event of the Lewis and Clark Bicentennial, held in January in Charlottesville, Virginia, appear on page 2.

NOTES

2 Telephone conversation with Loren Yellow Bird, October 2002. Mr. Yellow Bird works for the National Park Service at Fort Union National Historical Site.

3 Journal spellings also include “Ricares,” “Ricarre,” and “rees.” See Gary E. Moulton, ed., The Journals of the Lewis & Clark Expedition, 13 volumes (Lincoln: University of Nebraska Press, 1983-2001), Vol. 3, pp. 224 and 225. All quotations or references to journal entries in the ensuing text are from Moulton, by date, unless otherwise indicated.


5 For more on the Arikara economy and material culture, see James P. Ronda, Lewis and Clark among the Indians (Lincoln: University of Nebraska Press, 1984), pp. 42-49.

6 For more on Gravelines and Tabeau, see Moulton, Vol. 3, notes, pp. 154-155.

7 “Piaheto” is Clark’s spelling. (Moulton, Vol. 3, p. 156; entry for October 10, 1804.) He was also known as Arketarnashar. (Moulton, Vol. 3, p. 231, note.)


12 Ibid., p. 305, notes. Jackson quotes these remarks from a letter found in the National Archives which he did not include in his book.

13 Ibid., p. 274, notes. The observations are from Dunlap’s diary, published by the New-York Historical Society.

14 Ibid., p. 303. The date is given by Henry Dearborn in a letter to James Wilkinson.

15 The delegation’s stay in Washington included a visit to the Capitol, which is documented in a December 25, 1805, item in the National Intelligencer of Washington, D.C., reprinted in the Baltimore American & Commercial Daily Advertiser of January 1, 1806.

16 See the previously mentioned letter of Dearborn to Wilkinson.

17 Jackson, p. 306. Jefferson to the Arikaras. I have not been able to locate this grave. The Congressional Cemetery, where so many other Indian “delegates” who died in Washington were buried, was not opened until 1814, and in any event Eagle Feather is not there. Ryan Sheppard of the Washington Historical Society indicates that a public (nonfamily) burial in Washington at that early date would have been in Holmead’s Cemetery, near what is now Dupont Circle, which was dug up and built over in the mid-19th century. Sheppard suggests that the chief’s grave is “lost to the ages,” and he appears to be right.

18 There is a surprising discrepancy between Jackson and the journals on this point. In a note on the Arikaras on p. 437, the scrupulous historian writes, “Joseph Gravelines was ill-treated when he went to the tribe in the spring of 1807 to tell them of the chief’s death.” However, it is clear from Clark’s journal entry for September 12, 1806, that when the captains met Gravelines on the river that day, he was then on his way to break the news to the Arikaras. Even allowing for the difficulties of upstream travel, it is hard to imagine that Gravelines did not reach the Arikaras until the following spring.

19 Jackson, p. 432.

20 For more on Shannon’s post-expedition career, see George H. Yater and Carolyn S. Denton, WPO Publication No. 11, pp. 19-21.

21 Two separate and partly contradictory accounts of this confrontation can be found in LeRoy Hafen, ed., Mountain Men and Fur Traders of the Far West (Lincoln: University of Nebraska Press, 1982), pp. 82-83 and 93-94. While the writer (Harvey L. Carter) affirms that the “Rees treacherously attacked” the fur trappers, Loren Yellow Bird says that according to tribal history the trappers were drunk and molesting Arikara women.

More about the Arikara Nation

The Arikaras (sometimes known as Rees, Aricarees, or Ricarees) originally lived near the junction of the Missouri and Grand rivers in what is now South Dakota. Like the Pawnee, to whom they are closely related, the Arikaras speak a Caddoan language. They were once a numerous tribe: an estimated 30,000 strong at the end of the 18th century.

The Arikaras were an agricultural people. They lived in settled villages, each organized around a sacred medicine bundle. At the height of the Arikara culture, there were 12 villages in all. The villagers grew beans, squash, and corn. To this day, some tribal members preserve the original strain of corn grown by their people, known to them as “mother corn.”

After clashing with the fur brigade of William H. Ashley and elements of the U.S. Army in 1823, the Arikaras left their Missouri River villages. In 1846, they joined the remnants of the Mandan and Hidatsa tribes on the Fort Berthold reservation. In 1876, Arikara scouts served the U.S. 7th Cavalry on the expedition that ended with Custer’s defeat at the Little Big Horn.

Today, many Arikaras live off the reservation but remain in North Dakota, where they are mostly farmers and ranchers. The tribe has recently acquired a casino on the reservation, for which it has hopes of success. The tribe also supports an institution of higher education, White Shield College.

Efforts are being made to preserve the Arikara language, which is still spoken by some elders.

—Mark Chalkley
Adventure Caravans
Southern Indiana
Visitors Bureau

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You'll never think of Lewis and Clark and their
Corps of Discovery the same way again.
Lewis journal page images courtesy of American Philosophical Society
The Bicentennial of the Lewis and Clark Expedition was launched on a bitterly cold Saturday, January 18, at Monticello, Thomas Jefferson’s mountaintop home near Charlottesville, Virginia. The ceremonies culminated five days of lectures, tours, panel discussions, musical performances, and other events commemorating one of history’s most successful explorations.

Among the estimated four thousand people who took part in the festivities at Monticello and the University of Virginia was Taylor Haynes of Robbins, North Carolina. Taylor has traveled much of the Lewis and Clark Trail and is a regular at the Foundation’s annual meetings. A skilled photographer and draftsman (by profession he is a furniture designer), he likes to document his L&C peregrinations in personal journals written in his distinctive script and with photos, stamps, and other memorabilia. For the bicentennial kickoff, at WPO’s invitation he has put together something similar on this and the following two pages. (For more on the Charlottesville confabulation, see pages 2 and 4.)
We Proceeded On May 2003

James Ronda and Paul-A conversation in honor of Donald Jackson

Mrs. Donald Jackson - Standing

Andy Ambrose in Civil War uniform at the podium. Naming his father's uniform in honor of the contribution he made to our awareness of history.

Kat Irickoff 2000 Thomas Jefferson Foundation Lee and Patrice Gibson

My travel buddy Jack Wells at the joint Joie Tom and Carolina Chapter booth. The Carolina Chapter banner was handmade by my daughter Cheryl starkes, the banner hangs in my home when not in use at our chapter meetings. We are very proud of our new banner. Many thanks Cheryl.
We Proceeded On

May 2003

St. Josephs
Convention Bureau
Have you wondered what it would have been like traveling the rivers with Lewis and Clark? Certainly it would have been hard work. For nearly 3,550 miles they powered their boats upstream, battling current and wind, avoiding obstacles, and manhandling heavy crafts through rapids and over shoals. They traveled downstream an additional 5,498 miles, for a grand total of more than 9,000 miles on rivers from the Ohio to the Columbia.¹

Members of the Corps of Discovery did what river runners do today: they rowed, towed, poled, and paddled, read currents, drifted with the flow, and scouted rapids or suffered the consequences. They lined boats through chutes, and portaged baggage and boats around falls and rapids. Boats sprung leaks, hit rocks and split, and were swamped by winds and waves.

The explorers used whatever means would best move their boats in the desired direction, depending on conditions. They sailed when the wind was with them and rowed when it wasn’t, poled when the current was too strong, towed if the river was too deep or the bottom too muddy for poling, and paddled the smaller crafts. If conditions

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¹ "The Corps of Discovery" by Verne Huser
were really bad they laid over until the wind died or the storm blew through.

The explorers used a keelboat and two pirogues to haul supplies and equipment to their advance base camp at Fort Mandan, on the upper Missouri. On the first leg of their upstream journey from Fort Mandan they used the two pirogues plus six dugout canoes made during their winter encampment of 1804-05. Canoes became the primary means of river transport for the remainder of the expedition, and except for rafts they were the only crafts used west of the Continental Divide.

THE KEELBOAT

The keelboat, which measured 55 feet in length, with a beam (width) of eight feet four inches, had a jointed mast with a squaresail and was also rigged for a smaller fore-and-aft spritsail. It had rowing benches and a bank of lockers on each side. Decked fore and aft, with a cabin in the stern, it carried tow ropes, 22 oars, and 12 setting poles. It was steered with a rudder and tiller and could be sailed, rowed, poled, or towed.

Clark sketched top and side views of the keelboat in his field notes. The top-view sketch shows 20 oars, but he mentions building 11 rowing benches. The side-view sketch shows 11 thole pins and blocks, further indicating 11 rowing positions and suggesting a total of 22 oars. This same sketch includes a detail of a thole pin-and-block arrangement with the note, “T is pins to row by.” A thole pin is a vertical thumb-like post that serves as an oarlock and fulcrum point.

The keelboat was built near Pittsburgh under Lewis’s supervision during the summer of 1803. At Camp River Dubois during the winter of 1803-04, the captains added two rows of lockers attached to the interior of the hull along each side of the boat. The locker lids were positioned a few inches below the gunwales. Raising the lids created a defensive breastwork in case of attack. When the lids were closed (i.e., in a down position), they formed catwalks, enabling the men to pole in line.

Due to low water, the keelboat, or “barge,” as the captains sometimes called it, carried little freight while going down the Ohio in the late summer and fall of 1803, but going up the Missouri in 1804 it hauled a massive amount—12 tons by some estimates, including most of the lead, powder, weapons, tools, and provisions that sustained the expedition. Lewis and Clark sent it back to St. Louis the following spring with letters, documents, and specimens collected in the field. After that, it disappears from the record.

PIROGUES

Two pirogues were used on the expedition. Both were purchased by Lewis on the upper Ohio (one in Pittsburgh and the other in Wheeling). One was painted red and the other white, and each could carry six or more men and many tons of supplies and equipment. Pirogues were powered and maneuvered much like the keelboat. Being somewhat smaller and lighter, the white pirogue drew less water and was the easier of the two to handle.

What is a pirogue? Neither the journals nor any documents associated with the expedition give a clue except for a single rough sketch, drawn by Clark, of the white pirogue. “Pirogue” is a Carib Indian word meaning dug-out canoe, but by 1803 the term often applied to any long, narrow, flat-bottomed, plank-sided boat in common use on the Ohio River. The expedition’s pirogues were almost certainly made of planking, not hollowed-out logs, and they were big boats: the white pirogue, the smaller of the two, was perhaps 35 feet long and five feet wide in the bow, its broadest point, with six rowing positions. Each of the two pirogues had a mast and sail for use when the wind was right and was steered with a tiller and rudder.
The larger red pirogue had seven rowing positions and, according to boat historian Richard C. Boss, a capacity of nine tons. On the trip from Camp River Dubois to Fort Mandan it was manned by a crew of French-speaking civilian watermen. The white pirogue, with six oars and a crew of enlisted men, carried eight tons, a capacity verified by Clark's sketch, which he captioned "Perogue of 8 Tuns." On the trip up the Missouri to Fort Mandan, the white pirogue usually trailed the red pirogue. Its landlubber crew watched the experienced rivermen in the lead boat and learned by their example. The red pirogue was often left behind to wait for hunters and to bring meat to camp. Beyond Fort Mandan, the red pirogue was cached at the mouth of the Marias River and the white pirogue farther upstream, at the lower end of the Great Falls. On the return journey the explorers retrieved the white pirogue and returned with it to St. Louis. The red pirogue had rotted over the winter and was abandoned after salvaging its nails and hardware.

**CANOES**

The explorers built 16 canoes from materials found along their route: 10 from cottonwood trees and six from ponderosa pines. These true dugouts often split, shipped water in waves and rapids, steered poorly, and were so heavy that portaging them took herculean effort. A replica cottonwood dugout built several years ago in Missouri weighed three thousand pounds.

They made six cottonwood canoes during the winter at Fort Mandan and took them and the two pirogues up the Missouri the following spring. After caching the pirogues, they portaged the canoes 18 miles around the Great Falls on carts built on the spot.

Above the falls, they constructed two more cottonwood canoes to replace "the Experiment," Lewis's collapsible iron-frame boat, which filled with water within hours after it was launched at the Upper Portage Camp. (See story, page 25.) One of the canoes was abandoned at the junction of the Beaverhead and Wisdom rivers as they approached the Continental Divide. Upon reaching the head of navigation and setting up Camp Fortunate, they traded with the Shoshone Indians for horses to cross the divide, and the remaining seven canoes were loaded with rocks and sunk in a pond to preserve them for the return trip.

