

We Proceeded On

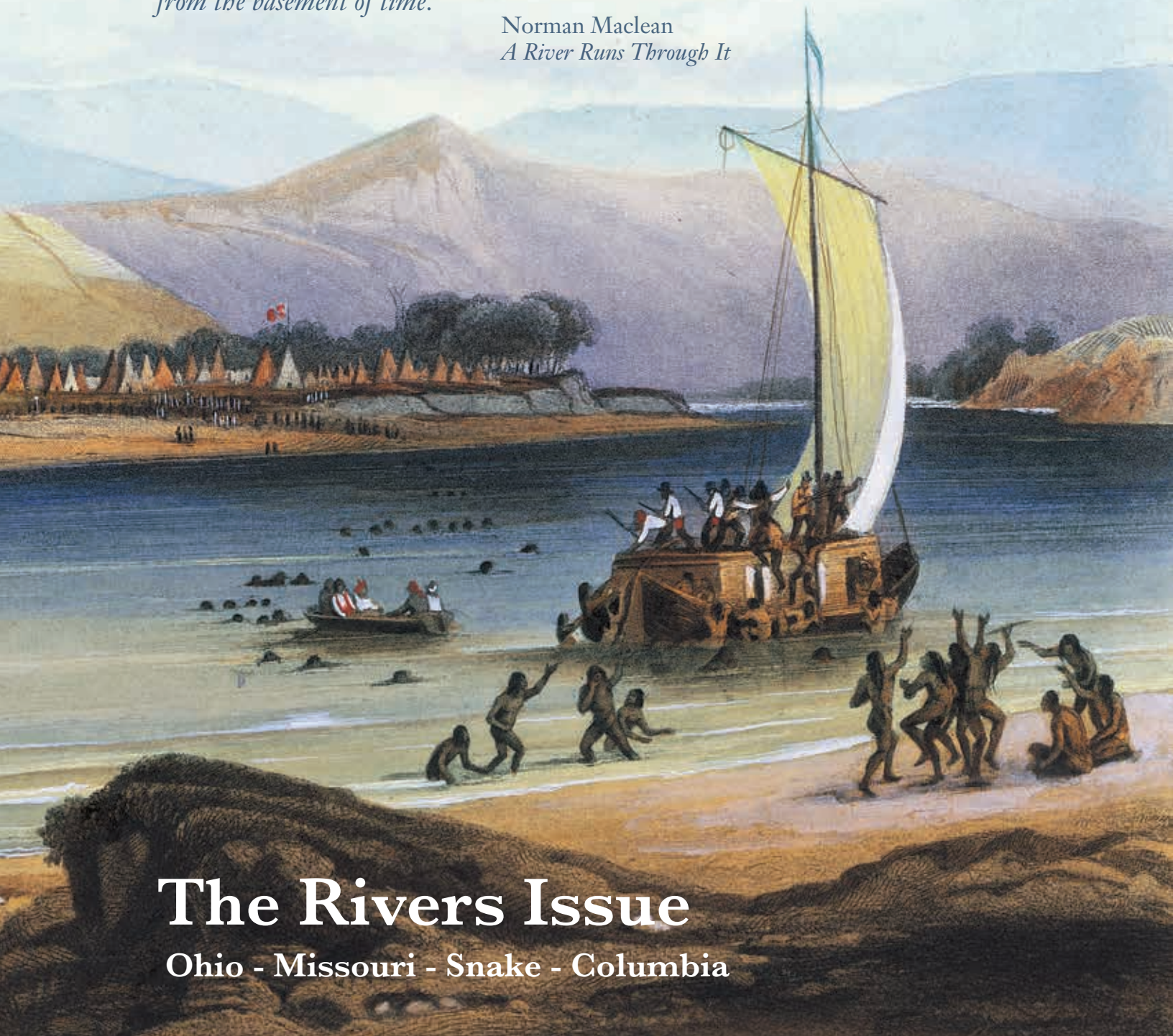
MAY 2019 VOL 45 NO 2

LEWIS AND CLARK TRAIL HERITAGE FOUNDATION



*"Eventually, all things merge into one, and a river runs through it.
The river was cut by the world's great flood and runs over rocks
from the basement of time."*

Norman Maclean
A River Runs Through It



The Rivers Issue

Ohio - Missouri - Snake - Columbia



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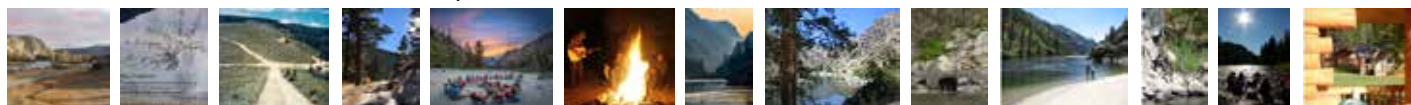
You begin your tour on a hilltop, watching three meandering rivers join, exiting as the Missouri. In the distance, along the Jefferson, you see a level plain. Is this where the Expedition camped and "*the Indian woman*" stated was the place she was taken away from her family? Tonight, John Colter returns to explain how he escaped the Blackfeet here in 1808. As the moon rises, Allen shares the Nez Perce Creation story. And your journey begins.

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In this Issue:



The Ohio River, page 8



The Missouri River, page 18



The Snake River, page 26



The Columbia River, page 32

Message from the President 3

Going with the Flow..... 6

Introduction by David Nicandri

Lewis and Clark on the Ohio River:
Then and Now 8

By Michael A. Loesch, Lorraine Loesch, and Paige Cruz

A Butiful Plain: The Oacoma Bottom, the Missouri
River, and the Legacy of Lewis and Clark..... 18

By Robert Kelley Schneiders

Many Forks: Towards a Geography of the
Snake River Drainage..... 26

By Jack Nisbet

The Columbia: The River of the Corps No More 32

By William L. Lang

The WPO Interview:
The Power of the Columbia: A Conversation
with Blaine Harden..... 39

By Clay S. Jenkinson

Obituary: James Morton Peterson Inside Back Cover

Covers

Front and Back: Karl Bodmer's watercolor of the keelboat *Flora* at an encampment of Gros Ventres des Prairies near Fort McKenzie. Image courtesy of Fort Mandan State Park, Washburn, North Dakota.

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



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Editor
Clay S. Jenkinson
Bismarck, North Dakota

Assistant Editor
Catherine Jenkinson
New York, New York

Transcription Services
Russ Eagle
Salisbury, North Carolina

Publisher
Washington State University Press
Pullman, Washington

Editorial Advisory Committee

Philippa Newfield
San Francisco, CA

Jerry Wilson
Versailles, IN

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Gary E. Moulton
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The Lewis and Clark Trail Heritage Foundation, Inc.

P.O. Box 3434, Great Falls, MT 59403
406-454-1234 / 1-888-701-3434
Fax: 406-727-3158
www.lewisandclark.org

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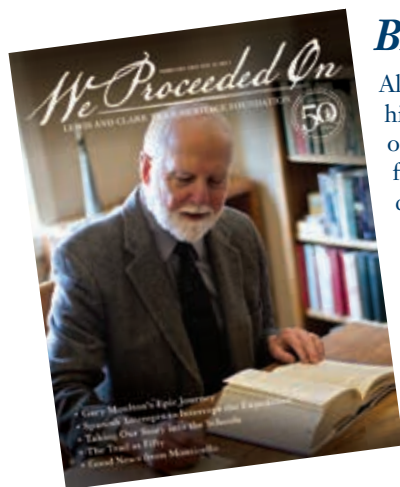
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A Message from the President



LCTHF President Louis Ritten

Like many of you, creeks and rivers, the main theme of this issue, have been entwined in my own life as well as with the Corps of Discovery in the past and LCTHF today. I grew up in Minneapolis, a town known as the “City of Lakes,” in the state of Minnesota, “cloudy water” in the Dakota language. We lived near Minnehaha (“rapid water” in Dakota) Creek, where we paddled canoes, caught crayfish, and played ball at “The Flats” along its banks. A few miles to the east, the creek tumbles over Minnehaha Falls, a local landmark. Family picnics at the park there and hikes below the falls to the creek’s outlet into the Mississippi River are treasured childhood memories. Nowadays, my wife and I always stop for a look when we’re in town. And St. Anthony Falls on the Mississippi River downtown explains why Minneapolis exists where it does. Father Louis Hennepin first made this feature, the only natural waterfall on the entire Mississippi, known to the European world in the late 1600s while working in conjunction with Rene-Robert Cavelier, Sieur de La Salle. I have friends who attended De La Salle High School located near Hennepin Island and the ancient por-

tage route around St. Anthony Falls in Minneapolis.

I left home to go to college in South Bend, Indiana, where the St. Joseph River makes a southerly jog on its westward flow to Lake Michigan, thereby giving the town its name. At Pinhook Park, an unassuming path up the bank reveals the location of a carrying place once used by the native Miami and Potawatomi tribes. As French voyageurs probed the land in the late seventeenth century, they followed this portage into the Kankakee Marsh and River. La Salle preferred this portage during his explorations into the interior, which ultimately led him into the Mississippi River and to claiming its basin for France. He named this vast land “Louisiana” after his royal patron, King Louis XIV.

Chicago, a city founded where the Chicago River meets Lake Michigan, became my home after graduation. I now live in a western suburb five miles from the Chicago Portage, a National Historic Site, which connects the South Branch of the Chicago River to the Des Plaines River, which in turn meets the Kankakee to form the Illinois River. Knowledge of this relatively short, nearly level portage connecting the Great Lakes basin with the Mississippi watershed was put on the map in 1673 by Father Jacques Marquette and his companion Louis Joliet. The Illinois joins the Mississippi several miles above the spot where the Missouri flows into the Father of Waters. Lewis and Clark, as we all know, established Camp Dubois just across

the river from the latter confluence.

Our son lives in New Orleans, the funnel through which all this water flows on its way to the Gulf of Mexico. Founded three hundred years ago by French Canadians to harness all the products derived from this bounteous land and floated down this waterway, the desire to possess New Orleans formed the basis for the Louisiana Purchase. President Jefferson, of course, chose Meriwether Lewis to lead an exploration of the country’s new possession.

Captain Lewis traveled down the Ohio River on his way to rendezvous with his co-commander William Clark in the Falls of the Ohio area. They and the Nine Young Men from Kentucky then met the Mississippi and battled the current upriver, picking up additional members of the Corps of Discovery on their way to establishing Camp Dubois. Just recently, through the advocacy work of LCTHF, our friends in the Partnership for the National Trails System, and supporters along the Ohio River, an expansion of the Lewis and Clark National Historic Trail has incorporated the section of the Mississippi from the site of Camp Dubois south, and then along the Ohio east all the way to Pittsburgh. Culminating decades of hard work, we are thrilled to have official designation applied to this 1,200-mile stretch of water and we thank our friends all along the route for their stellar work in bringing the national importance of this portion of the trail to the attention of Congress and the country at large.

The Eastern Legacy is now literally on the map.

Rivers create an allure for me, and I have been fortunate enough to have taken four river trips. The first was a five-day float adventure with my dad and three brothers down the Colorado through the upper portion of the Grand Canyon in Arizona. This magnificent trip whetted my appetite for more. The second was a shorter one down the North Fork of the Salmon River in Idaho with my son, brother, and a family friend. Although we made it downstream unscathed in our modern rubber watercraft, I got a great appreciation for the challenges the Corps of Discovery would have faced had they attempted that run in crude dugout canoes. I learned first-hand what the Lemhi Shoshone had told them, i.e., despite the difficulties the Corps would face by using the Lolo Trail, it really was the best route to take. The third river trip was in a canoe with my daughter on the Rio Grande in Big Bend National Park in Texas. Fabulous.

The fourth excursion followed on the heels of the 2008 LCTHF Annual Meeting in Great Falls, the first I attended. My wife joined me in Montana for a five-day canoe trip down the unspoiled White Cliffs and Missouri Breaks sections of the Missouri. To enjoy the serenity and scenic beauty the landscape afforded was enchanting. To savor the delicious food during days on the river was restorative. To realize that we were paddling through and in some cases camping on the same locations as the Corps of Discovery was magical.

You now have the chance to experience the charms of this extraordinary part of the Missouri River for

yourself. Elsewhere in this issue of WPO are details of a canoe trip sponsored by LCTHF. Although traversing wild and scenic country along the river, you will not be roughing it. Crews will set up and break down tents with cots and mattresses and prepare and clean up after meals. The river is not rough but the current moves along rapidly enough that you will not have to paddle vigorously. It will be as safe as being in an unmotorized craft on a river can be.

Largely through the efforts of Lee Ebeling, LCTHF Board member and president of the Portage Route Chapter, you will have the rare opportunity to be accompanied on the river by members of the Honor Guard, a living history group based in Great Falls. They will provide a close look at how the Corps would have gone about their business on the river. You will read passages from the journals and recognize what was described. You will, in short, have the experience of a lifetime.

As a side benefit of signing on to the river trip, you will visit the LCTHF headquarters in the Lewis and Clark Interpretive Center in Great Falls and nearby Giant Springs. You may also see the Upper and Lower Portage Camp sites, so wonderfully preserved and interpreted through the great work of the LCTHF Portage Route Chapter and others. Included as well are a driving trip to a buffalo jump and, weather permitting, visits to the Fight Site and Camp Disappointment led by former LCTHF president Larry Epstein.

There are, however, a limited number of spots for this grand adventure. You must act now if you want to participate and avoid disappointment. Please contact the LCTHF office by

calling 406-454-1234 or send an email to info@lewisandclark.org to signal your interest in participating. I hope you enjoy your voyage even more than I did while you relive the experiences of the Corps of Discovery and the magic of being on the river!

Your humble and obedient servant,

Lou Ritten

President

Lewis and Clark Trail Heritage Foundation

“Even the greatest rivers—the Nile and the Ganges, the Yangtze and the Mississippi, the Amazon and the great grey-green greasy Limpopo all set about with fever trees—must have been no more than trickles and flickering streams before they grew into mighty rivers.”

Aidan Chambers, This is All: The Pillow Book of Cordelia Kenn



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Editor's Note:

It was a river journey. It was a transcontinental river journey. Lewis and Clark floated their rivers in both directions, with and against the current. But as the pre-Socratic philosopher Heraclitus (ca. 535-475 BCE) wrote, you can never step into the same river twice.

