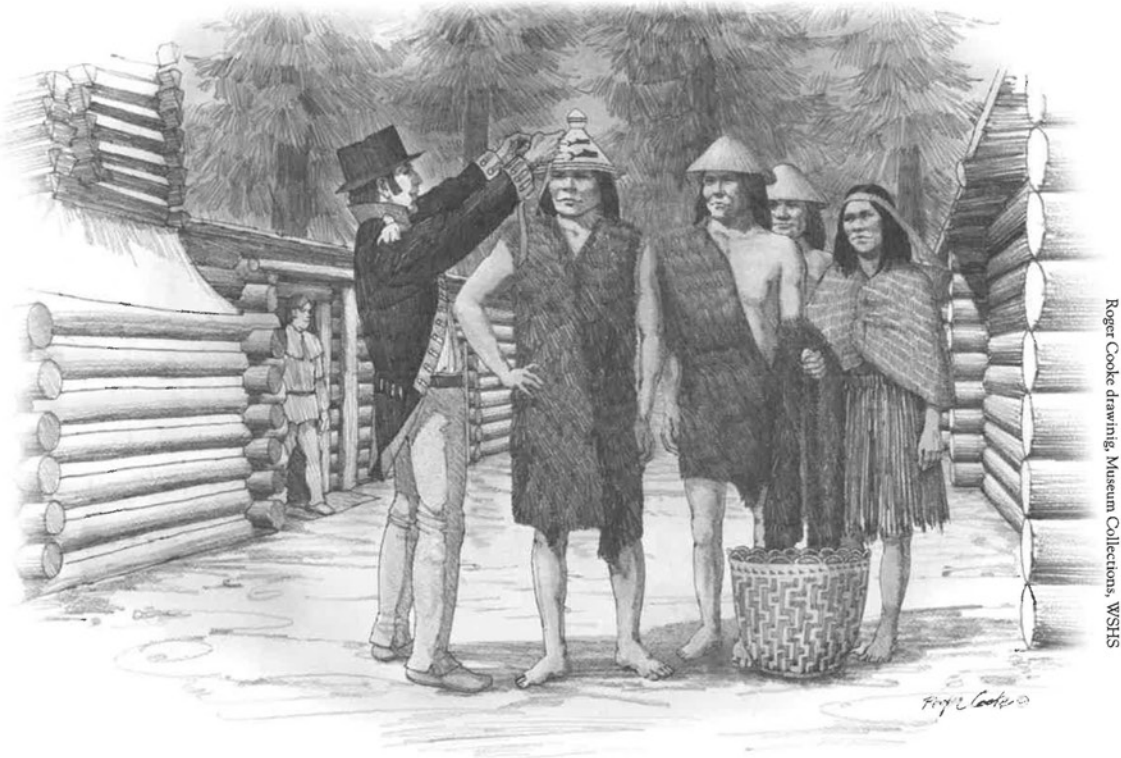


# SCIENTIFIC EXPLORERS

## *A Review of Literature on Lewis and Clark's Ethnography, Botany, and Zoology*



Roger Cooke drawing, Museum Collections, WSHS

By Jay H. Buckley and Julie A. Harris

**W**HEN MERIWETHER LEWIS and William Clark returned to St. Louis in 1806, they had just completed a difficult and dangerous two-and-a-half-year journey through the West. Citizens of St. Louis hailed them as heroes, celebrating the captains as courageous explorers, expert frontiersmen, and skilled military leaders. But when Lewis and Clark embarked on their journey in 1804 to explore the Missouri and Columbia rivers and find a viable waterway to the Pacific, plus examine the possibilities for a potentially lucrative fur trade, they carried another important commission from President Thomas Jefferson: to describe in detail the natural world through which they passed and the native people who inhabited it.

Although the captains devoted a significant portion of their journals to these observations, their scientific achievements were largely overlooked in favor of their more geographic accomplishments. Despite Jefferson's detailed request for scientific information, Lewis and Clark's findings lay neglected for almost

a century. Fortunately, when later historians realized this oversight, they dedicated many books and articles to the Corps of Discovery's scientific discoveries and reestablished the captains' contributions to North American ethnography and natural history as a crucial aspect of the expedition.

Believing that the future greatness of the United States of America lay to the West, Thomas Jefferson had long dreamed of sending an expedition into French and Spanish-held Louisiana territory in order to form alliances with the Indians and take inventory of potential natural resources. Understanding the importance of staking American claims in territory coveted by Britain, France, Spain, and Russia, Jefferson attempted to initiate expeditions. He was unsuccessful in getting George Rogers Clark, John Ledyard, Moses Marshall, and André Michaux to undertake the endeavor. During Jefferson's first presidential term American diplomats James Monroe and Robert Livingston did succeed in negotiating the purchase of Louisiana from France in 1803, doubling the size of the young

American republic. Although Jefferson had planned to explore Louisiana, even as a foreign territory, he finally found himself in a comfortable political position to realize his economic and imperial aspirations in the West.