After an arduous trek across the Bitterroot Mountains, the explorers reached the Clearwater River, where ponderosa pines—ideal for canoes—grew straight and tall. Here, while resting with the Nez Perce at what the captains dubbed Canoe Camp, they constructed five more dugouts. The earlier cottonwood dugouts had been built by the backbreaking method of hollowing them out with axes and adzes, but now they adopted the easier Nez Perce technique of burning and chipping them out. (Pine burns better than green cottonwood, and the explorers were still weak from the crossing and ill from their new diet of roots and smoked salmon.) From Canoe Camp they headed downriver to the Pacific Ocean.

On the Columbia River the expedition passed Indian villages with numerous canoes drawn up on shore. The natives used their canoes to hunt, fish, gather roots, and carry people and goods. Below Celilo Falls the explorers traded their smallest dugout for a Chinook canoe.

While pinned down by wind and waves near the Columbia's mouth they watched native paddlers ply the boisterous waters with astonishing aplomb. Noted Clark, "Those Indians are Certainly the best Canoe navigators I ever Saw." The Indian canoes were of far better design and construction than their own primitive watercraft. A native dugout easily rode waters that swamped the expedition canoes because its bow and sides flared out, deflecting the waves. This sleek design relied upon a novel construction technique. After roughing out the inside of the canoe, the builders whittled away the sides until they were very thin. Next, they filled the canoes with water, which they then heated with hot rocks to make the sides pliable. Then thwarts (cross braces) were forced in place.
to widen the gap. In this manner, a tree four feet thick might make a canoe six feet wide at the gunwales.

During their sojourn on the Columbia, the explorers traded for several canoes made by Chinook, Cathlamet, and Clatsop Indians. They also stole a Clatsop canoe for their return trip up the Columbia. They left Fort Clatsop in six canoes—three native vessels and three dugouts they had constructed from ponderosa pines. After losing one of their heavy dugouts lining it through a rapid, they purchased two more native canoes.21

At Celilo Falls they abandoned their last two pine canoes, which were too heavy to portage, and continued upriver in Indian canoes.22 They soon traded these canoes for horses, which they took overland, crossing the Snake River Plain to the Clearwater. Here, again using the burn-and-chip method, they built yet another canoe, this one for ferrying the river. Four days after the vessel’s launching, the river swept it under a driftwood pile, but by then the explorers were finished with upstream river travel. They were soon headed overland on horseback.

After reaching the eastern side of the divide, the corps split up. On horses, a party led by Lewis took a shortcut to the head of the Great Falls while Clark led the others to the cache of seven canoes at Camp Fortunate, on the upper Beaverhead. One of these was cut up for paddles and firewood. Ordway and nine other men took the remaining six canoes downriver. Meanwhile, Clark and the rest of his party traveled by horse to the Three Forks of the Missouri, then crossed overland to the Yellowstone River. A party led by Sergeant Nathaniel Pryor then split off from Clark, taking a remuda of horses on a course that paralleled the Yellowstone. Clark and the rest built two cottonwood dugouts, lashed them together to make a crude catamaran, and launched downstream. The various parties eventually reunited below the junction of the Yellowstone and Missouri. One of the Beaverhead canoes had been left behind at the Great Falls, but the remaining five, along with the white pirogue and the catamaran, continued the downstream journey. All but the catamaran, which they abandoned a few miles short of their destination, made it to St. Louis.

**SKIN BOATS**

On the return trip, when Lewis and his party reached the top of the Great Falls on the wrong side of the river, they shot and skinned some buffalo and attached their hides to crude frames of lashed-together willow sticks.23 Lewis refers to these two skin boats as “canoes,” but it is clear from his description that they were bullboats, the saucer-shaped watercraft widely used by the Mandans and other plains tribes. In his journal entry for July 12, 1806, Lewis reported, “the one we made after the mandan fashion with a single skin in the form of a bason and the other we constructed of two skins on a plan of our own.” Bullboats also figured in the Yellowstone saga of Sergeant Pryor and his party. After Crow Indians ran off with the last of their horses, they threw together two of these crude but serviceable vessels and proceeded downriver for several hundred miles, until they caught up with Clark’s party.24

**LOG RAFTS**

The corps also on occasion relied on log rafts. When traveling on foot, the hunters built rafts as needed to cross streams too deep to wade or too swift to swim. In June 1805, on Lewis’s initial exploration of the Marias, he had four men “busily engaged in making two rafts on which we purposed descending the river.”25 Regrettably, these makeshift vessels proved “too small and slender.” They “wet a part of our baggage and were near loosing one of our guns” — and were soon abandoned.26 A little later, while camped below the Great Falls, Lewis ordered another (presumably larger) raft built to ferry men and gear across the Missouri.27 A year later, the homeward-bound Lewis employed three rafts to ferry baggage and provisions across the Clarks Fork River.

**POWERING AND MANEUVERING**

Going upstream, the explorers sailed when the wind was right and rowed when it wasn’t, provided the current flowed moderately. They poled when the current was too strong and towed when nothing else worked. Once above the Great Falls, it was virtually all towing and pol-
ing. On July 26, 1805, near the Three Forks of the Missouri, Lewis wrote, “employ the cord and setting poles. the oars scarcely ever being used except to pass [cross] the river in order to take advantage of the shore and current.”28 By then, the corps’s fleet consisted entirely of dugout canoes, the two pirogues having been cached below the Great Falls.

Sailing was the easiest way to move against the current, but on a wild river it could be tricky. The crew had to dodge snags, sandbars, and islands—a difficult task when tacking with the wind. And as one student of Lewis and Clark’s boats has observed, the ponderous, fully loaded keelboat “must have been a cranky sailer.”29 The keelboat averaged fewer than 10 upstream miles a day but could manage many more with a good tail wind.30

Since the wind normally blows upriver during the heat of the day, the explorers often had good sailing unless a mast broke, which happened several times, or larger weather patterns disturbed the upstream flow of air. Headwinds slowed their travel, and either sudden gusts or sustained winds and chop could put them in real danger. On at least three occasions a pirogue or dugout floundered and nearly capsized.31

Especially on the lower Missouri, the men spent a lot of time rowing. Rowing involves pushing water in one direction to move a boat in the opposite direction. The oar acts as a lever, with the oarlock or thole pin as the fulcrum. On the keelboat, the oars were probably tied to the thole pins with rope or rawhide. The rowers sat on benches inboard of the locker lids (which, as noted, also served as a catwalk for poling). Wooden blocks at the base of the thole pins elevated the oars above the gunwales, giving the rowers more vertical height for clearing waves on the recovery stroke.

The keelboat’s oars were probably about 16 feet long and double-banked—that is, paired, with one oar directly opposite the other—so their loom, or inboard length (thole pin to handle), could be no more than four feet, or less than half the keelboat’s known width of eight feet four inches. The one-to-three inboard-to-outboard ratio would have generated plenty of pulling power but must have been hard on the rowers.32

The pirogues probably had thole pins or oarlocks mounted on the gunwales. Their relatively narrow beams would not have allowed the oars to be double-banked. Instead they were arrayed like the oars of a rowing shell, with alternating left- and right-hand strokes, just as the tick marks in Clark’s sketch suggest.33 The pirogues lacked benches, and their oarsmen probably rowed standing up.34

Poling was often the method of choice for propelling the corps’s keelboat, pirogues, and dugouts. Poling involves planting one end of a long pole on the river bottom and pushing, thereby moving the craft upriver. Pushing against a solid riverbed is more efficient than pushing...
against moving water—that is, rowing or paddling—especially if you’re moving upstream.

The pirogues and dugouts were no doubt poled by men standing at their rowing positions, using an action best described as “climbing the pole.” In unison, each man dropped one end of his pole into the water. As soon as the pole touched bottom, he pushed against it. His hands climbed the pole while his feet, planted to the deck, transferred the power of his thrust to the vessel. Poling the keelboat required a different technique, one that involved a team of polers positioned on each side of the boat, along the catwalk formed by the locker lids. The polers worked in unison. First, while facing upstream, each man thrust his pole into the river. Then, with one end on the bottom, he turned around, placed the other end to his shoulder, and marched aft, pushing against the riverbed and forcing the keelboat upstream. Once the lead man reached the end of the catwalk, the team about-faced, and forcing the keelboat upstream.35

Towing—wading knee-deep in fast current or struggling along the bank while straining on ropes attached to the boat—was surely one of the hardest tasks of the expedition. Also known as cordelling (a word derived from French and whose root is “cord,” or rope), Lewis found “this method of ascending the river, when the shore is such as will permit it, the safest and most expeditious mode of traveling, except with sails in a steady and favourable breeze.”37 Of course, Lewis wasn’t doing the towing.

The journals are scant on details about how the towline was rigged, but if the expedition’s keelboat used methods typical of the day, it ran from the mast to the men on shore through a ring or loop at the end of a 10- or 12-foot rope attached to the bow, an arrangement that helped keep the boat facing into the current. The helmsman maneuvered the boat as best he could by manipulating the tiller and rudder.38

Towing was complicated by wind, terrain and shoreline, depth of water, and obstacles in the river and along shore. The secret to towing lies in minimizing drag by keeping the boat pointed directly into the current, but all too often the towed craft had to be angled away from the flow to avoid a snag or logjam.

Sometimes when towing a boat it became necessary to move the vessel and its team of cordellers from one side of the river to the other. This could be tricky. First, the towline was tied to a stout tree on the near bank, while

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A grunt’s-eye view of river travel: Excerpts from the journal of Private Joseph Whitehouse

The current running very strong against us, and having to tow the boat it can hardly be imagined the fatigue that we underwent.

—June 22, 1804

Found the water to run very strong against us[,] we passed a Priari lying on the So West side of the River, we crossed the River at this Priari, and in so doing the boat swung and got aground, but by the exertion of the Men she got off.

—July 2, 1804

the boat struck a sand barr, on her larbourd Side, and all hands were obliged to jump out in the Water to prevent her from sinking (the place the boat Grounded on being quick sand) with much difficulty we got her off.

—July 28, 1804

the Wind blew hard from the South West[,] the boat plunging, had a hole broke in her by running against a Snag, so that we were obliged to put ashore, and had to unload her, but fortunately we got the hold stop’d.

—August 28, 1804

those in the barge [keelboat] had a Great deal of trouble to Git along the Sand bars, their was So many and the current So rapid that we did not come more than 4 miles.

—September 1, 1804

Shortly after the wind blew from the East, we set our Sails, and continued on, Sailing till about 12 oClock A.M. at which time the wind rose so high, that one of our Canoes filled with water.

—May 7, 1805

Several of our party were forced to go out into the Water in several places, to haul along the Canoes, and the rapidity of the Current made it very difficult for them to keep on their feet.

—August 5, 1805

then [we] came to a rockey rapid at the head of an Island in which one of the canoes under charge of Sergt. ordway ran fast on a Solid rock and Swung across the rock. they got out on the rock and attempted to Shove the canoe off the rock, but could not Start her for Some time. the waves dashed over her bow So that when we got hir loose from the rock. She filled full of water and considerable of the baggage and bedding washed out. … the canoe then broke away from them and left 4 men Standing on the rock.

—October 14, 1805
another boat ferried the cordellers and a second towline to the opposite bank. The first line was then released, and the second line took the strain as the boat swung at a sharp angle into the current. It took skillful maneuvering on the helmsman’s part to prevent the line breaking or the boat swamping.39

For the men, towing was pure hell. They slipped in mud, cut their feet on rocks and willow stumps, tripped on roots, stumbled in gopher holes and badger dens, and were attacked by mosquitoes.40

Whatever watercraft they manned—whether keelboat, pirogue, canoe, log raft, or bullboat—the members of the Lewis and Clark Expedition learned to read the river and respond to it with skill. They made plenty of mistakes but learned from them, and by the end of their nine-thousand-mile journey they had become expert boatmen.