I solicited the essays in this special Rivers Issue of *We Proceeded On* from outstanding writers: Bill Lang on the Columbia, Jack Nisbet on the Snake, Robert Kelley Schneiders on the Missouri, and Michael and Lorraine Loesch and Paige Cruz for the Ohio. All I asked of each of them was to write about these great American rivers then and now, with Lewis and Clark as their baseline, but with the goal of creating a kind of “state of the union” assessment of the Corps’ river corridor. Each essay is partly the same and wonderfully different from the others.

I chose the photographs and illustrations for this issue to tease out the complexities of the Ohio, Missouri, Snake, and Columbia, not to dwell solely on their enormous beauty, where it can still be found, but to see them as they now actually are. Three of the four rivers vie in conservation literature for the dubious title, “the most industrialized river in America.”

Blaine Harden, the author of *A River Lost: The Life and Death of the Columbia*, was under a publishing deadline, so he had to decline to contribute an essay to this issue, but he generously offered to sit for an extended interview. You can read the beginning of this fascinating interview on page 39 and finish reading it (and other WPO interviews) at the Foundation’s website or at Jeffersonhour.com. My own essay on the changing face of the Lewis and Clark Rivers is posted on those sites, also.

One more thing. Apologies to the magnificent Yellowstone, the least industrialized of the Lewis and Clark Rivers, the track of Clark’s 1806 return journey, which was so untouched by Captain Lewis’ intensities that it was almost a recreational float trip.

Clay Jenkinson
At the October 20, 1804, camp
Bismarck, North Dakota

Ohio River

Source:	Allegheny River, Pittsburgh, Pennsylvania
Source elevation:	730 feet
Mouth:	Mississippi River, Cairo, Illinois
Elevation at mouth:	290 feet
Length:	981 miles
Drainage basin:	204,000 square miles
Average flow:	281,000 cubic feet per second
Lewis and Clark:	August 31-November 21, 1803

Missouri River

Source:	Upper Red Rock Lake, Montana
Source elevation:	6,614 feet
Mouth:	Mississippi River, St. Charles, Missouri
Elevation at mouth:	404 feet
Length:	2,341 miles
Drainage basin:	529,350 square miles
Average flow:	87,520 cubic feet per second
Lewis and Clark:	May 14-October 26, 1804 April 7-August 17, 1805 June-September 23, 1806

Snake River

Source:	Two Ocean Plateau, Yellowstone National Park
Source elevation:	8,927 feet
Mouth:	Columbia River
Elevation at mouth:	358 feet
Length:	1,078 miles
Drainage basin:	108,000 square miles
Average flow:	54,830 cubic feet per second
Lewis and Clark:	October 7-16, 1805 May 24-June 29, 1806

Columbia River

Source:	Columbia Lake, British Columbia
Source elevation:	2,690 feet
Mouth:	Pacific Ocean, Ilwaco, Washington
Elevation at mouth:	Sea Level
Length:	1,243 miles
Drainage basin:	258,000 square miles
Average flow:	265,000 cubic feet per second
Lewis and Clark:	October 16-December 7, 1805 March 23-April 23, 1806

Going with the Flow

by David Nicandri

In the town where I grew up, Seneca Falls, New York, there was a small creek that ran through the woods (as we called it) behind our house. I can't remember when I first "discovered" this stream; perhaps my older brother showed me the ¼ mile trail through the tall grass, shrubby trees, burdocks and other bushes that led to it, or maybe some older kid from the neighborhood did. In any event, I was always roaming out to this unnamed stream (I just checked Google Maps and that's still its status) whenever the elementary school equivalent of wanderlust struck me, more often than not just by myself. It seemed to be more fun that way.

Off I'd go, sometimes with my trusty hatchet or small shovel in hand, to see if I could pull off some feat of youthful engineering. I learned early on that flowing water is inexorable. Building dams out of wet snow was the only, albeit temporary, victory against that small force of nature.

The Fourth Ward Creek, I'll call it, had its own mysteries. Occasionally the stream bed was dry, which puzzled me at the time. I can remember being on its shallow banks one day when two or three inches of water about a foot wide just came around the bend, like someone had turned a faucet handle. That moment was a marvel for me, a miniscule version of a phenomenon I later learned was called a freshet. Early on I was also frequently preoccupied with thoughts like "where does this creek begin?" or "I wonder where this goes?"

As I got older, and braver I suppose, I explored those fascinating (for a first-grader) propositions. The former was the more problematic quest. By definition figuring out the stream's source meant having to head deeper into the woods and away from home. In the event, that outcome proved unsatisfying because the creek seemed to flow out of an otherwise indistinct boggy lowland that, from looking at a modern map, has since been built over by houses. There was no definitive cleft of origination, like the kind Hugh McNeal stood astride over on August 12, 1805. Going downstream seemed less adventuresome but was in a sense more productive. I had a sense that the creek that ran through a culvert a mile down the street from where we lived was the same one I accessed out



Childhood and the lure of rivers.

back. From that point, after passing by the cemetery that now holds my parents' remains, the Fourth Ward Creek flowed the equivalent of two small town blocks into the Seneca-Cayuga Canal; a branch of the New York State Canal System that succeeded the famous Erie Canal.

The Erie Canal, completed now almost 200 years ago, was originally conceived in the 1780s and authorized in the last full year of Thomas Jefferson's presidency, though not by Jefferson, who preferred a Potomac route. By connecting the headwaters of the Hudson River (named after Henry Hudson who in 1609 was searching the Atlantic seaboard for a Northwest Passage) with Erie and its sister lakes, the canal was the first substantial attempt at transecting the Appalachian barrier through engineered means. That is, what nature had failed to provide in terms of access to the continental interior was constructed by human hands (and backs). The Erie Canal was enormously successful in not only facilitating the transport of the produce and products of the Ohio Valley and upper Great Lakes region to New York City, its corridor was populated in the pre-Civil War era with one of the most influential generations in American history, second only to the founders. Suffragist Elizabeth Cady Stanton, Lincoln cabinet member William H. Seward, frontier artist John Mix Stanley, and Mormon Church founder Joseph Smith all once lived within 30 miles of Seneca Falls; indeed the empty lot next to the Stanton house was our neighborhood ballfield.

The Erie Canal (to say nothing of my childhood wanderings) may seem a long ways away from the Lewis and Clark trail but the juvenile psychological profile and primitive hydrological underpinnings of these musings can be made to apply. The captains' story appeals to us because exploration, and the study of it, is, among other things, fun. And it teaches.

It's fundamentally a river story.

At root, Lewis and Clark's expedition is a study of watercourses, whether seen from the boats or the riverbanks. The classic musing of the novelist and critic John Gardner pertains. He once averred there are only two plots: a stranger comes to town and someone goes on a journey. Those eleven words just about sum up any voyage of discovery, certainly the Lewis and Clark story in Indian country.

In many ways the world, and our experience in it, is a story of movement, usually through space and always through time. River exploration is perhaps the most crystalline form of this type of human endeavor. The journals and charts of Samuel Hearne, Alexander Mackenzie, and Lewis and Clark, for instance, are constantly engaged in the temporal and spatial dimensions. The great seafarers of that age—think James Cook or George Vancouver—travelled farther and longer, and could change direction at a whim. Indeed, one of Cook's great innovations was sailing on the hypotenuse instead of running down latitudes in the traditional manner. The chronometers he sailed with on his second and third voyages enabled him to establish longitude by glancing at a clock face set to the time of the Greenwich Observatory.

But reading the journals of these great navigators, and especially their junior officers and naturalists, one clearly senses the deep loneliness inherent in covering vast oceanic distances, and sometimes even isolated coastlines. On occasion, their voices are silent except for course and weather data. There's a reason seafarers are often defined by the word laconic. A river voyage, on the other hand, was consistently tangible and referential. With the bank always in view there was always something to encounter, whether plant, animal, or human.

We think of terrestrial explorers as jumping off into the pure unknown, and though certain particulars had to be proved out, much of their geomorphological experience was quite predictable. For example, river systems bear a resemblance to the structure of trees. The shape of the Mississippi Valley was generally known by 1800. As an optical representation, its roots were on the Gulf of Mexico and major branches reached to the north, northeast and northwest. The physical laws of nature—including gravity—dictate that water

will form such networks which keep everything moving, including humans.

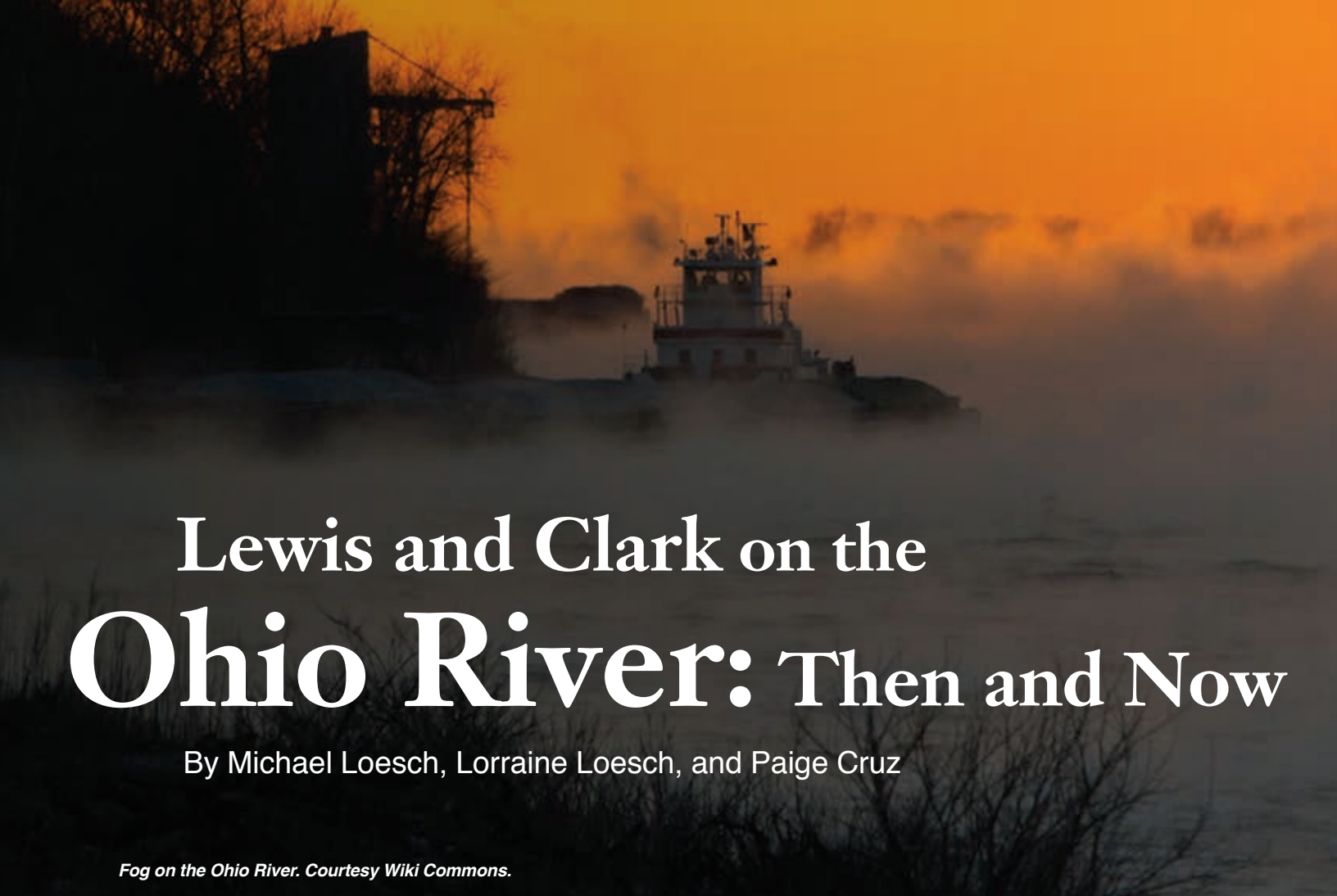
Correspondingly, when Lewis and Clark followed the Missouri westward and crossed the Continental Divide (another fully expected feature) they entered the adjacent river network. Unlike the mid-continental system, the image of this western version was virtually blank. It was presumed that the "roots" of this watery tree lay at 46N, where Vancouver charted the opening of a large river onto the Pacific. Even before the expedition began, the War Department's Nicholas King inscribed a chart for the captains' use with a hypothetical branch that necessarily interfaced with the upper reaches of the Missouri.

Only experiment would allow discernment of the Columbia River's network or rivers, streams, creeks, and branches. This was a disorienting experience for Lewis and Clark. "Going with the flow" would seem to be conducive to an exploratory effort, much like catching a favorable current or wind would at sea, but from reading the expedition's journals it is clear this was far from an enjoyable voyage, even though the movement was in fulfillment of the venture's ultimate mission. Only crossing the mountains in snowy conditions was worse. It was so distressing to Lewis that he stopped writing altogether once the team reached the upper reaches of the Columbia River system.

Somewhat counter-intuitively, Lewis turned the long-standing desideratum—looking for the course of least resistance—on its head. He seemed to relish the mission's penultimate objective (finding the headwaters of the Missouri) more than the prime directive (reaching the Pacific Ocean). But then, no explorer was perfect. In 1778 Cook thought that the inlet in Alaska bearing his name was the mouth of a great river that drained the northwestern quadrant of North America. Peter Pond and Alexander Mackenzie spent the next fifteen years trying to find its (nonexistent) headwaters. Or consider George Vancouver, whose expedition mapped the lower 120 miles of the Columbia and came to the astonishing conclusion that this was one half the river's total length. It took the combined efforts of Lewis and Clark and David Thompson to sketch the Great River of the West's watery "canopy."

This is why exploration is so compelling. ■

David Nicandri, a frequent contributor to WPO, is the author of River of Promise: Lewis and Clark on the Columbia. He is the former director of the Washington State Historical Society.



Lewis and Clark on the Ohio River: Then and Now

By Michael Loesch, Lorraine Loesch, and Paige Cruz

Fog on the Ohio River. Courtesy Wiki Commons.