**T**HOMAS JEFFERSON'S CAREFULLY conceived expedition reflected his tendencies as an amateur Enlightenment scientist. His book, *Notes on the State of Virginia* (1781), reveals his detailed attention to the plants, wildlife, and weather of his native state. In his enthusiasm for ethnography and natural history, Jefferson had amassed a large collection of Indian artifacts, fossils, and plant and animal specimens. He regularly corresponded with leading European scientists and served simultaneously as president of the United States and president of the American Philosophical Society. Because Jefferson greatly valued natural history, he had leading American scholars train his hand-picked expedition leader, Meriwether Lewis, in botany and zoology.

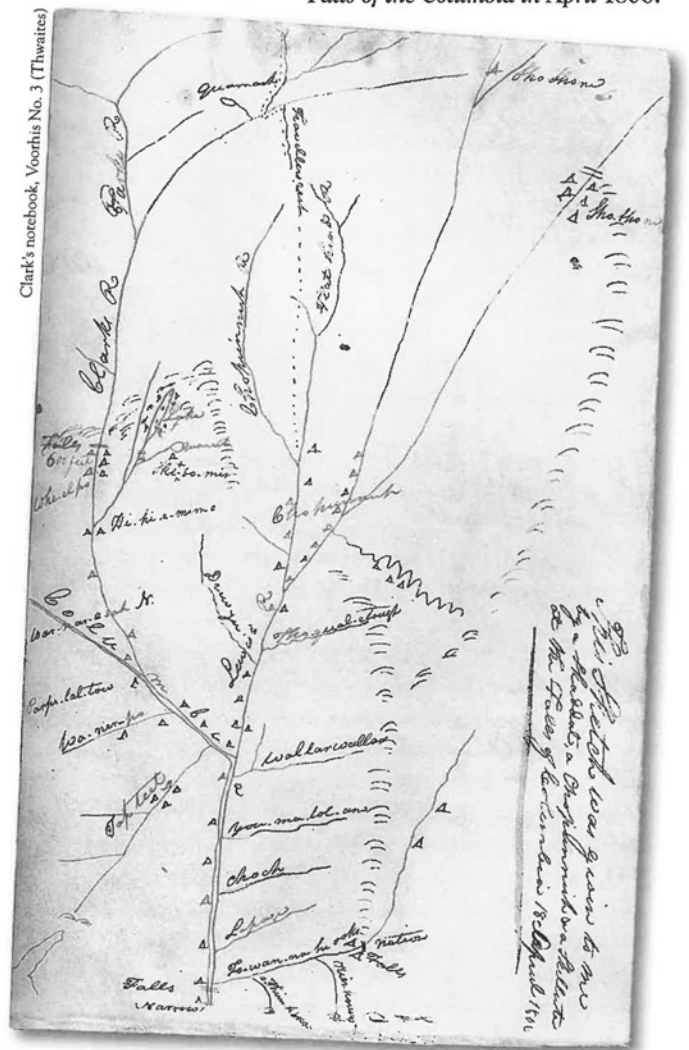
Mindful of Jefferson's request to observe and record information on the people and places they encountered, Lewis and Clark dutifully kept lists of their findings, fully expecting to publish their discoveries when they returned to the United States. They made hundreds of celestial observations, which they converted into maps. And they described almost every animal or plant new to them, often collecting specimens to send back to Jefferson. In the early 19th century, indigenous peoples were conceived as sufficiently distinct from peoples of European descent, that inquiry into their lifeways was considered an aspect of natural history. Consequently, the captains recorded their customs, origin stories, and vocabularies as they recorded the terrain around them. Ironically, American Indians provided critical assistance and information to the expedition, demonstrating the intellectual accomplishments of their civilization. In all, Lewis and Clark compiled some of the finest 19th-century descriptions of the native inhabitants and the natural world of the Great Plains and the Northwest.

Unfortunately, politics and personal tragedy prevented immediate publication of the expedition's scientific findings. Two unfortunate deaths delayed the analysis and publication of the scientific wealth contained in the journals. First, Meriwether Lewis died in 1809, perhaps by suicide. Lewis had collected most of the scientific data during the expedition and intended to publish it afterward. After Lewis's death, Jefferson and Clark entrusted preeminent botanist Benjamin Barton with the task of preparing a scientific volume on the expedition. He died in 1815, leaving the volume unfinished and his papers in disarray. His unfortunate death led to indefinite delay of the publication of the ethnographic, zoological, and botanical material of the journals. Worse, it led to the loss of over 23 vocabularies of Indian languages that Lewis and Clark had painstakingly collected on their journey across the continent. Jefferson lamented in a letter to Alexander von Humboldt that the "botanical and zoological discoveries of Lewis will probably experience greater delay, and become known to the world thro' other channels before that volume will be ready."

Meanwhile, Clark had commissioned Nicholas Biddle, a prominent Philadelphia lawyer, to write an account of the expedition based on the captains' journals. The Biddle edition, *Journals of the Expedition Under the Command of Capts. Lewis and Clark* (1814), firmly established the two men's reputation as explorers and adventurers. Because Biddle lacked a scientific background, however, his work did not mention any of the expedition's natural history contributions. As Paul Cutright described Biddle's edition, "Because it excluded the great bulk of scientific detail, it failed to portray the leaders as important forerunners in such fields as botany, zoology,

**OPPOSITE PAGE:** Lewis and Clark made numerous ethnologic observations when they met differing Indian nations along their route. "Those people call themselves War-ci-â-cum and Speake a language different from the natives above with whom they trade for the Wapato roots of which they make great use of as food." William Clark, November 7, 1805.