Foundation member Verne Huser lives in Albuquerque, New Mexico. A veteran waterman, he has manned sweeps, oars, paddles, and poles while running more than 35,000 miles on 108 different rivers in 25 states, three Canadian provinces, and Yukon Territory. His book On the River with Lewis and Clark will be published next February by Texas A&M University Press.

NOTES

1 To be more specific, the Corps of Discovery logged 3,548 upstream miles (184 miles on the Mississippi; 3,096 on the Missouri; and 268 miles on the Columbia); and 5,498 downstream miles (1,126 miles on the Ohio; 640 miles on the Clearwater, Snake, and Columbia; 3,096 on the Missouri; and 636 miles on the Yellowstone). Total river mileage—upstream and down—was 9,046. See Gary E. Moulton, ed., The Journals of the Lewis & Clark Expedition, 13 volumes (Lincoln: University of Nebraska Press, 1983-2001), Vol. 8, p. 207 and Postexpeditionary Miscellany, especially pp. 388, and 392-394.


4 Pronounced and sometimes spelled “gunnels,” gunwales are the railings running along the top of a boat’s sides.

5 Ambrose, p. 107; Boss, p. 81.

6 In his journal entry for April 7, 1805, Lewis wrote, “We dismissed the barge [keelboat] and crew with orders to return without loss of time to St. Louis.” This is the last journal reference to the keelboat. (Moulton, Vol. 4, p. 7.)

7 Lewis purchased a pirogue in Pittsburgh sometime before his
departure there on August 31, 1803, and a second pirogue on September 8 at Wheeling. At Georgetown, Pennsylvania, four days after his departure from Pittsburgh, he also purchased for $11 a “canoe,” but found that it “leaked so much that she was unsafe [without] some repairs.” (Moulton, Vol. 2, p. 71.) As Moulton points out, Lewis appears to have used the terms pirogue and canoe interchangeably, although writers have generally assumed that the Georgetown purchase was, in fact, a pirogue. (See, for example, Ambrose, p. 110.) Assuming that Lewis indeed purchased three pirogues on the Ohio, only two departed Camp River Dubois the following year for the Missouri.

10 Ambrose, p. 105; Boss, p. 77; Large, p. 18.
12 Boss, p. 81.
13 Saindon, p. 17.
15 Saindon, p. 21.
16 The canoe was one of three built by Tom Ronk and other members of the Missouri Department of Conservation, who use them for reenactments.
17 On August 7, 1805, Lewis wrote, “our stores were now so much exhausted that we found we could proceed with one canoe less.” (Moulton, Vol. 5, p. 55.) They pulled the canoe out of the river and hid it in thick brush on the east side of the Jefferson River, opposite the mouth of the Wisdom (Big Hole) River, near present-day Twin Bridges, Montana.
18 Moulton, Vol. 5, p. 244. In his entry for October 2, 1805, Clark wrote, “Burning out the hotter [hollow] of our canoes, men something better” after their severe indisposition. Although not explicitly stated, it was probably the Nez Perces who taught them the burn-and-chip method.
19 On November 4, Clark counted 52 canoes on the bank in front of one village. (Moulton, Vol. 6, p. 17.)
20 Entry for November 11, 1805. (Moulton, Vol. 6, p. 41.)
21 On April 12, 1806, they lost the dugout, but the next day Lewis “obtained two small canoes from [the Indians] for which I gave two robes and four elkskins.” (Moulton, Vol. 7, pp. 111, 115.)
22 Moulton, pp. 151-152.
23 For a detailed description of the construction of bullockboats, see Clark’s journal entry of August 8, 1806 (Moulton, Vol. 8, p. 284). Like Lewis, Clark refers to bullockboats as “canoes.”
24 For a complete accounting of the corps’s horse inventory, see Loren M. Gibbons, “All Them Horses and One Poor Mule,” WPO, August 2002, pp. 26-32.
25 Moulton, Vol. 4, p. 260. The entry is for June 6, 1805.
26 Ibid., p. 261.
27 Ibid., p. 327.
28 Ibid., p. 429.
29 Boss, p. 75.
30 In his entry for August 27, 1804, Clark wrote, “under a Gentle Breeze from the S.E. they made 14 miles. (Moulton, Vol. 3, p. 39.) On September 1 they made 16 miles (Moulton, Vol. 3, p. 39), and they sometimes made more than 20 (Moulton, Vol. 3, pp. 88-89, 92-93, 129, and 150).
31 Large, pp. 19-20.
32 Author’s personal experience. See also Boss, p. 73.
34 The pirogues were narrow boats, with a maximum width of perhaps five feet. See David Lavender, The Way to the Western Sea (Lincoln: University of Nebraska Press, 1995), p. 63. The oars were probably 14 feet long, about two feet shorter than the keelboat’s oars, which had to be longer because of the higher freeboard (the distance from the water to the gunwales). An estimated four feet of the oar would have been inboard of the oarlock. Given the pirogue’s five-foot beam, this would mean that a man tending an oar extending from the starboard side would have had to stand on the port side of the boat, and vice versa.
36 Because poling was so common a practice, none of the journalists attempted to describe the technique. For more details on how it was done, see Leland D. Baldwin, The Keelboat Age on Western Waters (Pittsburgh: University of Pittsburgh Press, 1941), pp. 62-64.
37 Entry for May 17, 1805. Moulton, Vol. 4, p. 158.
38 Baldwin (p. 64) describes the towing arrangement.
39 The expedition boatmen often had to “pass the river” (cross from one side to the other to find good towing terrain). Baldwin (pp. 64-65) describes how they did it. A cliff or dense woods or obstructions in the river forced the towing crew to cross. With the current constantly pressing against the boat, it had to be held in place while the crew found new purchase on the opposite bank. On June 9, 1804, to prevent an accident the men actually swam a rope ashore. (Moulton, Vol. 2, p. 289.)
40 To elaborate further on the chalal of towing:
On some days the men had to cut trees to make a towing route. (Moulton, Vol. 11, p. 25.) On June 15, 1805, Clark wrote, “the men in the water from morning until night hauling the Cord & boats walking on Sharp rocks and round Slippery Stones which alternate cut their feet & throw them down, not with Standing all this difficulty they go with great cheerfulness.” (Moulton, Vol. 4, pp. 297-298.)
Riverbanks are notoriously irregular and overgrown with willows, a favorite food of beavers, which trim them on a daily basis, leaving sharp stumps. Tree roots form gnarled networks on banks. Clark complained about mosquitoes throughout the expedition, but the men towing the boats had little opportunity to swat them.

Finally, although it can’t be documented in the journals, my own experience leads me to believe the explorers may also have had problems with hornets. On April 16, 1805, Clark found “a great number of old hornets nests in the woody bottom.” (Moulton, Vol. 4, p. 45.) As a guide on the Snake River in Wyoming I have found hornets’ nests in trees overhanging the current, and it seems likely that the expedition’s towing crews may have too.
The Lewis and Clark Expedition was based on a geography of hope. Thomas Jefferson, who conceived the great adventure and asked Meriwether Lewis to lead it, believed that the Missouri and Columbia rivers were navigable to their sources and that only a short portage separated their headwaters. Boats were essential to the expedition, and the notion of bringing along a collapsible iron canoe took shape early in the planning. This novel watercraft would be built on an iron frame from materials obtainable from the wilderness—hides for the boat’s skin, pitch for sealing it, and wood and bark for interior components. Whenever needed, the frame could be broken down, carried overland, and reassembled.

Whether the idea for the iron boat was Lewis’s or Jefferson’s we don’t know, but it was Lewis who worried about the details of its design and fabrication. In March of 1803, Lewis left Washington, D.C., for the federal armory at Harpers Ferry, located on the upper Potomac River in what is now West Virginia. His visit there served two purposes—to outfit the Corps of Discovery with firearms and oversee construction of the canoe’s iron frame.

Lewis spent a month at the armory, longer than he had expected. Following his departure, he stopped in Lancaster, Pennsylvania, for more provisioning. There, on April 20, he wrote to Jefferson about the iron boat, explaining that his delay at Harpers Ferry had been due to problems converting the concept into a functional watercraft: “my greatest difficulty was the frame of the canoe, which could not be completed without my personal attention to such portion of it as would enable the workmen to understand the design perfectly.”

In ways that he did not fully explain, working out the
boat’s design involved certain “experiments,” including one “to determine its dimensions.” Lewis ordered two sections to be fully assembled—that is, with the iron frame and all the natural materials (hide, wood, and bark) that he expected to gather in the field. Evidently satisfied with the results, Lewis directed the workers to complete the iron frame. Some two months later, when Lewis compiled his expedition inventory, the list included “1 iron frame of Canoe 40 feet long.”

The iron boat then disappears from the record for nearly two years, resurfacing on May 13, 1805. On that day, anticipating the corps’s approach to the Great Falls of the Missouri, Lewis advised his hunters to provide him with elk skins, the intended covering of the assembled frame of his “leather boat.”

The explorers assembled the iron boat in the early summer of 1805 at the Upper Portage Camp, upstream of the Great Falls. There, on June 23, in a clearing on the banks of the Missouri, under willows protecting them from the Montana sun, Lewis and the men put together the frame. For the next 11 days, they worked on completing the canoe. “We called her the Experiment,” wrote Sergeant Patrick Gass in his journal, “and expect that she will answer our purpose.”

ORIGINS

Unfortunately, Lewis’s journal entries at the Great Falls, like his letter to Jefferson, offer little about the Experiment’s design—only a few tantalizing details about its component parts and even less about its construction. But a careful reading of what Lewis wrote, coupled with knowledge about his pre-expedition life as an officer on the Northwest frontier and the construction of bark canoes used by French-Canadian fur traders, can tell us much about the Experiment. The iron boat was not created in a vacuum, and I believe that its design was strongly influenced by the bark canoes of the voyageurs. Consider this excerpt from Lewis’s letter to Jefferson:

Altho’ the weight of the articles employed in the construction of a canoe on this plan, have consistently exceeded the estimate I have previously made, yet they do not weigh more than those which form a bark canoe of equal dimensions, and in my opinion is much preferable to it in many respects; it is much stronger, will carry its burden with equal ease, and greater security; and when the bark and wood are discarded, will be much lighter, and can be transported with more safety and ease.

Here and elsewhere in the letter, as well as in his journals, Lewis refers to the iron boat as a “canoe,” and his wording suggests that it was modeled on “a bark canoe of equal dimensions.”

The bark canoes built by Indians in eastern Canada and adopted by European fur traders had long been the most efficient means of traversing the American wilderness. They carried men and supplies over the vast network of waterways penetrating the continent. Lewis had firsthand knowledge of these versatile watercraft. As an army officer he had been stationed at Fort Detroit, a post situated on one of the main fur-trade routes. The Detroit area was also a hub of canoe manufacturing.

At the Upper Portage Camp, when assembly of the Experiment was nearly complete, Lewis recorded that the frame exceeded 36 feet. Only one bark canoe reached this length, and the similarity can hardly be a coincidence. The Experiment’s model was the canot du maître, the fur-trade canoe used for crossing the Great Lakes. These ca-
noes were 36 or more feet long, 5 or 6 feet wide at the beam, and 30 inches deep at midships. The Experiment’s width and depth were 4 1/2 feet and 26 inches, respectively—smaller than those of the typical canot du maître but consistent with the size of these vessels. (A narrower canoe meant a faster canoe, although it sacrificed some load-carrying capacity.)

The process of building bark canoes casts light on the design and construction of the Experiment.

THE BARK CANOE

The bark canoe is an exquisite feat of engineering. Samuel de Champlain, one of the early explorers of the St. Lawrence River and interior Canada, watched in amazement as a canoe propelled by only two paddlers—one of them a woman—easily passed his fully manned longboat. The French-Canadian fur traders refined the longer canoe into the canot du maître and established a canoe “factory” at Trois Rivières, on the St. Lawrence River. When the British displaced the French, they too depended upon the canot du maître and continued the factory’s operation, employing both French-Canadian and native craftsmen.

Regardless of length, every bark canoe had the same basic features—most notably its covering, the bark of the paper birch, Betula papyrifera. Birch bark was waterproof, flexible, and durable. Minor damage such as splits and tears could be easily repaired in the field. (A narrower canoe meant a faster canoe, although it sacrificed some load-carrying capacity.)