Introduction: Our River Systems

Great river systems like the Amazon, Congo, Nile, Yangtze, and the Mississippi have influenced the exploration, settlement, and development of human civilizations. These dynamic river systems are products of a complex interplay of tectonic plate movements, the inexorable process of erosion, and in some cases, the advance and retreat of immense continental glacial ice sheets. Over the millennia these processes have combined to construct vast basins containing tributary stream systems, landscapes, and complex ecosystems. In the contemporary world these systems customarily exert their influence through the processes of erosion, annual flooding, and by acting as avenues for commerce and river-based recreation.

Two of the world's great drainage basins, the Hudson Bay Basin in Canada and the Mississippi River Basin in the United States, dominate the interior region of the continent of North America. This region is located roughly east of the Rocky Mountains and west of the Appalachians and drains a combined area of more than 2,727,265 square miles

(7,063,585 square kilometers).¹ Their combined watershed area is exceeded only by those of the world's five oceans and the Mediterranean Sea. The most distinctive and important natural feature of North America is this river network that dominates the middle third of the continent.

The Mississippi-Missouri River watershed, composed of the Ohio, Missouri, Red, and Arkansas River systems, is immense, being the third or fourth largest in the world and is located almost entirely within the United States. The four major tributary systems are either east-west or northwest-southeast oriented and are comprised of smaller tributary rivers having varying sized areas of drainage and flow rates. The entire basin is a vast single river network that provides virtually unlimited water-based access to most of the interior of the continent as well as an interconnecting avenue for movement between virtually any two points within the system. Consequently, these river systems have shaped and guided the exploration, settlement, and development of the interior of North America, perhaps more than any other natural force, including climate. These river systems shaped the cultures of both Native American



The Ohio River Watershed.

populations and European settlers. From the time of the river-based fur trade made famous by the voyageurs, to the movement of settlers' rafts down the Ohio River, to today's movement of millions of tons of chemicals, coal, and agricultural products, these rivers have been of paramount importance in shaping today's world.

Rivers and Exploration

These intricate and interconnecting river systems have played a particularly significant role in the exploration of the interior of North America. Lewis and Clark, along with many earlier explorers such as LaSalle, Radisson, Hennepin, Marquette, McKenzie, and later explorers like Powell, Schoolcraft, Kearney, and Long, were all influenced by the constraints and advantages posed by these systems. The passage of 200 years since Meriwether Lewis and William Clark traversed these vast river systems is but a brief moment in earth history. However, the impact of man over the last two centuries has significantly and perhaps permanently altered the appearance and ecology of these systems in a fashion that would not occur through natural processes. Observations

made by Captain Lewis and others will be contrasted with present day conditions to point out and describe some of the changes that have occurred. This comparison will focus on answering three questions. What did these rivers look like then? What do they look like now? What has been lost and/or gained with the passage of two centuries?

A brief description of the geography of the Ohio River Basin can provide some context for this discussion. The Ohio River's drainage basin covers 204,000 square miles (about 130 million acres) in fifteen states.² Its major tributaries include the Tennessee, Cumberland, Kanawha, Big Sandy, Licking, Kentucky, and Green Rivers from the south, and the Muskingum, Miami, Wabash, and Scioto Rivers from the north. The Ohio River Basin comprises about seventeen percent of the total area of the Mississippi River Basin and about 5.8 percent of the area of the continental United States.

The Ohio River originates at the confluence of the Monongahela and Allegheny Rivers in Pittsburgh, Pennsylvania, at Point State Park and has developed in its present form over the past 2.5 to 3.0 million years. Its name is

derived from the Seneca (Iroquoian) word *Ohi : yo'*, a proper name derived from *ohi : yo : h*, meaning "good river." From Pittsburgh, the Ohio flows 981 miles along the borders or through the states of Pennsylvania, West Virginia, Ohio, Kentucky, Indiana, and Illinois. The river descends 430 feet vertically from an elevation of 710 feet mean sea level (msl) at Pittsburgh to 250 feet msl at Cairo, Illinois. Although it is only the tenth longest river in the United States, its flow exceeds the entire flow of the Middle Mississippi River. At the point of confluence near Cairo, the Ohio today discharges 281,500 cubic feet per second, adding to the 208,200 cubic feet per second flow of the combined Upper Mississippi and Missouri Rivers.³

Nineteenth Century Observations

A number of individuals recorded journals of travels made along the upper stretches of the Ohio River during the second half of the eighteenth century, including De Celeron (1749), Captain William Trent (1752), Charles Beatty (1762 – 1769), Samuel Montgomery (1785), and George Washington (1754 and 1770). Prior to observations made by Captain Lewis during the expedition, Thomas Jefferson (later to become his mentor, President, and Commander-in-Chief) described the Ohio River and its tributaries in 1785. He described the river as "... the most beautiful on earth. Its current gentle, waters clear, and bottom smooth and unbroken by rocks and rapids, a single instance only excepted." Additional observations recorded by Jefferson regarding the Ohio and its tributaries are found in Query II of *Notes on the State of Virginia*.⁴ The French botanist Andre Michaux also recorded observations made during a trip in 1802 in *Travels to the West of the Alleghany Mountains*.⁵ Extensive and detailed observations were made by Thomas Rodney during his 1803 trip down the Ohio River in *A Journey Through the West—Thomas Rodney's 1803 Journal from Delaware to the Mississippi Territory*.⁶ It should be noted that Lewis and Rodney actually crossed paths and met with each other on September 8, 1803, at Wheeling⁷ as they both came down the Ohio River in the fall of 1803.

Captain Lewis' Observations

As Captain Lewis and a crew of eleven hands departed Pittsburgh at 10:00 a.m. on August 31, 1803,⁸ via keelboat, he immediately began to make observations and record events. Lewis and various members of the expedition, including Captain William Clark who joined them at the Falls of the Ohio, remained on the Ohio River until November 20, 1803, when they headed north on the Mississippi River toward St. Louis. Nineteen journal entries were made beginning on August 31 and ending on September 18. The observations

describe places and conditions along the first 236 miles of the Ohio River, beginning in Pittsburgh and ending at Letart Falls near the community of Letart, West Virginia. Unfortunately, journal entries ended on the 18th and did not resume until November 11. As a result, no journal entries were made that covered the 707 miles from Ohio River mile 235 to mile 942 at Ft. Massac (near Metropolis, Illinois). Entries made after the 11th are not as descriptive and concentrate almost exclusively on the progress of the expedition.

Excerpts from recorded observations for these nineteen days present a picture of what Lewis observed, and provide us with clues of what the Ohio River Valley looked like in the early nineteenth century. The observations of Captain Lewis have been drawn directly from journal entries presented in Volume II of *The Journals of Lewis and Clark Expedition*, edited by Dr. Gary Moulton.⁹ The locations of features described by Captain Lewis are indexed by Ohio River navigation chart number and Ohio River mile. Bob Anderson, a re-enactor and descendant of expedition member George Shannon, identified these locations for placement in a set of special commemorative Ohio River navigation charts that were published by the US Army Corps of Engineers in 2003 for the Lewis and Clark Bicentennial Commemoration.¹⁰

Captain Lewis indicated that heavy fog was a significant issue during eight of the days from August 31 through September 18. On six of those occasions the party had to delay movement down the river until visibility improved and safe passage became possible. Significant shoals, sandbars, and riffles were encountered and documented in sixteen of the seventeen daily journal entries made for the days they were actually traveling down the river. More than 40 significant (those adversely impacting navigation of the keelboat) riffles were specifically mentioned in the journals, with the longest located at Letart Falls. In eleven of these situations Lewis had to secure an oxen team to clear the keelboat over obstacles. For most of the remainder, the crew had to completely unload the vessel, pull the boat over obstacles, and then reload before proceeding downstream. This would have been a daunting task when one considers that tons of supplies and equipment were being transported aboard the keelboat. Descriptions of features and events made at these riffles, other bars, and nine mentioned islands covering a distance of only 236 river miles paint a rather clear picture of the nature and appearance of the upper one-fourth of the Ohio River at that time. Observations were also made regarding flora or fauna in five daily journal entries and physical geographic features were described in four others. The locations of Native American cultural sites and Euro-American settlements and abandoned forts were also noted in several journal

*“We must begin thinking like a river if we are to leave
a legacy of beauty and life for future generations.”*

David Brower



Fog over the Ohio - The Great Miami River joins the Ohio at the border of Ohio and Indiana. The coal-fired power plant is the Miami Fort Generating Station. Photograph by Ed Mullin. edmullin

entries. On four different days Lewis recorded air and water temperatures in an attempt to explain the extreme fog conditions present on the river at that time of year. Several of his more unusual and descriptive observations follow and paint a picture of the Ohio River as seen through his eyes.

*... proceeded to a ripple of McKee's rock where we were obliged to get out all hands and lift the boat over about thirty yards; . . . halted for the night much fatigued after labouring with my men all day . . .*¹¹

[August 30, 1803 (August 31 1803) - McKee's Riffle and Rocks, Ohio River Chart 223, Ohio River mile 3.3]

*... so thick a fogg on the face of the water that no object was visible 40 paces . . . Foggs are very common on the Ohio at this season of the year . . . [after passing Little and Big Horse-Tail riffles with great difficulty Lewis reached riffle called Woollery's Trap] . . . after unloading again and exerting all our force we found it impracticable to get over; . . . employed a man with a team of oxen with the assistance of which we at length got off . . . made only ten miles this day.*¹²

[September 1 - Horsetail Riffles and Woolery's Trap, River Charts 223-221, near upstream sides of Neville and Davis Islands at River miles 5-10]

*. . . a serpentine course between them alternately washes their bases. - thus leaving fine bottom land between itself and the hills in large boddys, and frequently in the form of simecicles or the larger segment of a circle or horseshoe . . . the leaves of the buckeye, Gum, and sausafras begin to fade, or become red.*¹³

[September 2 - Logstown area riffles, River Charts 218 and 219]

Morning foggy, obliged to wait. . . the fogg dispeared and we set out; . . . passed the line, which divides the States of Virginia and Pennsylvania on the east side of the river and on the West that of Pennsylvania from the State of Ohio.

*The water is so low and clear that we see a great number of Fish of different kinds, the Stergeon, Bass, Cat fish, pike, &c.*¹⁴

[September 4 - River Chart 212, River mile 40]

. . . reached Wheeling . . . this is a pretty considerable Village contains about fifty houses and is the county town of Ohio (State of Virginia) just below the town and on the same side of big

Wheeling creek emptys itself into the Ohio, on the point formed by this creek and the river stands an old stoccade fort, now gone to decay [Ft. Fincastle] . . . this town is remarkable for being the point of embarkation for merchants and Emegrants who are about to descend the river; . . . the water from hence being much deeper and the navigation better than it is from Pittsburgh . . . met with Colo. Rodney one of the commissioners appointed by the government to adjust the landed claims in the Mississippi Territory.¹⁵

[September 7 - River Chart 197, River mile 90]

. . . a remarkable artificial mound of earth called by the people in this neighbourhood the Indian grave.-- This remarkable mound of earth stands . . . on the most elevated ground of a large bottom . . . near the mound to the N. stands a small town lately laid out called Elizabeth-town there are but about six or seven dwelling houses in it as yet, in this town there several mounds of the same kind . . . near the summit of this mound grows a white oak tree whose girth is 13½ feet . . . the whole mound is covered with large timber, sugar tree, hickory, poplar, red and white oak.¹⁶

[September 10 - River Chart 194, River mile 102]

Set out about sunrise, . . . entered the long reach, so called from the Ohio runing in a strait direction for 18 miles in this reach there are 5 Islands from three to 2 miles in length each - observed a number of squirrels swiming the Ohio and universally passing from the W. to the East shore they appear to be making to the south; . . . many of these squirrils wer black, they swim very light on the water and make pretty good speed -¹⁷

[September 11 - River Chart 187-189, River miles 11-135]

. . . we arrived at Marietta, the mouth of the Muskingum river, at 7 OClock in the evening observid many pigeons passing over us pursuing a south East course. The squirrels still continue to cross the river from N.W. to S.E.¹⁸

[September 13 - River Chart 177 and 177A, River mile 172]

. . . when the Ohio is in it's present low state, between the riffles and in many places for several miles together there is no preseptable courent, the whole surface being perfectly dead or taking the direction only which the wind may chance to give it. . . .¹⁹

[September 17]

. . . passed Letart's falls; . . . this rappid is the most considerable in the whole course of the Ohio, except the rappids . . . opposite to Louisville in Kentucky - the descent at Letart's falls is a little more than 4 feet in two hundred fifty yards.²⁰

[September 18 - River Chart 164, River mile 235]

passed Wilkinson ville about 12 Oclock oposite to which is the first or great chain of rocks streching in an oblique manner across the Ohio this evening landed on the point at which the Ohio and Mississippi form there junchon²¹

[November 14 - River Chart 5, River mile 963]

. . . a little surprised at the apparent size of a Catfish which the men had caught in our absence altho we had been previously accustomed to see those of from thirty to sixty pounds weight . . . have been informed that these fish have been taken in various parts of the Ohio & mississippi weighing from 175 to 200 lbs. weight . . . I have no doubt is authentic-- . . . saw a beath hen or grows which flew off] and having no gun with me did not persue it.²²

[November 16 - River chart 1, River mile vicinity of mile 981]

Captain Lewis clearly describes the Ohio as a free-flowing river obstructed by many snags (accumulations of tree trunks and limbs), rocks, gravel and sand bars, and rapids that made navigation difficult and hazardous. The width and depth of the river as well as its rate of flow changed seasonally with variations in rainfall and snowfall. During periods of little rain navigational depths as shallow as one foot between Pittsburgh and Cincinnati were common (471 miles), as were depths of two feet between Cincinnati and the confluence with the Mississippi River 511 miles to the west. Many areas of the river essentially became a series of shallow very slow flowing pools. However, *Ohio River Navigation--Past and Present*, indicates that the river could rise 30 to 70 feet from low water to flood stage in a matter of just a few days.²³ During periods of extreme high-water currents have been clocked as high as 8.8 mph with flows approaching two million cubic feet per second. During periods of low and normal flow the water appeared to be very clear.

Wildlife along the Ohio During the 19th Century

At the time of the expedition high quality water and habitat supported large populations of a wide variety of lentic and lotic fish species such as pike, bass, catfish, sauger, walleye, and anadromous species such as the river sturgeon, shovelnose sturgeon, paddlefish, and the American eel (catadromous species). The numerous rapids and riffles commonly found in the river provided habitat that supported high populations of a large number of species of mollusks, reptiles, aquatic invertebrates, and amphibians such as the hellbender.