**BELOW:** Map sketch of the "Confluence of the Snake and Columbia Rivers and Environs" depicting the geography from The Dalles east to Traveler's Rest, compiled by Clark with information from native inhabitants—a Skaddat (Klickitat), a Chopunnish (Nez Perce), and a Skillute (Dalles)—at the Falls of the Columbia in April 1806.



geography, cartography, meteorology, and ethnology. In particular, it failed altogether to establish the true measure of Meriwether Lewis as a naturalist.”

Disturbed at the failure to publish the scientific findings of Lewis and Clark, Jefferson sent the journals to the American Philosophical Society in Philadelphia. By this time, however, public interest in the expedition had waned, and the scientific achievements of the explorers faded into obscurity. The expedition's journals, letters, and collections lay scattered in public and private collections across the United States and Europe; some resurfaced later, others were lost indefinitely.

WITH THE PUBLICATION of the Biddle edition of the journals, Patrick Gass's expedition journal, and several apocryphal accounts of the Corps of Discovery's adventures, the public's appetite for Lewis and Clark literature remained satiated until the end of the century. No scholar came forth to study the expedition's scientific contributions until 1891 when a New York publisher approached Elliott Coues, a prominent frontier historian and naturalist, about editing a reissue of Biddle's work. Coues enthusiastically tackled the job and tracked down the original journals that had quietly rested at the American Philosophical Society in Philadelphia for three quarters of a century. Employing his talents as a historian and a naturalist to their fullest, Coues produced a heavily annotated version of Biddle's 1814 edition, *The History of the Lewis and Clark Expedition* (1893). Coues's footnotes on geography, botany, and zoology often surpassed the amount of actual text. For the first time, a historian portrayed Lewis and Clark as pioneering naturalists.

Reuben Thwaites became the next historian to contribute to the study of the natural history of the expedition. As president of the Wisconsin State Historical Society, Thwaites received authorization to edit the journals of Lewis and Clark based on his extensive experience and solid reputation as editor of the *Jesuit Relations and Allied Documents* (1901). Because he was not specifically trained in the sciences, Thwaites could not include the same extensive scientific annotation as Coues. Thwaites's major contribution was the inclusion of a catalogue of Meriwether Lewis's newly-discovered collection of over 200 plant cuttings. He also included an atlas volume that displayed Lewis and Clark's cartographic contributions to western geography.

Coues's reissue of the Biddle edition and Thwaites's edition, *Original Journals of the Lewis and Clark Expedition, 1804-1806* (1904), set the stage for a broad spectrum of Lewis and Clark scholarship. Despite Coues and Thwaites's personal contributions in bringing to light the natural history of the expedition, very little literature on the expedition's scientific discoveries was produced for many years. Although Lewis's "Ohio Journal" was

discovered in 1913, its editor, Milo Quaipe, lacked the knowledge and/or enthusiasm to annotate the wealth of natural history contained in that logbook. Another valuable opportunity to highlight Meriwether Lewis's unusual gifts as a naturalist and observer was lost. The idea of Lewis and Clark as pioneering naturalists would remain obscure until the advent of several new discoveries and publications such as *The Field Notes of Captain William Clark* (1964), edited by Ernest Staples Osgood, and *The Letters of the Lewis and Clark Expedition with Related Documents* (1962), edited by Donald Jackson, helped revitalize the field. Since the 1960s scholars have worked to fill the scientific void caused by the deaths of Lewis and Barton. Let us consider some of the historiography of the last half century pertaining to three important aspects of the natural history of the expedition: ethnography, zoology, and botany.

### Ethnography

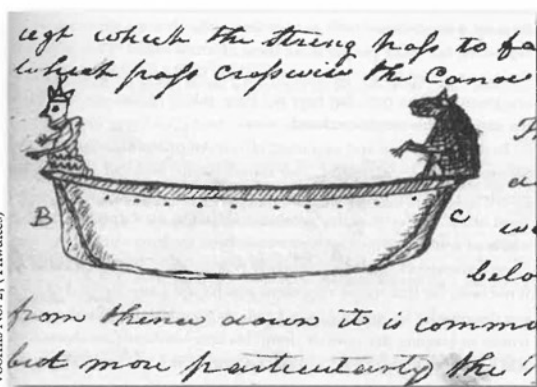
LEWIS AND CLARK'S JOURNALS represent one of the most detailed, early ethnographic records of early 19th-century Indian life on the northern Great Plains and in the Northwest. During Lewis and Clark's 1804-06 tour of the West, they passed through the homelands of some 50 nations, sometimes sojourning for weeks and months with the Mandan, Shoshone, Nez Perce, and Clatsop peoples, to name but a few. The captains filled their journal entries with descriptions of their interactions with these native groups. They also systematically

questioned the tribes about cultural practices, religious beliefs, social structure, diet, and even methods of canoe construction. Part of their documentation included collecting Indian artifacts such as clothing; a number of items, such as pipes and ornaments, were gifts. Some of these items remained in William Clark's private collection while others were left in the hands of Thomas Jefferson and, later, Charles W. Peale's American Museum.