In thinking about the construction of a bark canoe (and also Lewis’s iron boat, which followed many of the same principles) one should keep in mind that it was built from the outside in, starting with the bark and frame. Only after these were in place was the interior completed. Following is a highly simplified explanation of how bark canoes were constructed. (See the sidebar on page 29 for a more thorough description.)

Before starting, builders gathered all necessary materials. Cylindrical lengths of bark were cut from birch trees. (On rare occasions they found a tree wide and tall enough to yield a single piece sufficient to cover the entire canoe, but most of the time they resorted to sewing several smaller pieces together.) Wood from pliable white cedar or black spruce was cut to different lengths, widths, and thicknesses for various components: inwales and outwales, which together form the gunwales (the rail-like edge capping the boat’s sides), stempieces (the curved extensions of the keel that give a canoe its graceful, distinctive shape), ribs, and sheathing (the lining placed between the ribs and the bark).

Wood for thwarts (crosswise bracing bars) was cut from hard maple or ash. Thin spruce roots made the twine-like strands, called wattape, used for lashing and sewing. Pitch, the key ingredient in the sealant used on seams and lash holes, was extracted from spruce or pine and stored in baskets.

The builders placed two of the cedar strips side by side, then tied them at each end with wattape. These formed the inwales. They spread the inwales on the ground and notched them to accept the thwarts. Cut and shaped, the thwarts were then inserted into the notches and lashed to the inwales, forming the canoe’s frame.

After soaking to make it pliable, the bark was placed upon a flat piece of ground. The frame, which also served as a template for the canoe, was laid upon the bark. Working from one end to the other, the builders cut the bark in sections and folded it upward to create the sides. Then
they lifted the frame and secured the sides to it by sand-
wiching the bark between the inwale and outwale.

The builders could now begin work on the interior
structure. They started with the stempieces, which were
inserted at both ends of the canoe and lashed to the bark.
Next, the cedar planks, or sheathing, were secured to the
inside of the canoe. The builders laid the planks adjacent
to each other and flush against the bark, shaping and trim-
ing them for a tight, smooth fit. Finally, the ribs, which
had been soaked and bent into a U shape, were inserted
and tapped in place with a mallet. The ribs ran from stem
to stem and were positioned about three inches apart.

Seats were planks suspended from the gunwales by
leather strips or wattape. The number of seats depended
upon the number of paddlers. The crew of a typical canot
du maître averaged 8 to 10 men, but as many as 17 la-
bored on the very biggest canoes, which plied Lake Supe-
rior. Generally, two paddlers shared a seat.

The last, critical step was applying the sealer to the
bark’s seams and its sewing and lashing holes. The sealer
waterproofed the seams and holes. (The birch bark was
naturally waterproof.) Before it was applied, the pitch was
heated to soften it, and tallow and charcoal were added to
make a gooey, tarlike substance. The builders worked the
sealer into every place where the canoe might leak.

By comparing bark-canoe construction with Lewis’s
description of assembling the Experiment at the Upper
Portage Camp and details in his letter to Jefferson, we can
begin to unravel many of the secrets of what the captain
referred to as his “favorite boat.”

THE IRON BOAT

Lewis’s genius reduced the basic canoe frame to eight dis-
crete sections and substituted iron for wood. Each sec-
tion of the iron frame constituted a subassembly of the
whole and consisted of ribs, longitudinal pieces, and other
parts, so it could be carried in a collapsed state and put
together when needed. Additional components—wooden
bars and stays, bark lining, a covering of sewn hides, and
sealant—could be made on the spot from materials that
Lewis assumed would be readily available in the field.

Despite this simplification, the design and execution of
the iron frame was anything but easy. Unaccustomed to
casting anything so novel, the Harpers Ferry ironwork-
ers demanded Lewis’s hands-on guidance. As previously
noted, in his letter of April 20, 1803, from the federal ar-
mory, Lewis explained to Jefferson that his biggest chal-
lenged was getting “the workmen to understand the de-
sign perfectly.”

Also as noted, Lewis’s “experiment” involved the as-
sembly of two sections—“the one curved, or in the shape
necessary for the stem and stern, and the other simicilindrical, or in the form of those sections which con-
stitute the body of the canoe.”

CENTER SECTIONS

The two types of sections had distinctly different design
elements. The semicircular center sections formed the
main body of the canoe. In his letter to Jefferson, Lewis
listed their dimensions:

<table>
<thead>
<tr>
<th>Simicilindrical Section</th>
<th>feet</th>
<th>inches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of Keel</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Ditto beam</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>Depth of Hole</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

Note—The curve of the body of the Canoe was
formed by a suspended cord.

Lewis doesn’t describe the components of a center sec-
tion, but we can make some hypotheses about them based
in part on the above data. The “Keel” would have been
an iron bar running fore and aft and joined to the bot-
tom of the section’s two U-shaped outer ribs. I say
“outer” ribs because there were almost certainly one or
two interior ribs spaced along the keel as well.

Although Lewis doesn’t list them, each section must
also have had gunwale bars. One can also assume (though
again they aren’t mentioned) that a section had longitudi-
nal bars—perhaps two or three on each side—running
fore-and-aft to give shape to the section and augment its
structural integrity; these would have been structurally
equivalent to the horizontal sheathing in a bark canoe.

The number of longitudinal bars and ribs would have
depended to some degree on the thickness of the iron—
yet another unknown. Lewis at least is clear about the
overall dimension of a center section: Length, 4 feet 6
inches; width (beam), 4 feet 10 inches; and depth of the
whole (“hole”), 2 feet 2 inches.

CURVED SECTIONS

The two curved sections formed the stempieces (the bow
and stern). Given their curves and tapers, fabricating these
sections must have posed special challenges to the iron-
workers. Lewis lists some, but not all, of their dimensions:

<table>
<thead>
<tr>
<th>Curved Section</th>
<th>feet</th>
<th>inches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of Keel from junction of section to commencement of curve</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Length of curve</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Width of broad end 4 10
Depth of Do. Do. 2 2

“Keel” refers to the flat part of the bottom bar, and “curve” to the part that rose from the end of the flat part to its junction with the gunwales. The “broad” or open end was defined by the rib that attached to the adjacent center section. “Do. Do.” means “ditto” and refers to the depth of the broad end. Because it was the point of connection, the width and depth of the broad end of the curved sections and the connecting center sections were identical—4 feet 10 inches and 2 feet 2 inches. We know that the stem sections, like the center sections, must have had gunwales, as well as an unknown number of longitudinal bars and ribs.

The total horizontal length of the curved section isn’t stated but can be deduced. Lewis tells us that the “length of curve,” meaning the length of the curved part of the bottom bar, was 4 feet 5 inches. We know this part rose a vertical distance of 2 feet 2 inches. A gently engineered curve would yield a horizontal length of 3 feet 7 inches, which added to the keel’s horizontal length of 1 foot 2 inches gives a total horizontal length of 4 feet 9 inches. This measurement is consistent with the final assembled length of the Experiment.

Number of Sections and Total Length

Lewis doesn’t tell us the number of center sections, but in his journal entry of July 3, 1805, Private Joseph Whitehouse informs us that the boat had eight sections in all.21 Because there were two stem sections, the number of center sections must have totaled six.22

The final assembled length of 36 feet 4 1/2 inches does not match Lewis’s 1803 inventory of a 40-foot iron canoe.23 When he recorded his field measurement two years later at the Upper Portage Camp, it was probably the first time all eight sections were actually assembled. Perhaps Lewis got his arithmetic wrong or “rounded up” by several feet. Or (more likely) there was a good deal of tolerance in the engineering specifications.

Weight

Knowing the number of sections, the Experiment’s total weight can be calculated from the following data found in Lewis’s letter to Jefferson.24

<table>
<thead>
<tr>
<th>Weight of the Materials.</th>
<th>Curved Section</th>
<th>lbs.</th>
<th>Simicilindrical Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>22</td>
<td>Iron 22</td>
<td></td>
</tr>
<tr>
<td>Hide</td>
<td>25</td>
<td>Hide 30</td>
<td></td>
</tr>
<tr>
<td>Wood</td>
<td>10</td>
<td>Wood 12</td>
<td></td>
</tr>
</tbody>
</table>

Steps in building a bark canoe

The frame (inwales and thwarts) is assembled and laid upon the building bed, a clearing on the ground. Stakes — used later on to support the sides during their construction — are driven into the bed.

The stakes are removed, and the bark is laid down with the frame on top of it in the same position as before. Rocks weight down the frame.

In a process that starts at one end and works to the other, the bark is folded and held in place by the stakes, which are reinserted as the work progresses, and by inboard battens tied to the stakes. Horizontal strips are inserted to help shape the sides. These are later removed.

The sides are now in place, and the frame has been raised.

The outwales have been added, completing the gunwales. The bark is pressed between the outwales and inwales and the entire assemblage has been lashed tightly. Cedar sheathing or planking, held in place by widely spaced temporary ribs, has been added. In the stem, work has started on tapping into place the closely spaced permanent ribs.

Illustrations adapted from Edwin Tappen Adney, The Bark Canoes and Skin Boats of North America (1964); text from Adney and John A. McPhee, The Survival of the Bark Canoe (1975).
The iron in each section weighed 22 pounds, so the iron of the two stem, or curved, sections weighed 44 pounds, while the iron in the six center, or semicylindrical, sections weighed 132 pounds. The total weight of the iron frame—176 pounds—was a reasonable burden to carry up the Missouri.25

The final assembled weight—the iron frame plus other components—can now be estimated. The iron in each curved section weighed 22 pounds, the hides 25 pounds, the wood 10 pounds, and the bark 21 pounds. The total weight for a single curved section was 78 pounds \((22 + 25 + 10 + 21)\), so the two curved sections when fully assembled weighed 156 pounds.

In each of the six semicylindrical sections the iron weighed 22 pounds, the hides 30 pounds, the wood 12 pounds, and the bark 25 pounds, for a total of 89 pounds. The combined weight of the six semicylindrical sections yields a total weight for the fully assembled canoe of 534 pounds. Lewis believed the “articles employed in the construction of a canoe on this plan ... do not weigh more than those which form a bark canoe of equal dimensions.”26 He also boasted that the completed Experiment was lighter “than any vessel of her size that I ever saw.”27 In fact, a 36-foot bark canoe weighed between 500 and 600 pounds.28

CARRYING CAPACITY

The fur-trade canoe had a hauling capacity, or burden (spelled “burthen” by Lewis), of 8,000 pounds.29 At the Upper Portage Camp, Lewis confidently stated that the Experiment was “strong and will carry at least 8,000 pounds with her suit of hands”—an estimate probably based upon his knowledge of the fur-trade canoe.

Lewis had initially calculated the canoe’s burden as part of his Harpers Ferry experiments. A curved section’s “burthen” tested at 850 pounds, so the two curved sections had a combined capacity of 1,700 pounds. A semicylindrical section tested at 920 pounds, so the six sections could handle 5,520 pounds, yielding a total capacity of 7,220 pounds.30 Lewis was reasonably certain that his canoe could haul a greater load. In his letter to Jefferson, he noted that when the sections “were united they appeared to acquire an additional strength and firmness” that would enable the canoe to carry an additional 600 to 1,200 pounds.31

He confidently declared his iron-frame canoe to be stronger than a bark canoe and also lighter to carry: Whenever the boat required portaging, Lewis asserted, its bark and wood components could be discarded, “as those articles are readily obtained for the purposes of this canoe, at all seasons of the year, and in every quarter of the country, which is tolerably furnished with forest trees.”

ASSEMBLY

Leading a small advance party, Lewis came upon the Great Falls on June 13, 1805. The rest of the expedition arrived several days later in six dugout canoes and the white pirogue (the red pirogue having been cached downstream at the mouth of the Marias).32 The explorers set up camps below and above the falls and began the long and difficult job of portaging their tons of supplies and equipment.