Bird species such as the passenger pigeon, turkey, ruffed grouse, eagle, and osprey and large mammals such as Eastern elk, American bison, white-tailed deer, black bear, Eastern cougar, timber and red wolf were common. The old growth



On the Threshold of Discovery - Lewis and Clark embark at the Falls of the Ohio by Michael Haynes. Courtesy Michael Haynes.

forests present at this time formed a tightly closed canopy that included a great diversity of eastern hardwood species including those in the red and white oak groups, the hickory and ash groups, as well as walnut, yellow poplar, American chestnut, black cherry, elm, willow, sassafras, buckeye, butternut, and beech. It was common for species such as beech, black walnut, and hickories to reach diameters of five to six feet with some species such as sycamore exceeding twelve feet in diameter. Many lived to be hundreds of years old and reached heights exceeding 100 to 150 feet. A popular saying at the time stated that a squirrel could move from the east coast, along the Ohio, and reach the Mississippi River by moving from tree top to tree top without having to touch the ground.

Navigation Improvements and Environmental Changes

Substantial settlement of the Ohio River Valley began after the signing of Jay's Treaty of 1794 and the Treaty of Greenville in 1795.²⁴ Environmental modification of the Ohio River corridor had already begun before 1803 but dramatically increased after the extension of the National Road in 1818 opened the region to increased settlement.²⁵ [28] The extension and drought of 1818-1819 brought the first at-

tempts to improve navigation on the Ohio River because settlers and shippers began to bypass the upper 90 miles of the river due to perennially poor navigation conditions. In an attempt to avoid economic disaster the city of Pittsburgh began rock and snag removal in 1818. After the passage of the Inland Waters Improvement Act of 1824, channel improvements were initiated with the construction of the first wing dams (training dikes) at Henderson Bar in 1825. In later years improvements began to be made along the entire length of the Ohio and its tributaries. The history of the development of commercial navigation and the construction of the infrastructure that made it possible is interesting but complex. References are provided at the conclusion of this article.²⁶ Key highlights of that history follow.

Construction of the first bridge over the Ohio at Wheeling, Virginia (now in West Virginia), was completed in 1849 (when completed it was the longest suspension bridge in the world).²⁷ The historic bridge is still in use today. Meriwether Lewis acquired the red pirogue here and received goods shipped overland from Harpers Ferry.

Channelization of all 981 miles of Ohio River was finally completed in 1929 after construction of the last of 50 movable wicket dams, lock chambers, and navigation pools

was finished.²⁸ The lock chambers were 110 feet wide and 600 feet long and enabled vessels to be raised or lowered from one pool to the next so that they could move up or downstream via a nine-foot navigation channel. Prior to this time, rock wing dams known as training dikes had been used to maintain a 30-inch navigation channel by increasing the current velocity in the center of the river to degrade the river bottom and keep river sediments moving through the system. The system provided a more dependable channel that greatly facilitated commercial navigation. Similar projects, although on a smaller scale, were undertaken and completed on tributary components of the Ohio River.

A second round of improvements was undertaken in the 1950s to further increase system efficiency by accommodating larger tows and reducing the number of lockages. At completion the present number of twenty dams and navigation pools will be reduced to a total of nineteen, and the length of all lock chambers doubled to 1,200 feet. Companion auxiliary locks with lock chambers measuring 600 feet long and 110 feet wide are also being included in the renovation effort.

The construction of large-scale engineering projects on both the Ohio and its tributaries has permanently modified the hydrology, appearance, and ecology of the system. The river has been deepened and variations in its flow rates are buffered by the manipulation of outflows at more than 80 tributary stream flood protection dams. The river was widened in many locations and now looks more like a continuous string of lakes. A free flowing lotic ecosystem has been permanently transformed into a largely lentic system of large navigation pools resembling lake reservoirs. The removal of all riffles and rock structures in the navigation channel by dredging and the permanent inundation of most of those located outside of the navigation channel have eliminated or severely reduced the populations of species that require shallow free flowing aquatic habitat for survival. This has been particularly severe for species of mollusks and other aquatic invertebrates.

Prior to 1900 the Ohio River basin was home to 127 of the 297 native mussel species then known to inhabit North America. The Ohio River Foundation indicates that approximately 50 of the 70 species that originally existed in the Ohio River reside in the Ohio today, with eight of these being declared federally endangered.²⁹ Native mussel species are being displaced by the introduced exotic zebra mussel and other native species that are more tolerant of lake-like navigation pools. Migratory fish species mentioned earlier, such as the river and shovelnose sturgeon, and paddlefish, and American eel have been extirpated or

their populations drastically reduced in the Ohio River. Introduced exotic fish species such as the common carp, and four species of grass carp (grass, black, bighead, and silver) also compete with native species. The bighead carp, for example, can reach a length of four feet, weigh 100 pounds, and consume 40 pounds of plankton a day.³⁰ Environmentally sensitive amphibian species such as the hellbender have all but disappeared from the main stem of the Ohio and now only reside in the upper reaches of less disturbed tributary streams.

People, Prosperity, and Impacts

Human settlement and urbanization, industrialization, changes in land use, the application of poor land management practices, and the occurrence of market and unregulated subsistence hunting have all combined to radically modify the occurrence and population levels of various plant and animal species and the general appearance of the river corridor.

Traders, trappers, settlers, and Indians frequently traversed this corridor. As a result, environmental change began before the arrival of Captain Lewis, but greatly accelerated as millions of immigrants poured westward via the Wilderness Road and the Ohio River in the early 1800's. In 1790 only 5% of the nation's 3.9 million people lived west of the Appalachians. By the time Lewis went down the Ohio in 1803 slightly more than 10% of the US population lived west of the mountains and settlements were common on the Kentucky side of the Ohio. Lewis, and later Clark, passed by the settlements of Pittsburgh, Logstown, Georgetown, Steubenville, Charlestown (now Wellsburg), Marietta, the mansion at Blennerhassett Island, Guyandotte, Augusta, Louisville, Clarksville, and more.

That percentage increased to 25% in 1820 and by the 1830's Cincinnati's population had grown from 700 in 1800 to more than 50,000.³¹ By 1860 the State of Ohio had more than 2.3 million residents and was the third most populous state in the nation.³² The first chapter in one of the world's great human migrations filled the Ohio River corridor in a span of less than 50 years. Needless to say, such unbridled and rapid growth brought dramatic and largely chaotic environmental change. New villages and towns sprung up almost overnight along the river and existing cities such as Pittsburgh, Cincinnati, and Louisville exploded with growth that doubled their populations several times in just a few decades. Massive quantities of domestic sewage and industrial wastes were discharged directly into the river and its tributaries as populations grew and industrialization took place.

The old growth virgin forests were logged or trees

simply killed to facilitate the conversion of land to small farm agriculture. Those areas not converted to agricultural began to regenerate themselves as much less majestic appearing second growth forests. In later years imported diseases and insects virtually eliminated several key eastern hardwood species such as the American chestnut and American elm, while currently all species of ash and eastern hemlock are under attack by exotic species of insects like the emerald ash borer and the wooly adelgid. Land clearing and poor farming practices promoted significant erosion of the basin's light forest soils and resulted in massive amounts of silt deposition in the Ohio and its tributary streams. Additionally, virtually all existing native prairie was destroyed and converted to agricultural crop production.

Uncontrolled subsistence and market hunting became common as society viewed the basin's vast populations of fauna as an inexhaustible ready source of food that was free for the taking. Such hunting rapidly depleted and in some cases, extirpated several species observed by Lewis. The vast herds of American bison that had regularly migrated for thousands of years across the Ohio River at the Falls of the Ohio River in search of fresh grass and the salt licks in Kentucky were the first to be extirpated. They had completely vanished from Ohio and Illinois by 1808 and by 1830 in Indiana.³³ The next to go was the cougar in 1838,³⁴ the Eastern elk in 1839,³⁵ the timber wolf in 1842,³⁶ the Carolina parakeet in the 1840s,³⁷ the black bear in the 1850s,³⁸ the passenger pigeon in the late 1890s,³⁹ and finally the red wolf⁴⁰ and river otter in the early 1900s.⁴¹ Martha, the last surviving member of her species (passenger pigeon), died in the Cincinnati Zoo in 1914.⁴² Incas, the last surviving Carolina parakeet, died in the Cincinnati Zoo in 1918, a year after his mate Lady Jane had passed.⁴³ Market hunting also severely and negatively impacted waterfowl populations. Uncontrolled subsistence hunting continued until game laws with designated seasons and bag limits were established and enforced in the twentieth century.

What Has Been Lost and Gained?

So what has been lost and what has been gained? Lost forever is the wild and untamed wilderness that was the heart and soul of the Ohio River country experienced by Captain Lewis 200 years ago. No one will ever again see the nearly endless processions of bison and feel the ground vibrate underfoot as they ford the Ohio River at the Falls of the Ohio over the Buffalo Trace while on their annual pilgrimage to the salt licks and blue grass of Kentucky. No one will ever again stand next to the Ohio River, look up in the sky, and see a flock of passenger pigeons numbering in the

billions, a mile wide and 300 miles long, blocking out the sun as they fly overhead. No one will ever again wade across the Ohio in late summer, walk up a hollow into the woods, and marvel at centuries old forest monarchs like the American chestnut that reached diameters in excess of 10 feet and heights exceeding 100 feet. No one will be able to stop at its base and pick up a bag full of chestnuts to take home for roasting over an open fire. Lost are the shallow clear river pools and riffles teeming with many species of fish, mollusks, amphibians, and reptiles of all sorts. Lost are the solitude and adventure that can be experienced when the evidence of man is absent.

These losses comprise the payments that we have made as a society to enable twenty-five million Americans to call the Ohio River corridor their home. These changes that have been purchased at such a high price have enabled the Ohio River to act as the primary avenue of transport for the great human western migration that tamed the interior of the continent of North America. The engineering marvels made possible by the massive modifications to the river have provided dependable, efficient, and low cost water-based transportation that has been crucial in creating today's world, our modern economy, and in sustaining the high standard of living the citizens of the Ohio River Valley and our country have come to enjoy.

One can say that not all that was lost in the past is necessarily lost forever. Significant improvements in the quality of Ohio River water have been made over the last two decades through the installation of state-of-the-art sewage treatment plants, the treatment of industrial waste, precautions taken to avoid accidental spills in the river, proper storm water management, and the adoption of sound farming and land management practices. Species like the paddlefish that require high quality water may be returning to reclaim their ecological niches in the river system as well as mammals such as the river otter and black bear.

Federal and state land managers have established wildlife management areas, public forests, and refuges designed to conserve and enhance key wildlife and fish habitat for species of concern or those having depressed populations. Sound wildlife management practices have been established that prohibit market hunting and set bag limits and seasons for sport hunting that maintain species populations at sustainable levels. Nongame management programs have also been developed for the restoration, enhancement, and management of species not financed through normal hunting license fees. Most surviving Native American cultural sites have been placed in reserves and are being protected from destruction by looters as well as changes in land use.

Campgrounds, day use areas, and trails have been constructed that allow public enjoyment of sensitive areas while preserving their integrity.

As our knowledge of the environment and our commitment to environmental stewardship increase, one can reasonably expect that some additional prior losses will be recovered and development can be balanced with environmental stewardship to assure overall system sustainability. ■

Dr. Michael A. Loesch is a retired program manager of Army Corps of Engineers recreation and natural resources management activities for the region that includes the Eastern Legacy. He is a member of the Board Directors and the Eastern Legacy and L&C Eastern Legacy Sign Program committees. Lorraine Loesch is a retired Registered Nurse and editor and a member of the Eastern Legacy Sign Program committee. Both are members of the Ohio River Chapter and LCTHF. Paige Cruz was the Eastern Legacy Coordinator for the Great Lakes and Ohio River Division, US Army Corps of Engineers during the 2003 Lewis and Clark Corps of Discovery Commemoration. She currently serves as the chair of the Eastern Legacy Committee for the Lewis and Clark Trail Heritage Foundation.

Notes

- Hubert Walker, "Hudson Bay," *New World Encyclopedia*. Website: http://www.newworldencyclopedia.org/entry/Hudson_Bay. December 22, 2017. Also "Mississippi River Facts," *Mississippi National River and Recreation Area*. Website: <https://www.nps.gov/miss/riverfacts.htm>. November 24, 2018.
- US Army Corps of Engineers, "Ohio River Basin Comprehensive Reconnaissance Report," December 2009.
- "Ohio River," *Wikipedia*. Website: https://en.wikipedia.org/w/index.php?title=Ohio_River&oldid=882689775. February 10, 2019.
- William Peden, ed., *Notes on the State of Virginia* (Chapel Hill and London: University of North Carolina Press), 1982.
- See Francois Andre Michaux, *Travels to the West of the Allegheny Mountains in the States of Ohio, Kentucky, and Tennessee [sic], and Back to Charleston, by the Upper Carolinas: Comprising the Most Interesting Details on The Present State of Agriculture, and the Natural Produce of those Countries, Together with Particulars Relative to the Commerce That Exists between the Above-mentioned States, and Those Situated East of the Mountains and Low Louisiana, undertaken in the Year 1802, Under Auspices of His Excellency M. Chaptal, Minister of the Interior* (London: Printed by D.N. Shury for B. Crosby and Co. and J.F. Hughes). Reprint.
- See Dwight L. Smith and Ray Swick, eds., *A Journey Through the West—Thomas Rodney's 1803 Journal from Delaware to the Mississippi Territory* (Athens: Ohio University Press), 1997.
- Smith and Swick, *A Journey Through the West*, 50.
- Meriwether Lewis to Thomas Jefferson, September 8, 1803. Website: <http://www.wvculture.org/History/Settlement/lewisandclark.html>.
- Gary E. Moulton, ed., *The Journals of the Lewis and Clark Expedition*, 13 vols. (Lincoln: University of Nebraska Press, 1983-2001), 2:65-86.
- US Army Corps of Engineers, *Ohio River Navigation Charts-New Martinsville, West Virginia to Pittsburgh, Pennsylvania-The Bicentennial Commemoration of the Lewis and Clark Corps of Discovery 2003-2009* (Washington, DC: US Government Printing Office), 2003. US Army Corps of Engineers, *Ohio River Navigation Charts-Foster Kentucky to New Martinsville, West Virginia-The Bicentennial Commemoration of the Lewis and Clark Corps of Discovery 2003-2009* (Washington, DC: U.S. Government Printing Office), 2003. US Army Corps of Engineers, *Ohio River Navigation Charts-Cairo, Illinois to*

Foster, Kentucky-The Bicentennial Commemoration of the Lewis and Clark Corps of Discovery 2003-2009 (Washington, DC: US Government Printing Office), 2003.