Some of the records documenting these artifacts were lost when a trunk that Lewis shipped to Jefferson was stolen and its contents thrown into Chesapeake Bay.

Historians initially interpreted the expedition completely from the eyes of the American explorers, emphasizing their swashbuckling adventures. They also portrayed the journey as a passage through an empty wilderness waiting to be settled by yeoman farmers. Scholars recently have begun to view the expedition as a voyage through an already crowded landscape of people who were just as curious about or wary of the explorers as the explorers were of them.

Although Indian relations was one of the most important aspects of the expedition, it was one of the last to be thoroughly analyzed by scholars. The first serious article did not appear until 1954 when Verne F. Ray and Nancy O. Lurie coauthored "The Contributions of Lewis and Clark to Ethnography" in the



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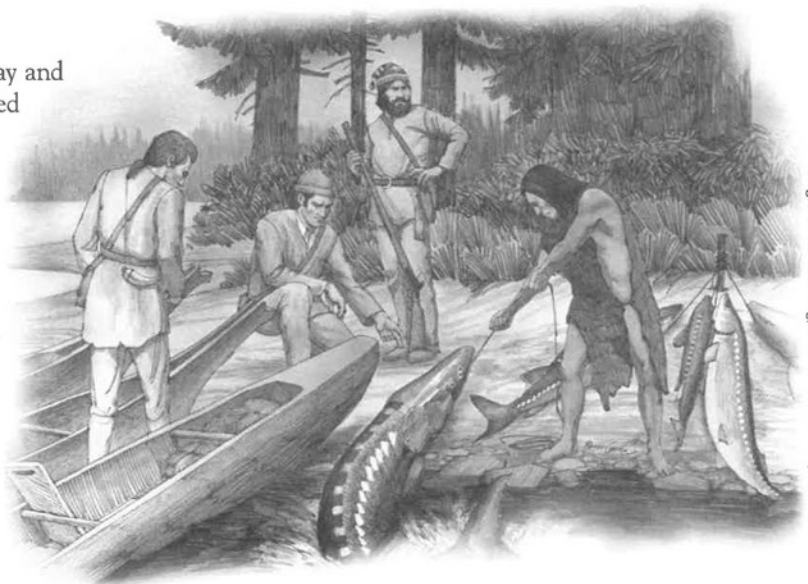


*Journal of the Washington Academy of Sciences* (1954). Ray and Lurie issued an ardent call for more research but cautioned scholars to remember that the “ethnographic investigations were carried out by military men pursuing a primarily political objective, under harrowing physical conditions, and without previous training in any sense adequate to the task.” Ray and Lurie argued that Lewis and Clark “respected the rights and property of the Indians even at the cost of the objectives of the expedition” and that they “recognized the Indians as their intellectual equals and they did not ascribe cultural differences to innate characteristics.” Although most contemporary scholars would disagree with Ray and Lurie on these points, their article encouraged further research, citing the need for Lewis and Clark’s ethnographic data to be rendered into modern terms.

The call for additional research initially went unanswered, but it slowly gathered momentum until by the mid 1970s scholarly literature on the ethnographic aspects of the expedition proliferated. Anthropologists used Clark’s maps to locate Indian villages on the Missouri; they mined Lewis’s descriptions for insight into Indian cultures. Historians placed Lewis and Clark’s Indian policies within the context of federal Indian policy. Scholars also attempted to look at the expedition from Indian perspectives, trying to gauge the width of the cultural divide. While academics have broached topics as diverse as peace medals, speech-making, and Indian women’s roles, William Foley, Charles Rice, and James Ronda have contributed some of the best literature on Indian relations during the expedition.

Foley and Rice have contributed several valuable articles to Lewis and Clark studies. Their essay, “The Return of the Mandan Chief” (1979), demonstrates how the “differing cultural perspectives of the region’s Native American and European inhabitants complicated official efforts to incorporate the Louisiana Territory within the expanding American republic.” The Mandan chief Sheheke, who had visited President Jefferson in Washington, D.C., could not return to the Mandan villages because of Sioux and Arikara hostilities on the Missouri. The long delay in returning the chief ended up precipitating a scandal involving alleged misuse of public funds that may have been a factor in Lewis’s death; it compromised the reputations of all government officials involved, including Lewis, Pierre Chouteau, and Secretary of War William Eustis; and it nearly precipitated a war between the Arikaras and the United States. Foley and Rice’s skillful treatment of this topic provides information on Lewis and Clark, the Mandan Indians, Jeffersonian Indian policy, and frontier politics.

ONE OF THE MOST important works on Indian interactions with Lewis and Clark is James Ronda’s *Lewis and Clark Among the Indians* (1984). In this groundbreaking book and in numerous articles, Ronda has portrayed the Indians not as passive bystanders but as key actors. Ronda described some of the common cultural biases of



Roger Cooke drawing, Museum Collections, VSHS

ABOVE: After eating lunch while waiting for the tide to return on March 25, 1806, the captains met two canoes of Clatsops loaded with dried anchovies and sturgeon, possibly white sturgeon (*Acipenser transmontanus*).