The captains decided to leave the white pirogue at the Lower Portage Camp and replace it with the iron boat, whose frame components would be hauled overland for assembly at the Upper Portage Camp. On June 18, recorded Lewis, they examined the frame “and found all the parts complete except for one screw.”33 John Shields, the corps’s inventive blacksmith, easily replaced it. The next day, they cleaned the frame components of rust and greased them to protect against further oxidation.
On June 21, Lewis assigned Gass, Shields, and Joseph Field to carry the iron frame to the Upper Portage Camp. In his journal entry for that day, he noted “several difficulties in preparing the leather boat which are the want of convenient and proper timber; bark; skins and above all that of pitch to pay [seal] her seams, a deficiency that I really know not how to surmount.”

At the upper camp he selected a willow-shaded site for assembling the boat. The four men cleared away some brush and quickly put together the sections. Lewis recorded the frame’s dimensions—length, 36 feet 4 1/2 inches, width 4 feet 10 inches, depth 26 inches. Assembling the frame at this point appears to have been done for the purpose of obtaining the measurements needed for building the rest of the boat from natural materials, and the sections were subsequently disassembled so they could be worked on individually.

WOOD

Lewis’s journal entries are short on specifics about the iron boat’s wooden components. For example, he writes about “horizontal bars” and “cross stays” but fails to describe their appearance or function.

Once again, a knowledge of bark-canoe construction sheds light. The ribs of a bark canoe were spaced vertically from stem to stem roughly three inches apart, providing a dense framework for supporting the sheathing and bark. In the case of the Experiment we can be certain that, given the lightness of its iron frame, it had many fewer ribs than a bark canoe, and with wide gaps between them.

The horizontal iron elements probably consisted of gunwale (top) bars, keel (bottom) bars, and no more than three longitudinal bars on each side of the canoe, so there would have been significant gaps between these elements, too. The wooden horizontal bars were laid along the iron frame and provided additional structure to support the hide covering and bark lining. The wooden cross stays spanned the width of the canoe and functioned as thwarts.

From the start there were problems gathering and finishing the natural materials. On June 24, Lewis recorded that Gass and Shields had “great difficulty in getting straignt or even tolerably straignt sticks of 4 1/2 feet long” for use as wooden horizontal bars. The search extended for several days, and once acquired, the timber proved “so crooked and indifferent that they make but little progress.” The men shaved and notched the sticks on the inner side so they could be fitted to lie flat against the ribs, while the outer side was shaved to present a flat surface for the bark lining and skin.

BARK, WAYSTRIPS, COVERING

The bark confounded Lewis even more. He intended to “line” or “bind” the canoe with bark that would lie between the frame and the hide covering. This was equivalent to the sheathing in a bark canoe. The men spent several days hunting for suitable material, for nothing in the Montana prairie resembled birch. Lewis noted on June 28, “I sent [Gass and Shields] in surch of willow bark, a sufficient supply of which they now obtained to bind the boat.” Once collected and cut, the bark had to be soaked to make it sufficiently flexible to conform to the shape of the hull.

Before the boat could be lined with bark, the wooden horizontal bars and cross stays had to be lashed to the iron frame. This would be accomplished with what Lewis called “way strips,” made from thin bark stripped from willow branches and similar to the wattape used by the builders of bark canoes.

The outer covering would be made of elk skins, which Lewis had been collecting since the expedition’s departure from the Mandan villages three months earlier. Some of these he had to abandon because of rot. Lewis sent George Drouillard, George Shannan, and Reuben Field to shoot elk for fresh skins to replace those lost.

The skins had to be sewn to make a covering large enough to fit the frame. Lewis designated Robert Frazer and Joseph Whitehouse to sew them together. The corps carried an ample supply of needles, and way strips served as lashing. Lewis preferred elk skins, believing them to be tougher and more durable than buffalo hides, but when the hunters failed to shoot enough elk he sent the men in

May 2003  We Proceeded On  31
search of buffalo. Preparing the hides was a tedious job that took a week and involved stripping them of hair. The men shaved off the fine, hollow elk hair and with torches burned off the coarser buffalo hair. To make them easier to sew, the shorn and singed hides were then soaked in the river overnight. Covering all eight sections of the iron boat took a total of 28 elk hides and four buffalo hides.

By the end of June, Lewis had nearly all he needed to complete his canoe: the assembled sections of the iron frame, the wood necessary to fill in the structure and brace it, the hides to cover the frame, and the bark to line the space between the frame and the hides.

Final assembly took more than a week and probably proceeded along the lines described below. (Most of this is based on documentary evidence from the journals, but some of it is conjectural, based on the principles of bark-canoe construction.) They began on July 1, when Lewis ordered Frazer and Whitehouse to sew the hides to each of the eight discrete sections, a task they completed by that evening. The next morning, Lewis and his team connected the sections, a job that took three hours. It would take another three days to complete the assembly, which involved inserting the wooden cross braces, lashing the wooden horizontal bars to the iron ribs, and inserting the bark pieces between the frame and the hide covering. Each section’s covering was sewn to the adjacent covering, creating a single composite skin. To thoroughly dry the skin in preparation for sealing the seams and stitch holes, the canoe was placed upside down on scaffolding and low fires were kindled underneath it.

“PAYING” THE BOAT

Lewis’s journal entries reflect a sense of pride in his creation. On July 5, he wrote, “the boat in every other respect completely answers my most sanguine expectation; she is not yet dry and eight men can carry her with the greatest ease; she is strong and will carry at least 8,000 lbs. with her suit of hands; her form is as complete as I could wish it.”

His enthusiasm, however, was tempered by a note of caution: “the stitches begin to gape very much since she has begun to dry.” Lewis was right to worry, for sealing, or “paying,” the stitched seams was essential to the Experiment’s watertight integrity. Lewis planned to use tar made from pitch for the job and had wrongly assumed they would find ample pine or spruce growing at the Great Falls. Instead, he had to settle for pine logs he found “among the drift wood near this place, from which, I hope, to obtain as much pitch as will answer to pay the seams of the boat.”

On July 1, he ordered Shields and Joseph Field to collect as much wood as they could and “prepare a pit to make tar.” Alas, after 24 hours, “our tar-kiln” produced an abundance of charcoal but no tar, and Lewis worried that it “will not yeald any.” His concerns proved well founded: by Independence Day the kiln had failed to produce even a drop.

“We discovered that a greater part of the composition had seperated from the skins and left the seams of the boat exposed to the water and she leaked in such manner that she would not answer.”

—Lewis, July 9, 1805
As an alternative sealer he opted for a mixture of tallow, charcoal, and beeswax. A similar concoction had been successfully used to fill cracks in the dugout canoes. (The fact that two of these three ingredients—tallow and charcoal—were also components of the sealant used on bark canoes is further evidence that Lewis had at least a theoretical knowledge of bark-canoe construction.) Though a bark canoe would have been pitched solely at the seams and holes, Lewis on July 8 ordered the men to cover the entire surface with this composition, which “gives her hull the appearance of being formed of one solid piece.” After the first coat cooled, “I gave her a second which I think has made it sufficiently thick.”

Tuesday, July 9, was the day of reckoning. By now, the entire corps was assembled at the Upper Portage Camp, along with all the supplies and six dugout canoes portaged from below the Great Falls. The plan was to load all the boats and proceed upriver.

Late that morning, Lewis and his men lifted the Experiment off the scaffold and placed it in the Missouri. The captain then ordered the seats to be lashed in place. We can assume that, like the canot du maître and other bark boats of the Canadian fur trade, the seats were wooden planks suspended from the gunwales with bark boats of the Canadian fur trade, the seats were.

Lewis was pleased and doubtless relieved to see that the boat “lay like a perfect cork upon the water.” The more objective Gass noted that the vessel “rides very light but leaks some”—a telling observation. The experiment’s failure was a direct result of his wishful thinking that a mix of tallow, beeswax, and charcoal could substitute for pitch. This composition was fine for filling cracks in the dugout canoes, which—unlike the Experiment’s failure

Lewis’s mortification was a direct result of his wishful thinking that a mix of tallow, beeswax, and charcoal could substitute for pitch. This composition was fine for filling cracks in the dugout canoes, which—unlike the Experiment’s failure—were rigid, solid-hulled vessels. Inevitably, the iron boat flexed as its hide, bark, and wood reacted to water and the dry Montana air. As Gass succinctly observed, “The tallow and coal were found not to answer the purpose; for as soon as dry, it cracked and scaled off, and the water came through the skins.”

True to his nature, Lewis second-guessed himself about the iron boat’s failure. He blamed the sewing needles used, which had sharp edges that cut the skin. The way strips, or thongs (which he spelled “throngs”) filled the needle holes when the hides were wet, but as they dried, the holes expanded so that “the throng does not fill the holes as I expected” I made them sew with a large throng for that purpose.”

Lewis also concluded that the boat might have stayed afloat had they left enough hair on the hides. He noted that the hair on some of the buffalo hides had not been burned off completely; these “leaked but little and the parts which were well covered with hair about 1/8th of an inch in length retained the composition perfectly and remained sound and dry.” If only he had covered the boat “with buffalo skins singed not quite as close” as the ones employed. Alternatively, “had I only singed my Elk skins in stead of shaving them I beleive the composition would have remained [in place] at least untill we could have reached the pine country … where we might have supplyed ourselves with the necessary pich or gum.”

Lewis was right to be concerned about the needle holes, and they might not have been a problem if he could have sealed them with pitch, a stickier and more elastic medium than his tallow-based substitute. This assumes, of course, that pitch sticks to leather as readily as it does to birch bark. If so, the best and simplest solution might have been to lay in a supply of pitch in advance of the corps’s departure from Fort Mandan. The captains could have set up their tar kiln there or even at Camp River Dubois, in Illinois. Instead, Lewis clung to the hopeful assumption that he would find pines at the Great Falls.

His assertions notwithstanding, it is doubtful that hair on the hides would have enabled the tallow to adhere to them for long under the rigorous conditions of river travel and the constant flexing from loading and unloading supplies and men. Buffalo hair may have retarded drying and kept the tallow pliant for a while, but probably sooner than later it would have hardened, cracked, separated, and peeled.

A larger issue is the difficulty inherent in making a waterproof covering of sewn hides with no practical knowledge of the subject. In the far north, Athabaskans
and Inuits built seaworthy boats from oiled hides sewn together with small needles, using a technique that did not fully penetrate the skin. But these skilled craftsmen had generations to develop and refine their methods; Lewis had three weeks.

The Experiment’s failure left the captains in a bind about the baggage it was intended to carry. They decided to use the existing canoes to ferry its cargo several miles up the Missouri to an area of bottomland they knew to be well timbered with large cottonwoods—raw material for two more dugouts. Clark led 10 axemen overland to start the boat-building job while Lewis and six others stayed behind to take apart the Experiment and cache its disassembled frame. The task took only a couple of hours. When they finished, Lewis went off to nurse his regrets at the end of a fishing line.\(^6\)

\(\text{Foundation member Mark Jordan lives in Walnut Creek, California.}\)

\section*{Notes}
2. Ibid., p. 73.
3. Gary Moulton, ed., \textit{The Journals of the Lewis and Clark Expedition}, 13 volumes (Lincoln: University of Nebraska Press, 1984-2001), Vol. 4, p. 149. All quotations or references to journal entries in the ensuing text are from Moulton, by date, unless otherwise indicated.
5. For more on this, see Donald W. Rose, “Captain Lewis’s Iron Boat: ‘The Experiment,’” \textit{We Proceeded On}, May 1984.
7. See also the reference in his inventory. Jackson, p. 73.
14. In areas where birch did not grow, natives covered their canoes with the bark of elm, spruce, hickory, or basswood—but these were less durable substitutes. Some builders—notably the Inuit and Athabaskans, who lived north of tree line—covered their boats with skins. Adney and Chapelle, pp. 175-211.
19. Ibid. Lewis uses “stern” to refer to the after end of the canoe. A canoe, of course, is symmetrical, so that either end can be the stem (fore end, or bow) or stern, depending on the direction the paddlers are facing. It is clear from the letter’s context that both ends of the iron boat, like those of a fur-trade canoe, had the same shape and dimensions.
22. This number can also be confirmed by the section lengths recorded by Lewis. Multiplying 4 feet 6 inches (the length of one center section) by six yields 27 feet, which subtracted from 36 feet 4 1/2 inches (the length of the assembled boat as measured at the Upper Portage Camp) yields 9 feet 4 1/2 inches (the total length of the stem sections), which divided by two equals 4 feet 8 inches and change—a figure very close to 4 feet 9 inches, the length of a stem section derived by adding 1 foot 2 inches (“Length of Keel from junction of section to commencement of curve”) and 3 feet 7 inches (“Length of curve”).
23. Jackson, p. 73.
24. Ibid., p. 39.
27. Moulton, Vol. 4, p. 356. The actual field materials assembled at the Upper Portage Camp were probably heavier than those Lewis used in making his estimates at Harpers Ferry.
28. See Roberts and Shackleton, p. 200. Weight would vary based on length and width.
29. Ibid., p. 204.
30. Jackson, pp. 39-40. Both Appleman (p. 31) and Dillon (p. 38) mistake the Harpers Ferry calculation for the total burden of the canoe, asserting that the Experiment could carry only 1,700 pounds. Ambrose (p. 86) makes the same error. As with all the information recorded at Harpers Ferry, the numbers refer only to the two test sections, not the entire canoe.
Lewis’s exact wording is, “I am confident that in cases of emergency they would be competent to 150 lbs.” If each of the eight sections could carry 150 additional pounds, it would increase the Experiment’s capacity by 1,200 pounds. Added to 7,220 pounds, this figure gives a total burden of 8,420 pounds. If he was referring to the burden of the combined sections (150 pounds, or 75 pounds each), then the additional burden would amount to 600 pounds, for a total burden of 7,820 pounds.