- Moulton, *Journals*, 2:65.
- Moulton, *Journals*, 2:67.
- Moulton, *Journals*, 2:68-69.
- Moulton, *Journals*, 2:70-71.
- Moulton, *Journals*, 2:74.
- Moulton, *Journals*, 2:77-78.
- Moulton, *Journals*, 2:79.
- Moulton, *Journals*, 2:80.
- Moulton, *Journals*, 2:84.
- Moulton, *Journals*, 2:84.
- Moulton, *Journals*, 2:86.
- Moulton, *Journals*, 2:88-90.
- Clarence W. Newman, *Ohio River Navigation-Past, Present, Future* (US Army Corps of Engineers – Ohio River Division. 1979), 2.
- Neil Elvick, *Early History of the Upper Ohio River Valley*, Gallia County Genealogical Society, OGS Chapter, Inc. Website: <http://galliaagealogy.org/Histroy/ohiovalleyhistory.html>.
- Norris F. Schneider, *The National Road—Main Street of America* (Columbus: The Ohio Historical Society, 1975) 40.
- See Elvik, *Early History*. Michael C. Robinson, *History of Navigation in the Ohio River Basin--Navigation History NWS-83-5*, (US Army Engineer Water Resources Support Center-Institute for Water Resources, January 1983), 71.
- "Wheeling Suspension Bridge," *Wikipedia*. Website: https://en.wikipedia.org/w/index.php?title=Wheeling_Suspension_Bridge&oldid=881002349. Last edited January 30, 2019.
- Clarence W. Newman, *Ohio River Navigation*, 2.
- Foundation for Ohio River Education, *Ohio River Resource Manual*, (PA Denny River Education Center, undated), 19.
- "Ohio River Islands," US and Wildlife Service. Website: https://www.fws.gov/refuge/Ohio_River_Islands/wat_we_d/-invasives.html. March 2013.
- U.S. History.org, "The Importance of the West," *U.S. History on Line Textbook*, 2019. Website: <http://www.ushistory.org/us/22a.asp>.
- Christopher Phillips, "The Breadbasket of the Union," (New York Times, August 8, 2012).
- "Bison Bellow: Bison East of the Mississippi," National Park Service. Website: <https://www.nps.gov/articles-bison-bellows-9-16-16.htm>.
- "Cougar," *Ohio History Central Online Encyclopedia*, Ohio History Connection. Website: <http://www.ohiohistorycentral.org/w/Cougar>.
- "Elk or Wapiti," *Ohio History Central Online Encyclopedia*, Ohio History Connection. Website: http://www.ohiohistorycentral.org/w/Elk_or_wapiti.
- "Eastern Timber Wolf," *Ohio History Online Encyclopedia*, Ohio History Connection. Website: http://www.ohiohistorycentral.org/w/Eastern_Timber_Wolf.
- "Carolina Parakeet," *Ohio History Online Encyclopedia*, Ohio History Connection. Website: http://www.ohiohistorycentral.org/w/Carolina_Parakeet.
- "Black Bear," *Ohio History Online Encyclopedia*, Ohio History Connection. Website: http://www.ohiohistorycentral.org/w/Black_Bear.
- "Passenger Pigeon," *Ohio History Online Encyclopedia*, Ohio History Connection. Website: http://www.ohiohistorycentral.org/w/Passenger_Pigeon.
- "Red Wolf," *Wikipedia*. Website: https://en.wikipedia.org/w/index.php?title=Red_wlf=883617196.
- "River Otter," Ohio Department of Natural Resources – Division of Wildlife. Website: <http://wildlife.ohiodnr.gov/species-and-habitats/species-guide-index/mammals/river-otter>. 2012.
- Joy W. Kraft, *Images of America—The Cincinnati Zoo and Botanical Garden* (Charleston, SC: Arcadia Publishing, 2010), 118 -119.
- Kraft, *Images of America*, 120.



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A Butifful Plain: The Oacoma Bottom, the Missouri and the Legacy of Lewis and Clark

By Robert Kelley Schneiders

The Missouri River at US212, South Dakota. Photograph by Scott Shephard. scottshephardphotography.com

"...the first comers in a land can, by their individual efforts, do far more to channel out the course in which its history is to run than can those who come after them...."

*Theodore Roosevelt, July 4, 1886,
Dickinson, Dakota Territory.¹*

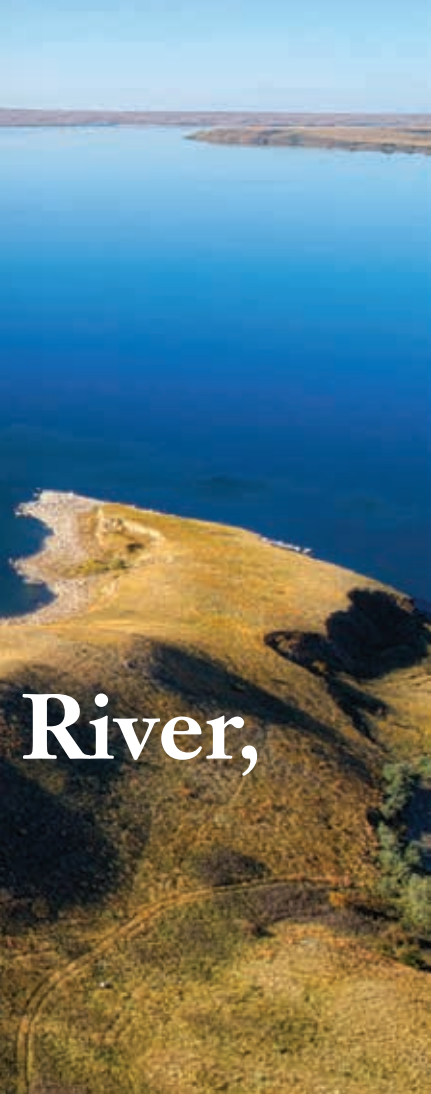
On the morning of Sunday, September 16, 1804, after having travelled a little over a mile upstream from the previous night's camp, Meriwether Lewis and William Clark, and the men aboard the keelboat and two pirogues, landed on the west bank of the Missouri River at a place later known as the Oacoma Bottom. The exploring party spent the next two days at this location, drying clothing and equipment, observing flora and fauna, and hunting bison and deer. The men had such a wonderful time at this Missouri River bottom that they referred to it in the journals as "Pleasant Camp." They were in today's South Dakota.

Several expedition members described Pleasant Camp and its environs. Clark referred to the bottom as "a butifful Plain Surrounded with timber."² John Ordway wrote, "...we Camped on S.S. in a handsome bottom of thin timbered

land, lately burned over by the natives, it had grown up again with Green Grass which looked beautiful."³ But it was Lewis, who spent all of Monday, September 17, traipsing across the valley lowlands and the plains above, who penned the most memorable lines. "...this senery already rich pleasing and beautiful, was still farther heightened by immense herds of Buffaloe deer Elk and Antelopes which we saw in every direction feeding on the hills and plains. I do not think I exaggerate when I estimate the number of Buffaloe which could be compeed at one view to amount to 3000."⁴

The Oacoma Bottom and the lands around it held more than just bison, white-tailed deer, elk, and pronghorn. The exploring party also saw wolves, coyotes, porcupines, rabbits, and what the men called "barking squirrels" or prairie dogs. A large prairie dog town pockmarked the entire bottom, stretching three miles long and a mile wide. Cottonwood, elm, ash, and oak grew in the midst of the prairie dog town; and a quarter mile to the rear of the explorers' camp stood a grove of plums—now ripe with the season.

The superabundance of life witnessed at, or near, the Oacoma Bottom, on September 16 and 17, 1804, was no mere



River,



The Missouri River Watershed.

coincidence. Biological diversity was not evenly distributed along the Missouri or across its vast drainage basin. Rather, flora and fauna concentrated in the valley's "bottoms."

Bottoms differed from bottomlands. Bottomlands lay next to the river and were subject to annual inundation. Bottoms, on the other hand, stood on top of the second or third terrace above the Missouri and were immune to most floods, which meant trees had time to take root and grow. As a result, bottoms often contained healthy stands of timber. Rich soils blanketed the bottoms—the result of the decomposition of organic matter, the defecating of mammals, and the infrequent deposition of Missouri River silt. Such soils fostered the growth of herbs, grasses, wild fruit, and nut trees.⁵ Edible plants brought bison, white-tailed deer, elk, pronghorn antelope, and all sorts of other creatures into the bottoms. The big grazers in-turn attracted predators, such as grizzly bears, wolves, and coyotes.

The Oacoma Bottom was one of many that once existed along the Missouri from the Platte to the Three Forks. A small bottom once occupied the flatland between the mouth of Perry Creek and the mouth of the Floyd River (the site of

today's Sioux City). Another dominated the eastern edge of the Big Sioux River a mile above its mouth. Others sprawled out along the Missouri just downstream from the James, Niobrara, and Cheyenne Rivers—to name a few. One of the Missouri's grandest bottoms extended six miles along the west bank of the Missouri north of the Bad River confluence at today's Pierre, South Dakota.⁶

The bottoms acted as oases in an otherwise harsh land. When drought struck the northern plains, the bottoms, which still contained food and water, filled with mammals, birds, and burrowing creatures. During cold, snowy winters, all kinds of animals found shelter from frigid temperatures and deadly winds in the bottoms, nestled amongst the trees or lying low in the high grass. Because of their ecological role as refuges, the bottoms helped sustain biological diversity across the northern plains for thousands of years.

In early autumn 1804, the Lewis and Clark Expedition witnessed firsthand the biological diversity present in, and around, a single Missouri River bottom. Had the expedition reached Oacoma in June (the wettest month on the northern plains), its members would have likely seen only a fraction

of the wildlife that they saw in September (one of the driest months). We're fortunate they arrived when they did, because thanks to them we now know, through their journals, of the incredible variety and vast number of creatures that lived in and around the Missouri Valley in the early nineteenth century.

After Lewis and Clark returned to St. Louis in September 1806, the two men advised prospective fur traders on the best sites for the establishment of trading posts within the Missouri Valley. Armed with this information, the Missouri Fur Company established a post in 1809 in the Oacoma Bottom—its purpose, to trade with the Teton Lakota for furs, especially that of the beaver. This post lasted only a year before burning to the ground.⁷

Not until the end of the War of 1812 did the Upper Missouri fur trade kick into high gear. In subsequent decades, large trading posts and smaller, temporary trading houses arose in the bottoms, many in the vicinity of Oacoma. Farther upriver, Fort Pierre, Fort Clark, and Fort Union became lasting fixtures of the fur trade, each of those posts built atop a bottom.

In the early years of the trade, keelboats and pirogues carried supplies and laborers to the posts. But in the 1840s, keelboats disappeared along the Missouri, replaced by the faster, larger, and more cost-effective steamboat.

The fur trade, and the steamboat traffic that supported it, fundamentally changed the hydrology and ecology of the Missouri Valley and northern plains. The fur trading posts, and the men who worked within their walls, prevented bison and other species from using the bottoms during the height of summer and the depths of winter. Forced to remain on the wide-open plains during the most difficult months of the year, species suffered higher mortality rates.

The fur trade also decimated the beaver population on the lands between the Missouri trench and Continental Divide. How many of the animals inhabited that area prior to the fur trade is unknown. But the number may have been astronomical—in the tens of millions. Removing the beaver from the scene had unintended consequences. Hundreds of thousands, perhaps millions, of beaver dams fell into disrepair in the decades after 1815. As a result, more rainfall and snowmelt flowed into the Missouri, and at a faster rate, forcing the stream to rise higher than it did in the past. These higher and more frequent flood flows rearranged the valley's habitat mosaic—washing away islands, submerging sandbars, and toppling timber stands.

The loss of beaver ponds not only influenced the Missouri's hydrology, it harmed all of the species dependent upon the water in those ponds. Birds, fish, reptiles, amphibians, and

mammals lost an important source of water. No longer able to access the beaver ponds, creatures either perished or tried to migrate to comparable areas—such as the Missouri River bottoms. These attempted migrations happened at the very same time the bottoms came under increasing human pressure from fur traders and steamboat crews.

The steamboat may have been a technological marvel of the age, but it came at great ecological cost. Steamers went up the Missouri in March and April, riding on the high water of the spring rise. The northbound boats passed through the Upper Missouri Valley just as the calving season came to an end. Newborn elk, bison, and deer huddled with their mothers in the bottoms at this time of the year. The boats made such a racket as they rattled and thumped their way upstream that creatures fled to the highlands to escape the strange sounds.⁸ Once on the uplands, in the open, the young fell prey to both the weather and wolves.