OPPOSITE PAGE: Lewis and Clark often made small sketches to illustrate their journal entries, including this canoe with carved images, drawn by Clark on February 1, 1806, with this observation: “This form of a canoe we did not meet with untill we reached tide water or below the Great Rapids.”

the day and how those perceptions shaped Lewis and Clark’s diplomatic efforts. Ronda discussed the conference procedures, language barriers, and trading systems that both the captains and the Indians encountered or employed in their quest for mutual discovery. He explained that although Lewis and Clark were sincere in their mission to promote trade and intertribal peace, their lack of political and social understanding of the Indians ultimately undermined their intentions and endeavors. With the publication of a series of excellent articles, including “Lewis and Clark and Enlightenment Ethnography” (1984), “Exploring the Explorers: Great Plains People and the Lewis and Clark Expedition” (1993), and “Coboway’s Tale” (1999), Ronda has continued to explore the theme of mutual discovery. Yet, in most of these articles Ronda confronts the shortcomings of the expedition and does not hesitate to state that what eventually followed the expedition—the onslaught of white immigration to the West—was disastrous for the tribes.

One of the most recent works to interpret Native American experiences with Lewis and Clark is *Arts of Diplomacy: Lewis and Clark’s Indian Collection* (2003). A social anthropologist and curator at Harvard’s Peabody Museum of Archaeology and Ethnology, author Castle McLaughlin discusses the circuitous route some of these objects took: from Jefferson’s collection to the Peale Museum of Philadelphia, to P. T. Barnum’s exhibit, to the Boston Museum, and finally, in 1899, to the Peabody Museum. *Arts of Diplomacy* argues that Indian tribes initiated making alliances, promoting their own interests, and forming friendships with the expedition leaders. Also, Missouri



**ABOVE:** In the vicinity of Cape Disappointment and near the Wallacut River, one of the men shot a California Condor (*Gymnogyps californianus*) with a wingspan of nine feet that was feasting on the remains of a beached whale. Today, this endangered species is being bred in captivity and has been reintroduced in several locations in California and Arizona.

**OPPOSITE PAGE:** The condor was captured on February 17, 1806. This sketch accompanies a meticulously detailed description of the bird, beginning thus: "I believe this to be the largest Bird of North America. it was not in good order and yet wayed 25 lbs...."

Historical Society curator Carolyn Gilman's *Lewis and Clark: Across the Divide* (2003), the official companion to the bicentennial exhibition, describes the journey to the Pacific and the exchanges that took place between the Indians and the explorers. Photographs accompanying the text illustrate the material world of Lewis and Clark and the Indians between 1804 and 1806.

Jerry Ostler's *The Plains Sioux and U.S. Colonialism* (2004) advances the thesis that the Sioux creatively responded to the challenges brought by American expansion—which began in earnest for them with Lewis and Clark—and persuasively calls for future research that incorporates history from both the Indian and Caucasian perspective. Ostler posits that the Lewis and Clark encounter is but one episode that helps reveal the "myriad ways in which colonized peoples have resisted, contested, and adapted to colonialism." James Ronda's "Tough Times at the Bad [River]" (2002) shows how the captains' ignorance of Sioux politics almost led to disaster in their encounter with Black Buffalo's people while Robert Saindon explores Lewis's "Unhappy Affair" (2002) with the Blackfeet that did culminate in tragedy on Two Medicine River. Most recently, Harry Anderson's "The Diplomacy of Lewis and Clark among the Teton Sioux" (2005) provided a new look into the post-expedition council Clark held with the Sioux in the spring of 1807.

Two studies on Nez Perce relations with the expedition continue this trend: Zoa Swayne's *Do Them No Harm: Lewis and Clark among the Nez Perce* (2003), and Lynn and Dennis Baird's edited compilation, *In Nez Perce Country: Accounts of the Bitterroots and the Clearwater after Lewis and Clark* (2004).

Swayne presents a captivating narrative of the friendship between the Nez Perce and members of the Lewis and Clark expedition (and Americans in general) that lasted through the Civil War era. The Bairds take this one step further by using original source material to delve into Nez Perce-Anglo relations with the American and Canadian explorers and missionaries who followed in the captains' wake.

Individual Indians have also received greater attention. The fascination over Sacagawea shows no indication of declining. Since Grace Hebard's *Sacajawea* (1932), Harold Howard's *Sacajawea* (1971), and Ella Clark and Margot Edmonds' *Sacajawea* (1979), two more recent works evaluate her legendary status and her role as an influential Indian woman. Donna Kessler reassesses the truths and myths surrounding her life in *The Making of Sacajawea* (1996). Dale Nelson, on the other hand, places her within the context of the Charbonneau family unit, fleshing out her relationship with her husband, her children, her biological and adopted tribes, and with the members of the expedition in *Interpreters with Lewis and Clark* (2004). Another Indian diplomat has received attention in Tracy Potter's *Sheheke* (2003). Potter successfully weaves together archival and tribal sources to chronicle the history of this influential Mandan leader.