32 A pirogue is a wooden boat, often in the shape of a canoe. Lewis used the terms pirogue and canoe interchangeably when referring to the expedition’s two pirogues. (Moulton, Vol. 2, p. 71, fn. 1.) The expedition’s two pirogues were probably made from planking, while its dugout canoes were hewed from logs. The pirogues were longer than the canoes and fitted with removable masts for sailing when the wind was right.

33 The “screws” used for assembling the frame had threads that matched the grooved holes drilled into the frame. Whitehouse is quite clear about this when he states that the iron boat had “holes & screws to fit them.” (Moulton, Vol. 11, p. 207.) Depending on the head and whether the shaft was tapered or cylindrical, what Lewis called a screw might better be thought of as a bolt. Whether screws or bolts, it’s not clear how these devices were actually driven into their sockets; in his journal entry for June 21, Lewis refers to “the necessary tools” to assemble the frame, but he is silent on whether they were screwdrivers or wrenches (neither of which are listed in his equipment inventory).


35 This can be inferred from Lewis’s journal entry for July 2, eight days after the measurements were taken: “myself and all other hands engaged in putting the boat together which we accomplished in about 3 hours.”

36 On June 27, Lewis recorded that “Shields and Gass continued the operation of shaving and fitting the horizontal bars of wood in the sections of the boat.” Patrick Gass—the corps’s resident carpenter—provides slightly more illumination in his journal entry for June 23: “The iron boat is to be covered with skins and requires a quantity of thin shaved strips of wood for lining.”

37 Originally, Lewis probably planned to add only a few wooden horizontal bars because he intended to use large sheets of bark as the primary support, or lining, for the skin covering. In the experiments at Harpers Ferry, he used substantially more bark than wood, as can be seen from the weights of each material listed in his letter of April 20, 1803, to Jefferson (bark, 21 and 25 pounds; wood 10 and 12 pounds). In Montana, good bark was not available, so more wood was necessary to support the skin covering.

38 Entry for June 27, 1805.

39 On p. 41 of The Way to the Western Sea, Lavender states that a lattice of sticks supported the covering. If by “lattice” he meant the classical use of wood sticks laid over each other, such as is used in the bull or buffalo boat, he cannot be correct. Lattice would have been impractical in any event, and even more so with the poor wood that the builders had to use in the field. The sticks were shaved to make them flat. Flat horizontal bars provide the only suitable support for the skin and bark.

40 Moulton, Vol. 4, p. 337. Earlier journal entries note that Gass and Shields searched for bark as well as timber. See, for example, Moulton, Vol. 4, pp. 331 and 333. Lewis recorded that on June 26, “they brought some bark principally of the Cottonwood which I found was too brittle and soft for the purpose; for this article I find my only dependence is the sweet willow which has a tough & strong bark.” On July 3 the men were still busy “cutting and fitting bark for lining.”

41 In his entry for June 30, Lewis refers to this soaking process as necessary to “toughen the bark.” The context suggests that his purpose was to render the bark flexible so it could be flattened without breaking.

42 Lewis, July 1: “Gas[s] I set at work to make the way strips out of some willow limbs which tho’ indifferent were the best which could be obtained.” Moulton suggests that “way strips” were perhaps similar “to white spruce roots or bark strips used to fasten together birch-bark canoes.” (Vol. 4, p. 346, fn. 3.)

43 Moulton, Vol. 4, p.149.

44 Ibid., p. 261.

45 Jackson, pp. 71 and 72. Lewis’s inventory list included six saddler’s needles plus 24 gross of needles for Indian presents.

46 Moulton, Vol. 4, p. 338.

47 Lewis makes it reasonably clear that the sewing of the hides was done on a section-by-section basis. See Moulton, Vol. 4, pp. 344, 349.

48 Ibid., pp. 349, 351, and 363. In his journal entry for June 21, 1805, Whitehouse states that the iron boat “had screws to fasten the hides or skins that covered the bottom & sides.” (Moulton, Vol. 11, p. 207.) I think he is almost certainly wrong about this. As mentioned in note 33, there were certainly holes in the iron bars to receive the screws; but I believe that the frame also had lash holes for attaching the hides and that Whitehouse mistook these for screw holes. Whitehouse made this statement two days before the frame was assembled and 10 days before they began attaching the hides, and he never mentioned it again. More significantly, Lewis never stated that screws were used for attaching the hides to the frame. Nor did Gass. On the other hand, it is possible that the iron frame included not just single gunwale bars but (like a bark canoe) inwale and outwale bars joined by screws or bolts, with the hide sandwiched between them.

49 Entry of June 24. Moulton, Vol. 4, p. 330. Clark on July 3 noted that the men were “burning tar of the drift pine.”

50 Lewis, June 21: “I readily perceive several difficulties in preparing the leather boat … above all that of pitch to pay her seams, a deficiency that I really know not how to surmount unless it be by means of tallow and pounded charcoal which mixture has answered a very good purpose on our wooden canoes heretofore.”

51 Gass states that the boat was launched in the “forenoon.” (Moulton, Vol. 10, p. 110.)

52 Moulton, Vol. 4, p. 368; Vol. 10, p. 110; and Vol. 11, p. 221. Whitehouse recorded that “the iron boat leaked so much, that we did not put any load into her.” (Moulton, Vol. 11, p. 222.)

53 Ibid., Vol. 10, p. 110.

54 Ibid., Vol. 4, pp. 354-355. The entry is for July 3, 1805. Two days later, Lewis noted that “the stitches begin to gape very much since she has begun to dry; I am now convinced this would not have been the case had the skins been sewed with a sharp point only and the leather not cut with the edges of a sharp needle.”

55 Ibid., p.369.

56 Adney and Chapelle, p. 186.

57 Moulton, Vol. 4, p. 371.
A compelling (if at times exasperating) critique of the Corps of Discovery

**Exploring Lewis and Clark: Reflections on Men and Wilderness**

Thomas P. Slaughter

Alfred A. Knopf

231 pages/$24 hardcover

Ever since Gary E. Moulton completed the 13th and final volume in his edition of the Lewis and Clark journals for the University of Nebraska Press in 2001—the indispensable index—there has been great joy in the camps of those who write about the expedition. Fresh and unconventional studies such as Clay Jenkinson’s *The Character of Meriwether Lewis* and Brian Hall’s tour de force historical novel, *I Should Be Extremely Happy in Your Company*, challenge received wisdom about the journey. In this slender, fiercely reasoned critique, Professor Thomas Slaughter of Notre Dame presents the boldest and surely most provocative challenge to date to conventional wisdom about the explorers.

Taking the postmodernist position that the story of Lewis and Clark has been “superficially considered” within the culturally defined framework of a heroic journey, Slaughter posits that “neither the journals nor the explorers are what they seem.” The Lewis and Clark he discovers produced journals that “are just as false as they are true,” full of “lies, deceptions, errors, inconsistencies, internal contradictions.”

Slaughter argues that the captains were dealing from the start with a series of crushing disappointments. They realized that they were neither the first white men to cross the continent nor the first to seek a Northwest Passage, the mythical Welsh Indians, or living mammoths. As a result, they created “not daily recordings of ‘fact’ but crafted recollections designed to control public knowledge of the expedition and disguised as daily logs.”

The author supports his analysis by demonstrating inconsistencies among the captains’ journals and by comparing them to descriptions of the same events by the other journal-keepers. This reading has the virtue of presenting a disciplined approach to a story that attracts much uncritical analysis. But, while urging us not to take the published journals at face value, Slaughter gives short shrift to other firsthand sources, such as Clark’s Camp Dubois and River Journals and his Elkskin Journal. And, as Slaughter himself acknowledges, the captains were well aware of the previous journeys of Alexander Mackenzie and David Thompson, not to mention the explorations of the Missouri and Pacific Northwest by British, Russian, Canadian, and Spanish fur traders.

Slaughter makes his strongest case in two chapters where his expertise in natural history serves him well. One chapter fascinatingly chronicles the al-most pathological fear of snakes that shadowed the men of the expedition. Another on the rapacious hunting of wild game by the captains and their men is equally insightful. His discussion of Lewis and Clark’s treatment of Indians, York, and grizzlies is similarly and justifiably severe.

On other topics, Slaughter is fearlessly skeptical but less convincing. The Indian woman who joined the expedition has become “an idealized racial and gender Other” whose “most famous name” is itself a lie. The author prefers the name of “Porivo,” which he says was given to her by the Comanches before she died an old woman on the Wind River Shoshone reservation. He refuses to uncritically accept the widely accepted story of her death in 1812 at Fort Manuel, arguing it reflects cultural biases that give unreliable stories told by so-called “great men” more credibility and authority than Indian oral history.

The men of the expedition do not get much slack in this telling. Taking up the famous confrontation at Two Medicine River, Slaughter condemns Reuben Field for stabbing a Blackfeet youth during the fight (“obviously not necessary”) but hastens to defend another warrior who “fired only after he was hit by Lewis’s shot in what may even have been an involuntary muscle contraction.” But assigning the shot to a “muscle contraction” denies the Blackfeet even the ability to defend themselves willfully.

At times, the author not only drives a point home—but continues right off a cliff. To give just one example, Slaughter reads a sentence fragment written by Clark on August 18, 1804—“My father I am sorry that the first man I brought”—as an interrupted prayer, “a touching admission of frailty and an expression of regret” following the punishing of the deserter Moses Reed. If true, these would be virtually the only religious words written by Clark in the entire 68 years of his life. More believable is Moulton’s conclusion that
Clark was recording speeches made to or by the Indians. Indeed, Clark’s Field Notes entry for that day reproduces other similar speeches beginning with the conventional “Children” and “Father” salutations.

It is too easy to find fault with some of Slaughter’s most iconoclastic judgments. His tendentiousness should not diminish his real contributions. What is important about this clear and briskly written book is the author’s willingness to read the journals with an eye unbiased by the romantic version of Lewis and Clark and willing to see the captains and their men as the fallible mortals they most assuredly were. There is no single, authorized way to interpret their story. The journals are just as much contested terrain as is the land they described. Anyone who cares about the complexities of history will enjoy the irreverence and vigor with which this author undertakes the journey.

—Landon Y. Jones

Hall’s novel of L&C aims high — and hits mark

With the bicentennial officially launched at a snowy inaugural at Monticello on January 18, Lewis and Clark enthusiasts may hope for a new literary voice to set an appropriate tone for the commemoration. In I Should be Extremely Happy in Your Company, novelist Brian Hall makes a convincing bid for the status of bicentennial laureate. The captains and their fellow explorers were risk takers, and Hall has taken some risks himself to craft a historically based drama that will not soon be equaled.

James Alexander Thom has said that good historical fiction requires that a novelist place the reader so squarely in the moment that he forgets he knows what happens next. By this standard Hall’s prose passes muster. He skilfully recreates the flavors and smells of the expedition, enabling readers to feel every fear and pain, every physical or sexual itch. The narrative unfolds through the voices of Lewis, Clark, Sacagawea, and Charbonneau.