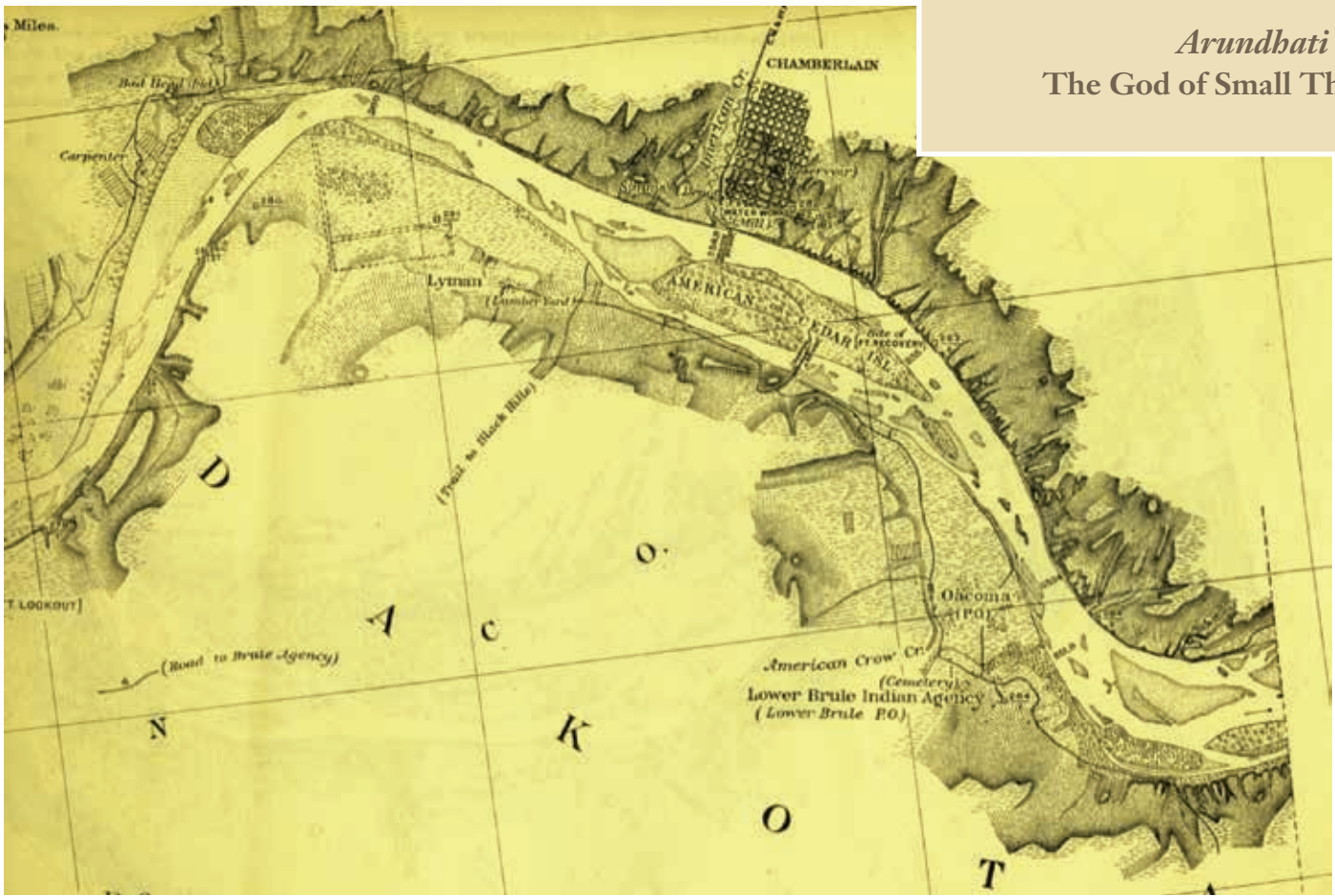
To add to the woes of the wildlife, crews on board the steamers all-too-frequently shot anything that lacked the wits to flee. And if all of the commotion and gunfire that accompanied the passage of the steamers were not enough of a disruption, the steamers regularly docked at the bottoms to gather wood. Once a boat reached shore, dozens of gun-toting passengers and crewmen disembarked, transforming a forest that minutes before had been quiet, or pierced only by the gentle notes of bird song, into a place of sound and fury. And slaughter.

The steamboats consumed huge quantities of timber. Crews procured all of the fuel for the boats from the valley itself. Each boat burned an average of 25 cords of wood per day. A single steamer working the river between March and November might burn thousands of cords. Not surprisingly, the steamboats fostered severe deforestation, especially in the river reach between the Platte and Yellowstone. As early as the mid-1840s, river travellers noted the paucity of wood. That absence compelled steamboat crews to desperate measures. On May 21, 1843, at the mouth of the Niobrara River, Edward Harris, who was traveling on board the steamer *Omega*, recalled the actions of the boat's roustabouts. "[H]ere we found a Fort (Fort Mitchell) which had been abandoned on account of the high waters and our folks went to work pulling down the stockades for fuel for the boat and carried off some furniture which was left in the houses."⁹ In the 1850s, the lack of valley timber became acute.¹⁰

Trees store water in their leaves, branches, trunks, and roots. Stands of riverside timber act as small catch basins—holding water back from the Missouri. They also serve as buffer strips, slowing or stopping surface runoff from entering the river. Trees even stabilize the banks, slowing the

“She smelled the river on him.”

*Arundhati Roy,
The God of Small Things*



Detail of Oacoma Bottoms from the Missouri River Commission Maps, 1884.

stream's propensity to wander across the valley floor.

At the same time that the valley's forests vanished into the furnaces of the steamboats, a series of floods came charging down the Missouri. It is probably no mere coincidence that the most voluminous Missouri River floods in the nineteenth century coincided with the steamboat era. We cannot prove that the deforestation that accompanied the steamboat era caused successive floods along the Missouri. Nevertheless, we can assume that deforestation worsened the flooding. Knocking down the valley's forests had to have had an influence on the river's flow volumes.

Floods struck the Missouri Valley in 1844, 1857, 1858, 1867, 1872, 1874, 1875, 1878, and 1881. During those same years, the river's morphology changed noticeably. When Lewis and Clark went up the Missouri, the river south of today's Yankton flowed through its valley in long, relatively-narrow loops. By the 1880s, the lower river had become straighter and wider (or what hydrologists call a "semi-braided stream") in order to carry the higher flows moving through its channel area.¹¹

In the nineteenth century, Euro-Americans radically

altered the Missouri's hydraulic regime. Weather phenomena played a role in that transformation, but the near-extinction of the beaver, along with deforestation, delivered a one-two punch to the river, pushing it higher than otherwise would have been the case. Those higher flows altered the river's morphology, rearranged the valley's habitat, and damaged European-American settlements further downstream.

During the steamboat era, European-Americans relied on the river as a transportation route and as a source of food, furs, timber, and fodder. When the railroad reached the river, settlers turned away from the Missouri and its by-now depleted resource base, relying instead on the railroad for many of life's necessities—and a few of its luxuries.

In 1894, the Missouri River Commission published detailed maps of the Missouri Valley. Map 37 in the series shows the Oacoma Bottom and vicinity. Much had changed since Lewis and Clark's visit ninety years earlier. A cemetery, a federal post office, and the Lower Brule Indian Agency occupied the southwestern corner of the terrace. A smattering of small trees grew near the mouth of American Crow Creek before it emptied into the Missouri near the agency

headquarters. To the north and east, a road skirted the edge of the bottom where it met the bluffs, connecting the Indian agency with a pontoon bridge that crossed the Missouri to Chamberlain—the terminus for the Chicago, Milwaukee and St. Paul Railroad. In the following decade, the railroad reached the river's west bank, passed through the tableland north of the Oacoma Bottom, and then swung westward up the valley of American Crow Creek.

The commission map provides no information on what animals lived at or near Oacoma. Nevertheless, we know the bison and beaver were long gone; and elk, deer, pronghorn, and wolves were in decline. The prairie dog—an animal with no value in American meat or fur markets—may have still lived at Oacoma, but it was considered so inconsequential that no one left a record of its presence.¹²

By the time of the publication of the Missouri River Commission maps, Missouri Valley residents had begun to view the river as a wasted natural resource and a threat to their way of life. Politicians from Missouri to Montana shared that perception. Beginning in the 1880s, the business elite in the valley's urban centers, and their federal and state representatives, lobbied Congress to develop the river for hydropower, irrigation, flood control, and barge navigation, with the goal of making the Missouri useful to an industrializing and urbanizing nation.

The lobbying efforts paid off. Between 1891 and 1940, the Army Corps of Engineers, in fits and starts, constructed a six-foot barge channel in the river from the mouth to Sioux City. Then, during the Dirty Thirties, the Army built Fort Peck Dam in eastern Montana to supply water to that six-foot channel. Soon after the completion of those two public works projects, floods returned to the Missouri.

The Missouri flooded south of Sioux City in 1941, 1942, 1943, 1944, 1947, 1949, 1950, 1951, and 1952. The Army's narrow barge channel exacerbated the flooding, as did Midwestern farmers, who had increased their crop acreage to meet the wartime emergency. Lacking the conveyance capacity to safely pass the floodwaters downstream, the barge channel forced the river up and out. Freed from the pile dikes and revetments hemming it in, the Missouri ran wild. Its fast-moving waters slashed deep gashes across the valley floor, undermined roadways, and carried away farmhouses. The loss of ground cover to cropland increased runoff into the stream—adding to the height of the flood crests and the destructive power of the floodwaters.¹³

To halt flooding south of Sioux City and to prevent the barge channel from being completely destroyed by the Missouri's high flows, and to provide hydropower and irrigation water to the residents of the northern plains, the Army

and the Bureau of Reclamation proposed the construction of an array of dams across the Missouri main-stem in North and South Dakota. The legislation authorizing those dams became law in December 1944. This was the comprehensive Pick-Sloan Plan, US Army Corps of Engineers' General Lewis A. Pick's determination to wage war against the caprices of the Missouri River.

On July 20, 1952, the Army closed the embankment at Fort Randall Dam in southeast South Dakota. Not long afterward, Fort Randall's reservoir began filling with water. By September 1953, the reservoir was rising at the rate of six inches per day. In September 1954—150 years since Lewis and Clark's visit—the cold, grey waters of the dammed river approached the Oacoma Bottom. By the end of 1955, the once “butifull Plain” at Oacoma lay silently beneath the wind-ruffled surface of the reservoir.¹⁴

At the same time the Army bulldozed mountains of dirt across the path of the Missouri in the Dakotas and filled its main-stem reservoirs (Garrison, Oahe, Big Bend, Fort Randall, Gavins Point), it rebuilt the barge channel south of Sioux City, this time to a depth of nine-feet. When completed in 1980, the narrow barge channel eliminated almost all of the lower Missouri's islands, sandbars, sandflats, and side channels. Only 57 acres of sandbar and island habitat remained along the river reach through western Iowa and eastern Nebraska upon the completion of the barge channel, this compared to an estimated 9,757 acres of island habitat and 14,790 acres of sandbar habitat along the same reach a hundred years earlier.¹⁵ Upstream, the huge Dakota dams, plus Montana's Fort Peck, divided the river into six distinct segments and drowned more than 750 miles of river valley, including the prime homelands of the Mandan, Hidatsa, Arikara, and Lakota peoples.

Encouraged by the Army to believe the Missouri had been irrevocably confined behind rock and reservoirs, the American people moved ever closer to the river. They erected their interstate highways, factories, power plants, gated communities, farms, RV parks, wastewater treatment facilities, hotels, strip malls, fast-food restaurants, parking lots, and warehouses next to the barge channel or alongside one of the upstream reservoirs. In the late twentieth and early twentieth-first centuries, all the lit-up, loud, super-sized accoutrement of modern America crowded in on the river. The last remnants of habitat fragmented into a thousand little pieces. Songbirds disappeared. Insects vanished. Forests fell. Deer fled. Fish diversity plummeted. Invasive species took hold and did not let go.

And then the unthinkable happened, the earth warmed, the rains came, and the Missouri flooded—again and again.



Oacoma today – faux bison guard the oasis. Photograph courtesy of Chad Coppess. South Dakota Department of Tourism.

In 1971, a major flood struck the lower valley, the first since all the Dakota dams went on-line. Floods followed in 1973 and 1984. In the summer of 1993, the lower river rose higher than at any time since the superflood of 1952. Non-stop thunderstorms, the tiling of agricultural lands, increasing suburbanization, the drainage of valley wetlands, the straightening of the Missouri's tributaries, the laser-levelling of cropland, the compaction of soil by heavy farm equipment, and the "asphaltification" of land to accommodate the automobile meant rainwater had nowhere to go but directly into the Missouri. Kept out of its floodplain by its ripped banks and a system of levees, the Lower Missouri rose until it overtopped both the barge channel and the levees; it then cascaded down into towns such as Hamburg, Iowa.

Although the flood of 1993 should have led to the dismantling of the barge channel between Sioux City and Kansas City, and the realignment of levees, powerful interest groups insisted on the reconstruction of both. Not surprisingly, the Army obliged those interests, rebuilding both the barge channel and the levee system. More floods descended the Missouri in subsequent years, but no one dared tackle the root causes, because to do so would have impinged on somebody's bottom line.

In 2011, a record 61 million-acre feet of runoff entered the river north of Sioux City.¹⁶ All of the factors that fostered the flood of 1993 were there in 2011, plus an additional one. Spurred on by high commodity prices, farmers in the Midwest and Plains states had in the previous decade converted millions of Conservation Reserve Program (CRP) acres to cropland. The new corn and soybean fields lacked the absorption capacity of the CRP acres.

Nothing could contain the ocean of water that ran into the Missouri that year, not even the Army's six main-stem reservoirs. To prevent the structural failure of its big dams, the Army leadership in Omaha decided to drain the reservoirs as fast as possible, dumping a "controlled flood" into the valley south of Yankton. Incredibly, after this unprecedented deluge, which brought distress to the whole Missouri River basin, the Army again rebuilt the flood-prone barge channel and levee system south of Sioux City.

In 2016, the Bureau of Reclamation published a report on the probable effects of climate change on the Missouri. The report concluded that the Missouri would become more erratic in the years ahead, with higher highs and lower lows. Most importantly, the river would experience dramatic rises on short notice—the consequence of warming temperatures,

the rapid melting of snow cover, and/or heavy rainfall events. On the other extreme, more frequent and intense drought episodes would lead to water shortages for municipalities, irrigationists, and power plant operators.¹⁷

Lewis and Clark envisioned the Missouri River Valley as a transportation route, a source of furs, the future site of European-American settlements, and as a means of projecting military power into the northern plains and Rocky Mountains. The two men never once considered leaving the river and valley as they found it, as a place rich in biological diversity and a source of sustenance for native cultures. In that regard, Lewis and Clark were radicals, men bent on overturning an ancient ecological order and the indigenous societies sustained by that order.

In the nineteenth century, fur traders and trappers, steamboat owners and operators, railroad men, and agricultural settlers fulfilled Lewis and Clark's vision for the Missouri River and its drainage basin. In the twentieth century, the American people took Lewis and Clark's vision even further, transforming the Missouri so thoroughly that it became as much a human artifice as a natural one.