**P**ERHAPS THE MOST important development in Lewis and Clark ethnography has been the insight offered by Native Americans—scholars, National Park Service employees, artists, and individuals associated with the Lewis and Clark Bicentennial. Amy Mossett, Allen Pinkham, Jack Gladstone, Otis Half-Moon, and Gerard Baker are but a few who have been instrumental in making sure the Indian perspective has been well-represented during the bicentennial. Their public service and outreach have been a key element in using the Lewis and Clark bicentennial commemoration to build bridges between Indian and Anglo cultures and make sure Indian voices are heard.

Indians' voices came through loud and clear in a 2004 special issue of the *Wicazo Sa Review*: "American Indian Encounters with Lewis and Clark." Contributors to the issue included Clarissa Confer, Elizabeth Cook-Lynn, Matthew Jones, Loren Yellow Bird, James Fenelon, Lydia Whirlwind Soldier, Mary Louise Defender-Wilson, and Craig Howe. Howe, a Lakota scholar and tribal member, provided an important reinterpretation and reassessment of the tense encounter between the Lakotas and the expedition by examining the different diplomatic strategies—such as theft, demands, threats, exchange, and friendship—that Black Buffalo and the Partisan employed during several days of negotiations with Lewis and Clark. This and other reassessments add important insight that can challenge, modify, and expand existing narratives.

Some Indians believe nothing good came out of the Lewis and Clark expedition and see little reason to "celebrate" or even "commemorate" the bicentennial. Others have viewed the bicentennial as an opportunity to tell their stories of cultural

adaptation and survival, and use the influx of tourists to teach a tribal perspective of historical events. They have utilized the additional resources resulting from the bicentennial to expand tribal efforts to retain and strengthen Indian languages and cultural values, compile tribal histories, and prepare for a brighter future. Leading the way has been a group known as the Circle of Tribal Advisors, one of five volunteer advisory circles to the National Council of the Lewis and Clark Bicentennial. Tribal participants articulated their priorities and concerns about telling their own stories about the expedition and its consequences; protecting their cultural resources, natural resources, and sacred sites; revitalizing native languages and cultures; and fostering intertribal and intercultural reconciliation.

A good example of this cooperation has been the Salish-Pend d'Oreille Cultural Committee which, along with the Elders Cultural Advisory Council of the Confederated Salish and Kootenai Tribes, worked with the Montana Bicentennial Commission to bring tribal voices and tribal history front and center in the 2005 publication, *The Salish People and the Lewis and Clark Expedition*. This joint effort provides an in-depth examination of events surrounding the Native American encounter with the Lewis and Clark expedition and its historical significance.

### Zoology

IN THEIR ENTHUSIASM to identify and collect new varieties of animals, Lewis and Clark actually sent live specimens—four magpies, one prairie dog, and a sage grouse—back to St. Louis in hopes that they would reach the president. The prairie dog and one of the magpies arrived alive in Philadelphia. Although Lewis and Clark only sent live fauna down the river once, they continued to collect and preserve the skins, feathers, and skeletons of other animals; and Lewis meticulously described new scientific species in his journal. They returned east with a fascinating collection of birds and mammals, which Jefferson soon put on display at Monticello. The specimens eventually moved to the Peale Museum where they remained on display until the museum's closure. The zoological samples, along with many of the Indian artifacts, next passed into the hands of P. T. Barnum, whose museum later suffered a fire in which most of Lewis and Clark's carefully collected specimens were burnt or lost.

Like so many of the expedition's scientific achievements, Lewis and Clark's zoological contributions soon sank into obscurity. Some enterprising American zoologists such as Alexander Wilson, George Ord, and Thomas Say did read some of the expedition records, which led these naturalists west to see for themselves some of the exotic animals described by Lewis and Clark. Thus, although the explorers were not recognized for

their discoveries immediately, they did encourage the growth of American zoology, which at the time had been largely dominated by Europeans. Eventually, when Elliott Coues edited the Biddle edition, he realized the extent of Lewis and Clark's zoological accomplishments. "The contribution to zoology made by Lewis and Clarke [sic], though not extensive . . . assumes great importance in the fact that to it we owe our first acquaintance with a large number of species," he postulated, noting that "Lewis and Clarke were the real discoverers, and actually the original describers, of many animals with which their names are seldom associated now in our acquired familiarity with the same species under names subsequently bestowed by others." While Coues was the first to actually recognize Lewis and Clark's zoological discoveries, later historians would beg to differ on his faint praise of the worth of their findings.

Thwaites's 1904 edition of the Lewis and Clark journals made the expedition's ample zoological findings available for study. Between 1904 and 1961, however, only a handful of zoological treatises on the Lewis and Clark expedition trickled out, mostly on local or regional topics such as the birds of North Dakota or other narrow subjects. During this period of neglect, conservationist Raymond Darwin Burroughs discovered the copious pages of meticulous zoological descriptions contained in the Thwaites edition. He went from merely counting the number of game killed on the expedition to writing a capstone work entitled, *The Natural History of the Lewis and Clark Expedition* (1961).