Yes, Charbonneau, the butt of ridicule at the time and for 200 years since. Yet Hall manages to make the Frenchman likeable, almost admirable. His comic dialect, often hilarious, may raise the eyebrows of the politically correct, but it adds bawdy charm to the novel. The opera-bouffe characterization is the boudin blanc of the savory trail feast.

Continued next page

Moore and Haynes team up to create the ultimate reenactor’s Bible

Readers of WPO are familiar with the articles of Robert J. Moore and the art of Michael Haynes. Moore, a National Park Service historian specializing in the army life of the Lewis and Clark era, and Haynes, a painter known for his scrupulous attention to period details of dress, have collaborated on a handsome and thoroughly researched book that is sure to become the Bible for reenactors and a definitive guide to illustrators of the Lewis and Clark story.

Lewis & Clark: Tailor Made, Trail Worn is a comprehensive look at the material culture of the members of the Corps of Discovery—how they dressed and groomed, the weapons and tools they carried and how they used them, the type of shelters that protected them from the elements. Moore’s research and Haynes’s evocative sketches and paintings are probably as close as most of us (reenactors excepted) will ever get to understanding their mundane details of clothing and routine. This is an essential volume for serious students of Lewis and Clark.

—J.I.M.
that Hall spreads before his audience. Charbonneau’s soliloquies, however, offer more than comic relief. Like the monologues of the other three narrators, his thoughts demonstrate a universal truth—that every human being has a rich unpublished inner literature, barely glimpsed even by one’s intimates.

Hall misses few opportunities to showcase the quality of his writing. A frustrated Lewis is “Sisyphus with both hands on the boulder and a terrible itch,” and the lanky figure of Thomas Jefferson draped over a chair looks “like a dropped marionette.” He presents Lewis on a visit to the teeming Clark household as surrounded by a “little pond of Clarks,” swept out to the garden on a “Clarktide,” and observing a “Roman turtle of Clarks” invading the drawing room.

He conveys Sacagawea’s story in an English interpretation of Shoshone vocabulary and syntax. This is the novel’s most daring conceit, for it risks criticism from etymologists and unflattering comparisons to portrayals of primitive or prehistoric peoples in pop fiction. Nonetheless, for patient readers the attempt works, imparting an exotic flavor to the novel and a sharp sense of “the other” often missing from attempts to novelize Sacagawea’s inner life. The raw, naturalistic unfolding of the Bird Woman’s account is a healthy counter to the sanitized and almost virginal beatification of her as a national heroine.

Admirers of Lewis who tire of poring over journals. Despite its mythic aura, his novel is as firmly anchored as a legal brief. One often seeks in a historian the second track, envision yourself in a

A musical adventure with voyageur Pierre Cruzatte and his fiddle

Try this. Go outside and pinch off a twig of some fragrant plant such as a pine or sagebrush. Now go back and load this CD into your player. Cue it up so it is ready to play either track two or track four. Now sit down, close your eyes, then take a few deep-cleansing breaths. Take a whiff of the aroma of your plant specimen and then leave the 21st century by pressing the “play” button on your CD player.

If you selected track four, then mentally picture yourself—you are physically tired, but your belly is now full and you are reviving somewhat from your strenuous daily labors. You are sitting around a campfire (can you hear it crackling now?) on the shoal side of the large river you battle daily. Both upstream and downstream along the riverbed, at about a fifty-foot distance, are two other campfires, each surrounded by groups of men, your comrades. One man, Pierre Cruzatte, picks up his fiddle and tightens his bow. Although the night air is crisp and fresh, Cruzatte has kept his fingers limber and warm. As the frogs in a nearby bog begin their evening chorus, Cruzatte’s fiddle starts playing the mournful tune of Shenandoah, and as you relax and digest your supper, your thoughts turn to home far away.

However, if instead you selected the second track, envision yourself in a

Novelist Brian Hall

old married couple—“William Meriwether Lewis Clark”—who could finish each other’s sentences rings true. Lewis’s strength of character shimmers through Clark’s observation that the men would follow Lewis off a cliff. “Clark had only their liking,” he muses, while “Lewis had their awe.”

Hall at the same time does not blink at Lewis’s tendency to fester in self-absorption. His enforced immobility after taking a bullet from the half-blind Cruzatte during an elk hunt prompts agonizing self-examination. Hall offers an interesting insight in which Lewis appears to conflate this hunting accident with his earlier fight with the Blackfeet warriors. He seems riveted on a morbid notion that Cruzatte’s slug may have been cosmic retribution for his hotheaded shedding of native blood.

Pungent descriptions of the mud, blood, and squalor of the early Indian wars make the formative years of Lewis and Clark come alive. Some gut-wrenching sequences, including the fine points of scalping, are reminiscent of MacKinlay Kantor’s Andersonville. The novel’s unflinching, earthy candor is a welcome antidote to the proprieties of bicentennial homilies, and its gritty realism is responsive to James Ronda’s admonition (delivered in his bicentennial commencement address at Monticello) that we do Lewis and Clark right.

The author cements his story not only with known details of the expedition but generous selections from the journals. Despite its mythic aura, his novel is as firmly anchored as a legal brief. One often seeks in a historian the soul of a novelist. Brian Hall is a novelist with the soul of a historian.

—Dennis M. O’Connell

—We Proceeded On—

May 2003

—Daniel Slosberg

Pierre Cruzatte

A Musical Journey Along the Lewis & Clark Trail
We Proceeded On
rough-hewn dugout canoe. It rocks slightly from side to side as your crew-mates, all Métis and expert watermen, break out singing *V’la bon vent* in cadence with their rowing.


Slosberg is Cruzatte’s modern-day alter ego. As Meriwether Lewis wrote in his journal on June 25, 1805, “Cruzatte plays extremly well.” Slosberg’s mastery of the fiddle and various percussion instruments is equally apparent in all 15 of the selections. Slosberg has fully embraced the Cruzatte persona and brings it vibrantly to life.

Slosberg’s music is only part of the experience, however, and if you haven’t yet seen his one-man living-history performance, I urge you to visit his Web site (www.cruzatte.com) and examine his calendar of upcoming shows for one near you.

—Jay Rasmussen

### In Brief

- The captains in Fincastle; L&C glossary; Sierra Club trail guide; two new cookbooks

*The Visits of Lewis & Clark to Fincastle, Virginia,* by Gene Crotty. William Clark found a bride there, and Meriwether Lewis tried to but failed. Fincastle, in extreme southwestern Virginia, figures in both captains’ stories but especially in Clark’s.

The connecting thread is William Preston, Jr, a fellow junior officer who served with Lewis and Clark on the Northwest frontier in the 1790s and hosted them at Greenfield, his family...
Digital Scanning Inc.
pickup from top of
p. 10, Feb. issue

Digital Scanning Inc.
pickup from bottom of
p. 10, Feb. issue
GOOD COMPANY: THE CAPTAINS’ CIRCLE

The Corps of Discovery will always be one of America’s greatest stories, and the Lewis and Clark Trail Heritage Foundation is dedicated to the telling of that story, to its accuracy, and to the preservation of the trail.

Consequently, President Larry Epstein is asking our help to build the Foundation Endowment. There is no better way to honor the Bicentennial; his call is being heard, and the strong Foundation that will be the result is a vision for us all.

For this endowment, nothing is better than the current gift, given now and ready for immediate action. But the significant current gift is not an option for every person who wishes to help. The Foundation program is long-term, and that is also the way that some of our giving can be managed.

The “Captains’ Circle” is there to welcome those whose giving needs to be made in another way: by gifts that will come to the Foundation only after life’s obligations and contingencies are met.

The range of future gift options is broad enough to include almost everyone who wants to be part of this vital effort. Life insurance, bequests by will, charitable trusts, annuities — select the type of gift that has the right features for you.

The Captains are calling! Their heritage needs you! The key is to plan now!

Would you like to know more? Please contact Carol Bronson, Executive Director of the Lewis and Clark Trail Heritage Foundation, PO Box 3434, Great Falls MT 59403, phone 406-454-1234.

Reviews (cont.)

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Lewis & Clark Expedition Illustrated Glossary, by Barbara Fifer. Aimed at school-age readers but of interest to adults, this 80-page softcover volume covers the Corps of Discovery from curtain (“Any illness whose symptoms include chills and fever”) to York: (“The African-American slave who belonged to and had grown up with Clark, and traveled as a civilian on the expedition”). In between are brief biographical sketches of all of the principal characters and short descriptions of animals, plants, places, and things mentioned in the journals. Opening a two-page spread at random, one finds entries for Black Cat, a Mandan chief; Blackfeet Indians; Black Moccasin, a Hidatsa headman; bleeding (Dr. Rush’s prescription for various ills); blubber (one of the Fort Clatsop staples); blunderbuss; boats; boudin blanc; brace (as in pistols); and brant (as in goose). There are helpful cross-references (Worthington, Wortheyton—“See Worthington, Richard”; Scannon—“See Seaman”) but no references to sources or bibliography. (Farcountry Press, $11.95 paper.)

Lewis & Clark, by John Hamilton. Aimed at younger readers, this six-volume set begins with “The Corps of Discovery,” an overview of principals and background of the expedition, and proceeds to “The Missouri River,” “Uncharted Lands,” “The Mountains,” “To the Pacific,” and “The Journey Home.” Each volume is just 32 pages, which is not a lot to tell the story of a journey that covered more than nine thousand miles and took 28 months to complete, but the text offers a concise outline of the expedition, and it is nicely illustrated by a mix of paintings and new and vintage photographs. For his research, Hamilton traveled the length of the trail and took virtually all of the contemporary photos. The volumes are indexed and include tips on places to visit. (ABDO Publishing, $16.95 per volume, $101.70 per set; hardback www.abdopub.com.)

Adventuring Along the Lewis & Clark Trail: A Sierra Club Guide, by Elizabeth Grossman. This addition to the growing list of Lewis and Clark Trail guides is part of the Sierra Club’s contribution to the L&C Bicentennial and “a celebration of environmental protection” that complements other efforts focused on the history of the expedition. It divides the trail into six sections between St. Louis and the Pacific and offers 10 “explorations” in each, plus side trips—all meant to encourage read-
Philadelphia
Annual Meeting

Heritage Inn
ers to leave their cars to experience the trail and adjacent areas by foot, canoe or kayak, or bicycle. Some of the suggested venues—Glacier National Park, the Bob Marshall Wilderness, the Yaak Valley—are somewhat far afield of the route traversed by the Corps of Discovery, but this is understandable considering how little of today’s trail would be recognizable to Lewis and Clark (according to Grossman, only about 10 percent of the Missouri’s floodplain and the Pacific Northwest’s sagebrush grasslands exists in their pristine state). The guide’s emphasis on the environment and natural history is welcome, but it would have been nice if the text had paid closer attention to historical accuracy. Knowledgeable students of Lewis and Clark will be surprised to read, for example, that George Drouillard joined the expedition at the Mandan villages along with an unnamed “Mandan man” who promised to guide the explorers to the Shoshones, or that the United States funded the expedition for the purpose of exploring the Louisiana Purchase, an event that occurred several months after the expedition’s authorization. Such quibbles aside, this is a useful guide for those seeking an experience closer to Lewis and Clark’s than one can get by viewing the trail from an automobile. (University of California Press, $19.95; www.ucpress.edu.)

- The Lewis & Clark Cookbook: Historic Recipes from the Corps of Discovery & Jefferson’s America, by Leslie Mansfield.
- The Food Journal of Lewis & Clark: Recipes for an Expedition, by Mary Gunderson.