History possesses weight, mass, and momentum. For over two centuries, the Missouri, its basin, and its people have been on a course first launched by Lewis and Clark. There is nothing in the foreseeable future that will alter that course. Granted, the Army may open additional side channels south of Sioux City to lessen the flood threat, and the least tern, piping plover, and pallid sturgeon may be saved from near-term extinction, but those actions will not fundamentally redirect the Missouri from its 215-year-old industrial trajectory.

Today, the four, gleaming-white, concrete lanes of Interstate 90 cross the Missouri at Chamberlain, touch the western shore of Lake Francis Case, and then make a graceful turn to the southwest, passing within a half mile of the long-drowned Oacoma Bottom. A motorist approaching Oacoma from the northeast first passes three wastewater ponds on the left; then, a little further on, and on the right, a Baymont Hotel, a strip mall named Al's Oasis (with three artificial bison out front), an RV park, and a slew of billboards, including one advertising for the Golden Buffalo Casino—"Your Winning Destination." The majority of the town's 451 residents (2010 Census) live in modest houses and trailers on the riverward side of the highway, within earshot of the constant hum of high-speed traffic.

If you travel to Oacoma, take Exit 260, turn south on Dougan Avenue, rumble over the railroad tracks, stay on the road until it turns to gravel and reaches a "T" intersection, turn left, pass two gravel roads on the right, turn right onto

the third gravel road. Drive until you reach the edge of Lake Francis Case. Stop. Get out of your vehicle and walk up to the ripped embankment. From there, in every direction, you can see the legacy of Lewis and Clark. ■

Robert Kelley Schneiders holds a PhD in Agricultural History and Rural Studies from Iowa State University. He is the author of Unruly River: Two Centuries of Change Along the Missouri and also Big Sky Rivers: The Yellowstone and Upper Missouri. More of his articles on the Missouri River can be found at www.ecointheknow.com.

Notes

1. David McCullough, *Mornings on Horseback: The Story of an Extraordinary Family, A Vanished Way of Life, and the Unique Child Who Became Theodore Roosevelt* (New York: Simon & Schuster Paperbacks, 2001), 349.
2. Gary E. Moulton, ed., *The Journals of the Lewis and Clark Expedition*, 13 vols. (Lincoln: University of Nebraska Press, 1983-2001), 3:77.
3. Moulton, *Journals*, 9:60.
4. Moulton, *Journals*, 3:81.
5. Melvin R. Gilmore, *Uses of Plants by the Indians of the Missouri River Region*, Enlarged Edition, (Lincoln: University of Nebraska Press, 1991), 22-37.
6. Max Heinze, cartographer, *Missouri River* (St. Louis?: Missouri River Commission, 1894), Map 40.
7. Richard Edward Oglesby, *Manual Lisa and the Opening of the Missouri Fur Trade* (Norman: University of Oklahoma Press, 1984), 97; Moulton, ed., *Atlas of the Lewis and Clark Expedition*, 1983), Map 20.
8. Reuben Gold Thwaites, ed., *Early Western Travels, 1748-1846, Vols. 22-24, Maximilian, Prince of Wied's Travels in the Interior of North America, 1832-1834* (New York: AMS Press, 1966), 22:268, 334, 366.
9. John Francis McDermott, ed., *Up the Missouri with Audubon: The Journal of Edward Harris* (Norman: University of Oklahoma Press, 1951), 68.
10. John Francis McDermott, ed., *Journal of an Expedition to the Mauvais Terres and the Upper Missouri in 1850*, by Thaddeus A. Culbertson, Smithsonian Institution, Bureau of American Ethnology, Bulletin 147, (Washington: GPO, 1952), 88.
11. George R. Hallberg, Jayne M. Harbaugh, and Patricia M. Witinok, *Changes in the Channel Area of the Missouri River in Iowa, 1879-1976* (Iowa City: Iowa Geological Survey, 1979), 10.
12. J.C. Barr, cartographer, *Missouri River*, (St. Louis?: Missouri River Commission, 1894), Map 37.
13. Stephen Lee, "Corn, Soybeans Dominate SD Planted Acres, While Wheat Acres Have Dwindled," *Pierre Capital Journal*, September 25, 2017; Gerald Miller, Aaron Sassman, and C. Lee Burras, "Iowa Corn and Soybean Acres Planted, 1927-2016," (Ames: Iowa State University, Agronomy Department, January 17, 2017).
14. Department of the Army, US Army Corps of Engineers, *The Federal Engineer, Damsites to Missile Sites: A History of the Omaha District, U.S. Army Corps of Engineers*, (Omaha: US Army Corps of Engineers, Omaha District Office, 1984), 110; "Randall Lake Grows Fast," *Omaha World Herald*, October 17, 1954.
15. Hallberg, et al., *Missouri River, 1879-1976*, 32.
16. Nick Hytrek, "Missouri River Runoff Forecast to be Above Average," *Sioux City Journal*, March 7, 2019.
17. Bureau of Reclamation, *Secure Water Act, Section 9503(c), Reclamation, Climate Change, and Water, 2016*, "Chapter 6: Missouri River Basin," (Denver: US Department of the Interior, Bureau of Reclamation, March 2016), 6-10 - 6-11.

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



Lewis and Clark Trail Heritage Foundation 51st Annual Meeting

Return to St. Louis

ST. LOUIS, MISSOURI • September 21–September 25, 2019

Please join us this September in St. Louis . . .

Our meeting will be held during the 213th anniversary of the return of the expedition party to St. Louis. We will commemorate the incorporation of the LCTHF, examine how the telling of the Lewis and Clark story has changed over time, discuss current scholarship within the field, learn about legacy projects, and participate in activities and panels about what it means to be the “Keepers of the Story and Stewards of the Trail.”

Registrants will visit the new museum exhibits at the Gateway Arch and learn about the background research from the curator and historian. Conference attendees will have a behind-the-scenes experience with Lewis and Clark artifacts at the Missouri Historical Society. We will revisit “Lewis and Clark Through Indian Eyes” with Indigenous scholars more than a decade after its groundbreaking publication. An exclusive chartered river cruise will take participants to the confluence of the Missouri and Mississippi Rivers, passing through the massive Mississippi lock system on this fascinating opportunity to understand changes to the river system since the time of Lewis and Clark. Scholars from the Osage Nation will share their history with Lewis and Clark and their delegation that met with Thomas Jefferson in 1804.

The final afternoon, attendees will choose one of three special tours: 1) an historical tour of Bellefontaine and Calvary Cemeteries

that will include visits to William Clark’s grave and the Nez Perce Warriors monument; 2) a visit to historic St. Charles (celebrating its 250th anniversary in 2019 with fiberglass replicas of

Newfoundlands throughout the city) and the Lewis and Clark Boat and Nature Center; or 3) a tour of Illinois Lewis and Clark sites including Campsite #1, the museum, and the Lewis and Clark Confluence Tower (completed in 2010).

We will be honoring individuals and organizations, past and present, that have worked together to make the Lewis and Clark Trail Heritage Foundation what it is today.

A pre-conference walking tour of the St. Louis riverfront will be offered on Saturday afternoon by NPS historian Bob Moore. You won’t want to miss this opportunity to learn about the St. Louis of Lewis and Clark. Archaeologist Michael Meyer will also be there to talk about his work with French colonial-era artifacts and the remnants of vertical log houses. Two post-conference day tours are being offered. One tour is to the recently designated Ste. Genevieve National Historic Park, where participants will tour

vertical log homes from the period. The second tour is a behind-the-scenes look at Jerry Garrett’s St. Louis. (This tour is not Lewis and Clark-focused but is a unique opportunity to see St. Louis through Jerry’s perspective.)



Hand-drawn map of Great Falls of the Columbia River by William Clark, Voorhis Journal 4, October 22–23, 1806. Missouri Historical Society Collections.

ST. LOUIS, MISSOURI • September 21–September 25, 2019



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The Tom Sawyer River Boat will take conference attendees to the confluence of the Mississippi and Missouri Rivers. Photo courtesy of Gateway Arch National Park.

Gateway Arch National Park exhibition. Photo courtesy of Gateway Arch National Park.

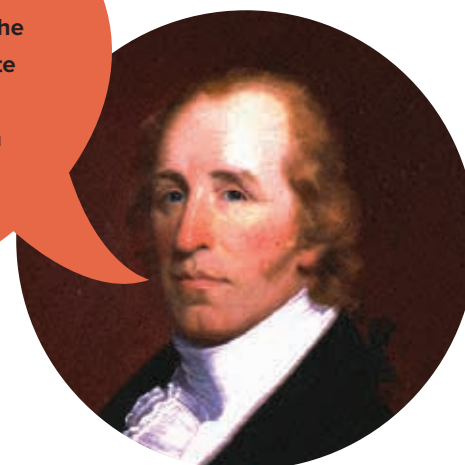
Lewis and Clark Confluence Tower, Hartford, Illinois.



Nez Perce Warriors Monument, Calvary Cemetery, St. Louis, Missouri.

"Decended to the Mississippi and down that river to St. Louis at which place we arived about 12 oClock. We suffered the party to fire off their pieces as a salute to the town. We were met by all the village and received a harty welcom from its inhabitants &c."

**WILLIAM CLARK
September 23, 1806**



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Return to St. Louis



Many Forks: Towards a Geography of the Snake River Drainage

By Jack Nisbet

Snake River and Columbia River Confluence. Photograph by Kirk Anderson. kirkanderson.com

Meriwether Lewis had his first experience of the Snake River basin when he topped Lemhi Pass on August 12, 1805. There he discovered the “immense ranges of high mountains still to the West of us with their tops partially covered with snow,”¹ then descended about three-quarters of a mile down the west slope. As he sipped cold water that he knew ran clear to the Pacific, Lewis noted ominously that the shoulder he traversed seemed much steeper than the one he had ascended to reach the Continental Divide.

For the next nine weeks, the Corps of Discovery struggled in the grip of that new world, tracking counter-clockwise around the headwaters of major Snake tributaries in the Salmon and then the Clearwater River, which Captain Clark called the Kooskooskee. They crossed back to follow the Bitterroot to Traveler’s Rest before tackling their demon again via Lolo Pass and the ridge between the Lochsa and the North Fork of the Clearwater, finally reaching the main stem of the Kooskooskee in late September. There, at today’s Orofino, Idaho, they built dugout canoes that allowed them to paddle to the confluence of the Snake on October 10. The Americans ran down the lower portion of the mother

river for another week, until the Snake met the Columbia as it curled in from the northwest carrying its own great flow.

Viewed from a modern distance, it is easy to see how Lewis and Clark’s Snake journey bogged down in a narrow crescent of Interior rain forest that stretches from the Salmon divide north into British Columbia. Their progress sped up in the open ponderosa uplands of the lower Clearwater, and finally shot through Snake River’s basaltic shrub-steppe canyons across eastern Washington State. During the first part of this test, the Corps passed through the homelands of Shoshone, then Flathead, then Nez Perce people, a human geography that obliged the Americans to absorb complex information from three entirely different language families. An early winter dogged their progress, and when their Shoshone guide Old Toby attempted to navigate the Lolo Trail, they entered a topographical maze where, as the initial Forest Reserve surveyor John Leiberg noted almost a century later, “The curvings, windings, ascents, and descents are incessant and confusing, and in every case only actual travel can determine the precise point at which any particular canyon or spur originates and ends.”² For the captains,



The Snake River Watershed. Map courtesy of US Bureau of Reclamation.

their relief at reaching more arid yellow pine benches was outweighed by the rush to build boats and move downstream. Any satisfaction gained from launching their dugouts soon gave way to the adrenalin-soaked anxiety of risking their precious payload (tools, weapons, journals, medicines, trade items, and gifts) through unrelenting rapids.

But they made it, and on their return trip the following spring, the Corps experienced the Snake River drainage in an entirely different manner. As they paused at encampments of Cayuse, Umatilla, Walla Walla, Palus, and Nez Perce people, Captain Lewis went on a botanical collecting spree, pressing half a dozen specimens from the lily family alone, including elegant mariposa lily. The roots of each one of these also provided sustenance for local people, who relayed details of cultural use for Lewis to record.

Although most retellings of the story remember camas as the principal root food that the Corps consumed during their time west of the Rockies, that spring Lewis also collected numerous species of “umbelliferous plants,” familiar to all gardeners as members of the carrot or parsley family. As they neared the forks of the Snake and the Columbia, the

captain described one of them in great detail: a low, abundant, yellow-flowered biscuitroot that he rendered as “cous” and sometimes “cows,” whose tubers he saw as the main ingredient in a kind of root bread called “cha-pel-el.”³

In fact, Plateau peoples have long utilized multiple species of biscuitroots, and the variety that went into their dried cakes depended on variables that included location, timing, weather conditions, and family recipes.⁴ From the Snake to the Nez Perce leader Broken Arm’s camp on the Clearwater, the Corps saw tribal women processing these roots by pounding them with mortar and pestle. Most of the Americans liked the biscuitroot breads and traded for bushel upon bushel as they stockpiled goods for their return trip across the Divide. While the men waited for the snow to melt so they could proceed, Nez Perce women turned from harvesting cous to camas on their annual round, and the captains could not hide their disappointment with the headman’s departing gift. “The Broken Arm gave Capt. C. a few dried Quawmas [camas] roots as a great present,” wrote Lewis on their last day. “In our estimation those of cows are much better and I am confident they are much more healthy.”⁵

The complex attraction of those biscuitroots mirrored the mysteries of the entire drainage, and Lewis's plant list as he moved up the Lolo Trail preserved clues about the unusual characteristics of the Clearwater. When he collected cascara leaves on May 29, Pacific dogwood two weeks later, and mountain kittentails just as his party lipped over the pass at Packer Meadows, he laid the groundwork for many botanists, foresters, and ecologists who followed. By extension, both captains' diligent work within this basin established benchmarks for larger geographical concerns that ranged from ancient ethnography to international boundaries. Proof of the Corps of Discovery's and Thomas Jefferson's indelible influence can be seen in the ways that successive visitors pored over their presence and actions.

Canadian fur agent and cartographer David Thompson had a long history with both Jefferson and the Corps. It was Thompson who in 1797 calculated the first good longitude of the Mandan villages, and placed them accurately on his map of the Missouri's long bend through the Dakotas and eastern Montana.⁶ Jefferson made sure that Lewis and Clark had a copy of that map when they headed upstream from St. Louis, and it helped William Clark to interpolate his east-west distances within the Snake drainage.