Although his title referred to "natural history," Burroughs's work only dealt with the zoological aspects of the explorers' findings and mainly consisted of a compilation of expedition journal entries relating to the animals encountered on the way to the Pacific. Burroughs quoted heavily

from Thwaites and Coues, but he also provided a list of the species discovered and anecdotes accompanying those encounters. Burroughs's book encouraged further scholarship by more firmly establishing Lewis and Clark's reputation as skilled, if amateur, scientists. Not only did he establish the importance of zoology on the expedition, he also became the first scholar to publish a full-length book on any natural history aspect of Lewis and Clark's journey west.

After Burroughs, Paul Russell Cutright advocated for public recognition of Lewis and Clark's scientific contributions. With articles entitled "The Odyssey of the Magpie and Prairie Dog" (1967) and "Meriwether Lewis: Zoologist" (1968), he directly challenged scholars such as Elliott Coues and Henry Setzer who claimed that Lewis was a scientific lightweight and that Jefferson should have sent a professional naturalist on the expedition.





Pointing out Lewis's extraordinary powers of observation and technical skill, Cutright praised the captain's accurate descriptions and his ability to use all five senses to describe the natural world. He concludes his article by claiming that America did not have a trained naturalist at the time of the expedition who could have faced the rigors of wilderness travel. Cutright justified Jefferson's trust in Lewis's scientific training, saying, "Meriwether Lewis was a surprisingly competent zoologist, with an objective, systematic approach that set a pattern for future naturalists. The abounding zoological data in Lewis's journals... eloquently supports Jefferson's decision to entrust this important phase of the expedition's work to him."

**B**URROUGHS AND CUTRIGHT have been the most outstanding defenders of the expedition leaders' role as pioneering zoologists. Some later scholars, however, have claimed that Lewis's scientific prowess has been greatly exaggerated. James Ronda, for example, wrote that "Far too much has been made of Lewis's scientific abilities. Largely self-taught, he was a keen amateur naturalist but no match for his European contemporaries." Although Lewis's scientific talent may have been overstated, he is now, at least, recognized for the vast number of animal species he and Clark discovered. Cutright gave Lewis credit for documenting at least 122 animal species new to science.

Since Burroughs's and Cutright's publications, other scholars have used them, along with Gary Moulton's definitive edition of the Lewis and Clark journals, to write about the mammals, birds, fish, and reptiles the explorers encountered. Keith Benson's "Herpetology of the Lewis and Clark Expedition, 1804-1806" (1978) demonstrates that much of Cutright's and Burroughs's work, while highly valuable, still needs critical analysis. Benson shows that there is still much to do. For example, no enterprising entomologist has yet written "The Insects of the Lewis and Clark Expedition." Most recently, Paul A. Johnsgard has contributed *Lewis and Clark on the Great Plains: A Natural History* (2003). Johnsgard's own detailed drawings show which plants and animals the explorers collected or described. He discusses the significance of these specimens to the Plains Indians and the environment; he also reports on the modern status of each plant or animal. Along with Johnsgard's new contribution, Burroughs's and, especially, Cutright's works remain the most valuable sources for assessing the importance of zoology as a component of Lewis and Clark's duties during their journey.

### Botany

**I**N KEEPING WITH THE botanical inquiries assigned to them by President Jefferson, Lewis and Clark diligently described new plants and collected specimens and seeds. Lewis, in particular, excelled on the Atlantic coast at identifying new plants; he then discovered that the ranges of some eastern plants extended farther to the west than was previously thought. Lewis intended to write a scientific volume of the expedition that would catalog and describe his extensive botanical collection. The first portion of Lewis's herbarium contained specimens collected before the winter of 1804; the following spring Lewis sent them downriver from the Mandan villages to St. Louis. Thomas Jefferson forwarded the herbarium to the American Philosophical Society where it remained for almost another century. Lewis continued to amass a collection of new western plants during the rest of his journey, and after his untimely death most of the collection also ended up in the guardianship of the American Philosophical Society where Barton intended to study it. Soon Frederick Pursh, a botanist preparing his *Flora Americae septentrionalis* (*Flowers of North America*), borrowed the specimens for further study. Unfortunately, he took many of the plant cuttings to London after Lewis's death, where they eventually became part of the Lambert Herbarium. In 1842 a wealthy American botanist named Edward Tuckerman recognized the collection at an auction and purchased it. In 1856 he donated the plants to the Academy of Natural Sciences in Philadelphia.

Today, Gary Moulton's new edition of the journals of Lewis and Clark contains an entire herbarium volume, *Herbarium of the Lewis & Clark Expedition* (1999), where photographs of Lewis's delicate plant cuttings can be viewed by any reader. But for almost a century after their deposit in Philadelphia, they remained largely forgotten. Finally, a Pennsylvania botanist named Thomas Meehan found the smaller herbarium in the American Philosophical Society. The society deposited the collection at the Academy of Natural Sciences, which

While waiting for the snow to melt in the Bitterroot Mountains, Lewis collected a sample of a plant later named for Clark—*Clarkia pulchella*, represented in this painting by Frederick Pursh. There are more than 232 Lewis and Clark herbarium specimens, the majority residing at Philadelphia's Academy of Natural Sciences and another dozen in London's Kew Gardens.