Given the interest in the Lewis and Clark Bicentennial and the flood of books on the subject pouring from publishing houses across America, it’s not surprising that these two volumes should land in bookstores at the same time. Both are attractively designed and filled with recipes for the enterprising armchair camp or country cook, and both draw their inspiration from the Corps of Discovery without being slavish about trying to replicate its day-to-day menus. That would be impossible anyway. The journals contain lists of

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**New Lewis and Clark cookbooks by Gunderson and Mansfield**
Nebraska Community
provisions—parched meal, hulled corn, salted pork, coffee, dried beans and peas, sugar, lard, and so forth—and tell us about the game and edible wild plants consumed on the expedition, but they are scarce on details about how such ingredients were prepared. The authors fill in the gaps with knowledge gleaned from other contemporary sources such as cookbooks and travel accounts. Some of their dishes, such as shrimp bisque and cream of tomato soup (Mansfield), or standing rib roast and apple tart (Gunderson), would be at home in 21st-century kitchens, while others—Gunderson’s harvest mince-meat, for example, or Mansfield’s rose geranium cake—belong to an era predating nouvelle cuisine.

In Mansfield’s *Lewis & Clark Cookbook* the recipes are organized by categories—soups, fish and fowl, breads and baked goods, etc. Gunderson’s *Food Journal of Lewis & Clark* hews to a more historical approach by taking the reader chronologically from Jefferson’s White House in 1803 to the expedition’s return to St. Louis in 1806 and integrating her recipes into the timeline. For example, her braised elk brisket appears in the section on the Fort Clatsop winter of 1805-06, when elk was a staple.

Both books include recipes for Toussaint Charbonneau’s specialty dish, *boudin blanc*, a mild sausage extolled by Lewis as a “white pudding we all esteem one of the greatest delacies of the forest.” Gunderson’s recipe is closer to the original, requiring ground buffalo, sausage casings, and a sausage stuffer (sources for all listed). By contrast, Mansfield substitutes pork loin for buffalo and concocts a cream-based puree molded in a soup tureen. Both recipes seem daunting to a reviewer whose kitchen efforts are limited to cheese omelets, but I’m sure that in skilled hands they would result in equally memorable meals. (Mansfield: *Celestial Arts*, $17.95, 510-559-1600, www.tenspeed.com; Gunderson: *History Cooks*, $19.95, 877-581-8422, www.historybooks.com.)

—J.I.M.

**L&C Roundup**

**“Trail guy” Jeff Olson moves over to Park Service**

Jeff Olson, who as the Foundation’s trail coordinator has spent most of the last three years working with local chapters, government agencies, and tribes to protect and preserve the Lewis and Clark National Historic Trail, has joined the National Park Service. In his new position he will serve as public information officer for the L&C Trail (which is administered by the NPS) and the NPS’s traveling bicentennial exhibit, “Corps of Discovery II—200 Years into the Future.”

Olson says he expects to continue to be involved with the Foundation on a variety of projects, including a CD/DVD training aid to help chapters with trail stewardship efforts.

“The Foundation is extremely grateful to Jeff for all he’s accomplished during the run-up to the bicentennial,” said Foundation president Larry Epstein. “His work with chapters, land owners, and tribes in inventorying private holdings was essential to identifying areas along the trail in need of special protection. He has also done a terrific job raising peoples’ awareness of the importance of respecting property rights and ‘treading lightly’ in environmentally and culturally sensitive places. Jeff has been our ‘trail guy’ at a pivotal time in our history, and we will miss his knowledge, common-sense approach to problems, and sense of humor. The good news, of course, is that we’re not saying goodbye to Jeff—we will be seeing a lot of him as he continues to apply his knowledge and diverse skills for the NPS.”

Olson, who assumed his new responsibilities in February, works out of the NPS office in Omaha, Nebraska, with Gerard Baker, superintendent of the L&C National Historic Trail.

**EXTENDING THE TRAIL**

On March 18, Congressional representatives from Kentucky and Indiana introduced legislation to extend the existing Lewis and Clark National Historic Trail eastward from Wood River, Illinois, to the Falls of the Ohio, where Lewis joined Clark in the fall of 1803. The sponsors (all members of the L&C Bicentennial congressional Caucus) are Senator Evan Bayh of Indiana, Representatives Baron Hill and Mark Souder of Indiana, and Representative Anne Northrup of Kentucky.

**L&C ON THE WEB**

The new Journals of the Lewis and Clark Expedition Online Project (http://lewisandclarkjournals.unl.edu) is up and running with the introduction to Gary E. Moulton’s 13-volume *Journals of the Lewis & Clark Expedition* and most of Volume 4. It will eventually offer the full text of the journals, a gallery of images, and audio files of Nebraska poet William Kloefkorn reading selected passages.

The National Register of Historic Places, a unit of the National Park Service, has a new Web site featuring sites of significance related to Lewis and Clark (www.cr.nps.gov/nr/travel). Videotapes of performances in the “Tent of Many Voices,” the 150-seat venue that is part of the NPS’s Corps II traveling bicentennial exhibit, can be seen on the Web site www.lewisandclarknet.com/index.php. The videotaped activities include cultural-arts demonstrations, music, living-history presentations, storytelling, and readings from the expedition journals.

The Missouri L&C Bicentennial Commission has a Web site, entitled “Lewis and Clark Across Missouri,” that features an interactive map, landmarks, and a river-travel day that allows viewers to virtually experience the day-to-day events of the Corps of Discovery as it passed through the state in 1804 and 1806 (http://lewisandclark.geog.missouri.edu/index.shtml).

Discovering Lewis & Clark (www.lewis-clark.org/index.htm) has a new article on the Northern Lights seen by
L&C Interpretive Association

Gib Floyd
the explorers at Fort Mandan. It has also added to its Music on the Trail section the titles of several songs they might have sung. To view, click on “New in April.”

The North Dakota L&C Bicentennial Foundation has revamped its Web site (www.fortmandan.com), which offers a virtual tour of reconstructed Fort Mandan and its interpretive center and has links to many other L&C online sites.

**CATHLAPOTLE PROJECT**

The Advisory Council on Historic Preservation has presented its Chairman’s Award for Federal Achievement in Historic Preservation to the U.S. Fish and Wildlife Service (FWS) for the Cathlapotle Archaeological Project at the Ridgefield National Wildlife Refuge, in Ridgefield, Washington. The Cathlapotle site includes a village, first documented by Lewis and Clark in 1805, that was one of the largest and most important Chinook settlements on the Columbia River. The site was occupied for at least 2,300 years. The FWS’s long-term management plan for the excavation, preservation, and interpretation of the site is regarded as a model of federal stewardship. Several regional partners—Portland State University, the Chinook tribe, and a volunteer advisory panel of Vancouver area teachers—have worked closely with the FWS on the Cathlapotle project.

**L&C IN OTHER PUBLICATIONS**

Most of the April 2003 issue of *American History* magazine is devoted to Lewis and Clark, with four features on the explorers: “Brains and Brawn,” an overview of the expedition by Tom Huntington; “The Corps of Rediscovery,” a travelogue with text and photos by Randall Hyman; “Return of the Native,” a piece about the Mandan chief Sheheke; and “The Mandan,” a piece about the Mandan “story teller” Hyman; “Return of the Native,” a piece about the Mandan chief Sheheke.

**Roundup continues on page 50**

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**Passages**

**LCTHF co-founder Bill Sherman**

William P. (Bill) Sherman, the last of the founding members of the Lewis and Clark Trail Heritage Foundation, died March 5 in Portland, Oregon. “Citizen” was the only epitaph Bill would have wanted, but like Thomas Jefferson, he was a person whose achievements and contributions to society were many and varied: fighter pilot, entrepreneur, art collector, historian, philanthropist, mentor, and teacher.

When he was nine years old, Bill saw a silent movie that motivated him to be a fighter pilot. The day after Pearl Harbor, he volunteered, and eventually flew fighters in the Italian theater, chalking up 88 missions and earning the Distinguished Flying Cross and so many other medals they had to be listed on an addendum to his discharge papers.

A native Montanan, Bill and his beloved wife, Marian, settled in Portland in 1945 and in his words “got hooked into a (fire-place implement) business with four men in a basement of a house and built it into a national organization.” The company grew to $20 million in sales and a work force of 500.

His success as a businessman allowed Bill to pursue his strong interest in western art. He became an early supporter of John Clymer, and his early backing of the Charles M. Russell Auction of Western Art benefited the Russell Museum in Great Falls. His financial support and wise counsel also contributed immeasurably to the success of the Montana Historical Society, the Museum of the Rockies, the Holter Art Museum in Helena, the Multnomah Club of Portland (he was a founding member), and the Oregon Historical Society.

He served the LCTHF as president in 1984–85. He gave crucial advice and financial assistance to the Portage Route and Headwaters chapters, based in Great Falls and Bozeman. He also obtained the Foundation’s support for the authorization to create the Lewis and Clark interpretive center in Great Falls—then made a cash gift of $228,000 to help match a federal grant and raised a like amount from another foundation.

Bill attributed his success to the nuns who taught him in his formative years. In gratitude, he commissioned a lifesize bronze statue of a nun for the St. Helena Cathedral. His motto was, “It is easy to get things done when you don’t care who gets the credit.”

He was deeply concerned about passing the next generation an understanding of, and love for, our nation’s heritage. Last year he made substantial gifts of cash and art—more than 50 signed, limited-edition prints of historical subjects by nationally prominent artists—to schools throughout Montana.

Bill was born in Butte on June 1, 1918, and was buried in the Veterans Cemetery at Fort Harrison, near Helena, on March 24. He received full military honors, including a 21-gun salute by an Air Force honor guard and a black-powder salute by the Lewis and Clark Honor Guard, another of the many organizations he assisted. In addition to his wife, survivors include his son, Roger, and daughter, Charis.

—Bob Doerk

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We Proceeded On May 2003

Innovation Fabricators

Kathryn Moore; and “After the Expedition,” about the explorers’ post-trip lives, by Larry E. Morris.

Thomas J. Gasque, a professor of English at the University of South Dakota, has written about “Naming with Lewis and Clark” in the March 2003 Names: A Journal of Onomastics.

The December 2002 Harper’s magazine includes “The Undiscovered Sacagawea,” a supercilious critique by Ben Matcalf of the Bird Woman’s life and role in the expedition.

Ouest Lointain, a French-language historical journal published in Quebec, Canada, has devoted its Summer 2003 issue to “L’ Expédition de Lewis et Clark, 1804-1806,” with special attention to the French-Canadian members of the Corps of Discovery (450-682-7970; http://pages.infinet.net/ouest).

An article by Kathryn Moore on “The Lost Years of Meriwether Lewis” will be featured in the Summer 2003 issue of Journal of the American West.


FOR THE RECORD
On page 36 of the February 2003 WPO, a review of Lewis and Clark in the Illinois Country lists “George Gibbon” among the members of the Corps of Discovery. The correct name, of course, is George Gibson.

George Berndt points out an error on page 20 of the November 2002 issue regarding an excerpt from the jour-
Kay Your Star Is Shining

LCTHF Necklace
We Proceeded On May 2003

Roundup (cont.)

nal of Joseph Whitehouse on a demonstration of Lewis’s air gun. That demonstration occurred not among the Teton Sioux, as stated, but among the Yankton Sioux. In the same issue, Ludd Trozpek advises that a picture on page 13 of Private Hugh McNeal and a grizzly is not from the 1807 Pittsburgh edition of Patrick Gass’s journal (which wasn’t illustrated) but from the 1810 Philadelphia edition.

On page 16 of the August 2002 issue, the caption for the painting of a Gros Ventres chief misspells the first name of the artist, Karl Bodmer. On page 3 of the same issue, the letter on celestial navigation contains an error pointed out to us by the writer, Bruce Stark: “I said if Lewis’s personal error and an unknown index error canceled when the sun was east of the moon, they would add to each other when the sun was west of the moon. Now I realize this isn’t true. Although those sets of sun-lunars Lewis took are excellent, they don’t tell us as much about the index correction as I’d hoped. Still, they do give good longitudes.”

Walter J. Gary of Walla Walla, Washington, informs us that we were mistaken in identifying the Corps of Discovery as the subject of the painting by John Clymer used on the cover of the May 2002 issue. The painting [above], which shows a group of European-Americans parleying with Indians on the Lower Missouri, depicts the meeting of May 31, 1811, between a Sioux war party and the overland party sponsored by fur trader John Jacob Astor and led by Wilson Price Hunt. (The painting has appeared in at least one book about the Lewis and Clark Expedition without specifically identifying the scene, which is how we made the wrong assumption that Lewis and Clark were the subjects.)