Flowers of North America (Pursh)

maintained the rest of the Lewis and Clark herbarium. In 1898 Meehan published a list of all of Lewis's plants, including notes from Pursh's *Flora*, which proved to be the beginning of Meriwether Lewis's renewed reputation as a skilled botanist as well as an explorer and adventurer. The Philosophical Society, which had for so long been the custodian of many of Lewis's plant cuttings, played a key role in redeeming the botanical aspects of the expedition through its publication, *Proceedings of the American Philosophical Society*.

The botanical contributions of the expedition did not languish in obscurity for as long as some of Lewis and Clark's other natural history observations. In 1928 the Philosophical Society published a lengthy article on the fate of Lewis's seeds, pressed plants, and live cuttings. Many of the seeds and plants were propagated by Philadelphia nurseries. Some of them, such as the Osage orange tree and the snowberry bush, became popular ornamental shrubs in eastern gardens. Although some time elapsed before more information on Meriwether Lewis's botanical ventures came forth, the Philosophical Society again made the next two offerings in articles describing the many historical plant collections located at the Philadelphia Academy of Natural Sciences as well as the doings of Frederick Pursh and his botanical associates.

Although by now the actual herbarium and its origins had been described, one of the first scholars to analyze Lewis's capabilities as a botanist was Velva Rudd. She wrote in her 1954 article, "Botanical Contributions of the Lewis and Clark Expedition," that Jefferson did indeed feel that Lewis's amateur scientific skills were honed enough to take a plant reconnaissance during his expedition to the Pacific. Paul Cutright agreed with her a little over a decade later in his important article, "Meriwether Lewis: Botanist" (1968). In this companion to his article on Lewis's zoological skills Cutright states, "In the context of his day, Lewis was an unusually competent botanist, one with attitudes more consistent with botanists of the twentieth century than those of the early 1800s." Cutright also concluded that although Lewis dedicated many more pages in his journal to zoological observations, he returned with a far larger collection of plants than animals, and he used a far greater technical botanical vocabulary than a zoological one.

As it did for many other aspects of natural history, Cutright's previously mentioned book, *Lewis and Clark: Pioneering Naturalists* (1969), played an equally pivotal role in defining botany as part of the Lewis and Clark expedition. He showed that the explorers identified over 178 new plants and continued to portray Meriwether Lewis as the ideal choice—as both scientist and frontiersman—to lead the expedition. Cutright's article on Meriwether Lewis as a botanist and Raymond Burroughs's article, "The Lewis and Clark Expedition's Botanical Discoveries" (1966), are both excellent summaries of the expedition's botanical accomplishments.

With the advent of the Lewis and Clark bicentennial, several botanical field guides on Lewis and Clark's discoveries have



*Lewis's solitary walks afforded him opportunities to observe nature and describe it in his journals as well as to collect samples for pressing and mounting.*

appeared. Among these, A. Scott Earle and James L. Reveal's *Lewis and Clark's Green World: The Expedition and Its Plants* (2003) and H. Wayne Phillips's *Plants of the Lewis and Clark Expedition* (2003) provide descriptions and photographs of the plants along the trail. Phillips's book provides photographs and excerpts from the captains' journals that describe their encounters with each featured plant. Earle and Reveal's book follows a similar format but places the photographs and journal entries in the context of an expedition narrative. Accompanying the narrative, photographs, and descriptions are maps that describe the expedition's route and the places where they made important discoveries.

**T**HOUGH PREVIOUSLY FORGOTTEN, the scientific contributions of Meriwether Lewis and William Clark are now commonly accepted as important components of their expedition, finding mention even in brief synopses of the expedition, encyclopedia articles, and popular magazines. After Coues's initial discovery of the huge amount of scientific data contained in the journals, scholars have mined the Thwaites and Moulton editions of the journals to explore questions of their own. Not only have modern historians and scientists acknowledged the importance of Lewis and Clark's inquiries, they have recognized the journals as valuable resources for solving modern problems in ecology and biology. Lewis and Clark's pioneering efforts in ethnography and natural history have secured them a chapter in the history of American science.

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Jay H. Buckley, assistant professor of history and director of the Native American Studies Program at Brigham Young University, is completing two books—*By His Own Hand? The Mysterious Death of Meriwether Lewis* and *William Clark: Indian Agent*—both slated for publication by the University of Oklahoma Press in 2006. Julie A. Harris is a master's student at BYU specializing in western and American Indian history.



# COLUMBIA

The Magazine of Northwest History

A quarterly publication of the

## WASHINGTON STATE HISTORICAL SOCIETY

VOLUME TWENTY, NUMBER ONE

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COVER: Front and back covers of a 1927 Chicago, Milwaukee & St. Paul Railway (Milwaukee Road) brochure promoting its transcontinental passenger train, "The Olympian." Once the rail link to Puget Sound was completed, what had once been an arduous six-month trek for the determined pioneer was reduced to a five-day journey that a person with enough leisure and money could undertake for mere pleasure. See related story beginning on page 21.