The Americans unwittingly returned the favor when a letter written by Meriwether Lewis fell into Thompson's hands soon after he reached the headwaters of the Columbia River in spring 1807. As the fur agent canoed down the Columbia four summers later, Captain Lewis's detailed account of his journey from Lolo Pass to the Pacific allowed Thompson to hop ashore at what is now Sacagawea State Park in Pasco, Washington, to test his sextant skills against Lewis' where the great rivers join.⁷ Since David Thompson was working for the British North West Company, crucial matters of sovereignty were involved. On the five large maps he later drew of western North America, Thompson used Sahaptin place names provided by his guides for the Snake and Columbia tributaries, and each designation differed from the ones that William Clark applied to his own great map.

But Thompson also gave credit where credit was due. On his most refined chart, he traced the Corps of Discovery's route with a distinct ochre-yellow line that accurately marked their journey through the Salmon-Clearwater morass all the way to Canoe Camp at the mouth of the North Fork. At that point Thompson penned in his neat script: "Here Capts Lewis and Clarke made Canoes and went to the Sea; they also returned this way."⁸

In that summer of 1811, when Thompson and his crew of voyageurs paddled back up the Columbia after a quick two-week stay on the coast, they turned east at the confluence

of the Snake to track Lewis and Clark's path of six years before. Using language that echoed the captains' journals, Thompson marveled at the basalt formations that towered over the river's course: "these Lands are wholly composed of Strata of Rock...those on the upper Strata of about 20 feet of pillar-like Rock – this is often like the flutes of an organ at a distance. The pillars are split also in various directions as if broken & cracked by a violent blow."⁹ The Nor'westers veered away from the Americans' course at the mouth of the Palouse River, cached the cedar plank canoe that had whisked them almost a thousand miles in three weeks of water time, and traded for horses to carry them overland back to the Spokane country.

David Thompson and his crew passed beneath the Marmes rock shelter on the very first day of that horse trip, a site that testifies to ten thousand and more years of steady occupation by Plateau people. He knew that his presence there, overlapping the earlier path of Lewis and Clark, would prove significant in much less time. As it happened, Thompson was the only one of the three leaders left alive when the deeper manifestations of their visits played out in geopolitical terms.

In 1845, as the question of the disputed international border in the Pacific Northwest finally simmered to a climax, Thompson (now 74 years old) wrote "There is but one boundary which ought to be satisfactory to England & ought to content the United States (if this is possible)."¹⁰ In his opinion, the border should turn south from its treaty-established endpoint at the intersection of the Forty-ninth parallel and the Continental Divide, follow the crest of the Rockies to the forty-seventh parallel, then track west until it touched the Columbia River (just above the modern town of Vantage, Washington). From there, the international boundary would run down the middle of the Columbia to the Pacific. That way, all the lands within the Snake River Basin where Lewis and Clark labored would belong to the United States; all the Columbia, from its confluence with the Snake upstream—lands which had been explored and surveyed by Thompson—would stay with Great Britain.¹¹ Neither Thomas Jefferson, with his vision of a continental empire, nor James K. Polk, running for president in 1846 with a campaign motto that advocated for the annexation of most of British Columbia, would have let that notion stand. Thompson was outraged when the 1846 treaty pinned the international boundary to the forty-ninth parallel.

Scottish naturalist David Douglas (1799-1834) directed his attention back to the smaller details of the drainage when he combed the lower reaches of the Snake for flora and fauna in the summer of 1826. On a previous collecting

*“A good river is nature’s
life work in song.”*

Mark Helprin



*The Inland Port of Lewiston on the Clearwater River. The steam rising in the background is from the Clearwater Paper Corporation.
Photo courtesy of Steve Lee.*

trip to the Atlantic seaboard, Douglas had perused Lewis and Clark’s collections in Philadelphia, where he carefully noted each of their Pacific Slope specimens. Now, traveling with a brigade of Hudson’s Bay Company traders bent on purchasing horses, Douglas arrived at a large Nez Perce encampment near Lewiston, Idaho, where the Snake meets the Clearwater. From there one of the fur men guided the naturalist on an excursion upstream to the mouth of the North Fork. There he stood on “the spot pointed out to me by the Indians where Lewis and Clarke built their canoes, on their way to the ocean, twenty-one years ago.”¹²—a span that points up both the accuracy and respect of local memory.

Determined to build upon that legacy, Douglas proceeded to add two new species of mariposa lilies to the elegant mariposa lily that Meriwether Lewis had collected in the vicinity. The Scot then veered off the main course of the river to probe the Craig Mountains, where he picked up the beautiful Brown’s peony and a new currant that Lewis had not seen along Lolo Trail.

Douglas’s knowledge of the captains’ natural history discoveries did not stop with flowering plants. Meriweth-

er Lewis had noted the eastern horned lizard near Lemhi Pass,¹³ but Douglas described the shrub-steppe’s particular pygmy western horned lizard clearly enough that today it still carries his Latin name (*Phrynosoma douglasii*).¹⁴ Douglas had seen the Corps’ bighorn sheep specimen in Philadelphia, and while in the Northwest he questioned fur agents, hunters, and tribal people alike about the animal’s coloration and habits. He also hotly pursued Lewis’s “Cock of the Plains,” or sage grouse, collecting male and female specimens and recording important nesting information about the bird.

While sage grouse can still be found in their much-reduced former habitats, the California condor has disappeared entirely from the Northwest. Lewis and Clark had considerable experience with those huge birds on the lower Columbia; Douglas followed suit, adding details of life history and range to their accounts. Although none of them ever saw condors on the Snake or Clearwater, company hunters assured Douglas that the birds’ territory extended east past the confluence of the Columbia and south through the Boise Basin. Tribal oral histories and testimony of white cattlemen into the early twentieth century bear out the

accuracy of Douglas's assertion.¹⁵ Furthermore, what Douglas learned about cultivated tobacco among the tribes also reflected Lewis and Clark's experience in the Mandan villages, with the Shoshone at Lemhi Pass, and downstream all the way to Fort Clatsop: the Snake and Clearwater had long served as corridors for plants, animals, and people to move fluidly east and west via a variety of paths from the Pacific Ocean across the Continental Divide and beyond.¹⁶

In 1895, Frederick Coville, the young director of the nascent National Herbarium in Washington, DC, attempted to further explore those trans-mountain pathways when he sent instructions for a plant survey of the Coeur d'Alene Basin to a seasonal field worker named John Leiberg. Coville told Leiberg that if "it is possible for you to do so, I shall be very glad if you can reach as far south as the Lolo trail. By doing so you would cover the route of Lewis and Clark's expedition which would be a matter of great value in your report."¹⁷

Coville had chosen his field agent well. Leiberg, a Swedish immigrant and plant lover, already had spent more than a decade exploring the region, including mineral prospecting up the Clearwater from Lewiston and probing for possible railroad routes over the Bitterroot Range from the Montana side. During his 1895 survey, twenty feet of snowpack prevented Leiberg from bulling his way from the St. Joe headwaters across to the North Fork of the Clearwater as Coville had hoped, but over the next few years the pair continued to use historic connections to further their understanding of the drainage. In 1897, when Leiberg was tasked with surveying the Bitterroot Forest Reserve, he searched for sites where Meriwether Lewis had gathered his specimens of clematis and bitterroot.¹⁸ The following year, after Leiberg had worked on the Clearwater side of the Divide, Coville invited him back to Washington, DC for the winter so they could examine his summer's plant catalog. "When you come we will try to get hold of the Lewis and Clark plants for your amusement and mine during the winter," Coville told Leiberg. "I think we can get a large amount of information out of them."¹⁹

Coville's intuition proved correct. The Corps' Clearwater herbarium included several disjunct plants such as Pacific dogwood that seemed to originate in the wet climate of the Pacific Coast. Leiberg talked to local trappers and hunters who clarified how the basin's long steep ridges trapped weather systems to create belts of heavy precipitation. When compiled with his own collections and observations, such data helped to define an Interior wet belt or rain forest that explained many of the obstacles Lewis and Clark faced during their fall journey.

It is difficult to clearly visualize those far drainages that Lewis and Clark traveled through, especially across distances of space and time. John Leiberg's employers at the Department of Agriculture and the Geologic Survey showed little understanding for the ruggedness of the west of the Rockies, instructing Leiberg to follow survey lines that plunged straight off sheer rock faces. More recently, when Paul Cutright, as part of the research for his classic *Lewis and Clark: Pioneering Naturalists*, rode the Lolo Trail twice in the 1950s, he described the landscape he saw in primordial terms: "Much of the virgin forest present here when Lewis and Clark struggled through it still stands, unscarred and unspoiled."²⁰

John Leiberg's surveys of the drainage in 1884, 1897, and 1898, together with a stint as a forest ranger there in 1902, tell a more nuanced story. "There are no large portions of either the Clearwater or the Salmon river basins but show some evidence of fires of recent date," he groused. "The fires kindled by white men have ravaged the forest areas of the preserve in thousands of places."²¹ Leiberg studied tree growth rings at sawmills to assemble long-term fire histories of different areas, and realized that tribal-set fires had long been a part of the scene. But those paled when compared to the fact that "Early discoveries of placer diggings ... had the effect of sending many prospectors to the more remote corners of the Clearwater basins and wherever they went fire and blackened ruins of the forest were left behind ... sterility and aridity of the soil in the mountain districts follow upon the destruction by fire of the forests there."²²

Although Leiberg traveled with the memory of Lewis and Clark in his mind, he also witnessed the beginnings of drastic landscape alterations that we live with today, both in the greater Snake River drainage and across the American West. He saw how careless fires could damage forest humus and lead to soil degradation, rapid snow runoff, and cycles of doghair thickets ripe for new fires. Even as he recommended small weirs to implement log transport and irrigation for homestead farmers, Leiberg talked with developers who were planning much larger dams that would alter the flow and timing of the great rivers that fed the Columbia system. In 1899 he wrote an article for *National Geographic* about a long-term trend toward heat and aridity in the western climate.²³ He railed at sweeping management laws passed without public input or local knowledge, while at the same time championing the need for sensible, science-based rules to govern the taking of game, timber, and minerals from public lands.

While Lewis and Clark might not recognize the place today, John Leiberg would not be one bit surprised by

the current condition of his beloved Clearwater and lower Snake drainages. For the past two Augusts, smoke from rampant wildfires has clouded the Lolo Trail. Water storage and release seems impossible to balance with fish viability and power production over the four large dams of the lower Snake. Each year some new aggressive weed seems to march along the former corridors of condors and tobacco. All told, this can be a discouraging watercourse to follow. But a follower of those early footsteps can still find the same mountain kittentails and Pacific dogwood that Lewis picked up, not to mention the equally disjunct lady fern and strawberry bramble that John Leiberg added to the list. Leiberg saw plenty of destruction, but he would never give up on the regenerative powers of the forest. He understood that tribal people had lived within the many different aspects of the Snake and Clearwater for much longer than he could imagine. Over the course of his surveys, he learned to question the travelers he met, to pay attention to the plants they offered in trade and the routes they took that diverged from his own.

Like Meriwether Lewis, Leiberg recognized the early-season explosion of coues and its umbelliferous relatives as the floral signature of the Intermountain shrub-steppe. Today a variety of those biscuitroots still paint the arid plains yellow and white each spring, and women from the complex of tribal groups along the lower Snake fan out to dig all manner of nutritious roots in their proper time. One of those groups, the Confederated Cayuse, Umatilla, and Walla Walla Tribes, has published an atlas of place names that stretches back far before the Corps of Discovery and aims to hold fast to the landscape that the captains described.²⁴

The journey from Lolo Pass to the confluence of the Snake and the Columbia has always been a hard one, no matter when the attempt is made, but the passion and power that Lewis and Clark felt during the course of their journey still throb through their entire route. As John Leiberg liked to point out, we still have only a thin comprehension of the place. “It is pretty certain we do not know the beginnings of the behavior of our soils,”²⁵ he wrote near the end of his adventurous life. We need to start there and build our way up, one tiny step at a time, until the entire drainage reveals itself. A new century has only made his plea for rigorous focus and common sense more urgent. It might take generations to figure it out, but there is no way we can give up on the river, or the forest, or the smallest biscuitroot flashing yellow above the soil. ■

Note: All plants in this article are referred to by common names as listed on the USDA Plant profile web site plants.sc.egov.usda.gov/java

Jack Nisbet has written several volumes of essays that explore the intersection of human and natural history, as well as award-winning biographies of cartographer David Thompson (Sources of the River) and naturalist David Douglas (The Collector). His most recent project, The Dreamer and the Doctor, traces the unlikely adventures of forest surveyor John Leiberg and his physician wife Carrie. For more information visit jacknisbet.com.

Notes

1. Gary E Moulton, ed., *The Journals of the Lewis and Clark Expedition*, 13 vols. (Lincoln: University of Nebraska Press, 1983–2001) 5:75.
2. John B. Leiberg, “The Bitterroot Forest Reserve (Idaho Portion),” in *Twentieth Annual Report of the United States Geological Survey*, Part 5:318.
3. Moulton, *Journals*, 5:380FN.
4. Eugene Hunn, *Neb’l-Wana: Mid-Columbia Indians and their Land* (Seattle: University of Washington Press, 1990), 99–109.
5. Moulton, *Journals*, 7:339.
6. David Thompson, “Bend of the Missouri River.” Library of Congress, Geography and Map Division.
7. Jack Nisbet, *Sources of the River: Tracking David Thompson Across North America* (Seattle: Sasquatch Books, 2005), 202.
8. David Thompson, “Map of North America from 84° West” (sheet 5). The National Archives, London.
9. Belyea, Barbara, ed., *David Thompson: Columbia Journals* (Montreal: McGill-Queens University Press, 1994), 165.
10. David Thompson to Sir James Alexander, June 10, 1845.
11. Jack Nisbet, *The Mapmaker’s Eye: David Thompson on the Columbia Plateau*, (Pullman: Washington State University Press, 2005), 139.
12. David Douglas, *Journal Kept by David Douglas during his Travels in North America 1823–1827* (Cambridge University Press, 2011), 200.
13. Moulton, *Journals*, 5:174.
14. Thomas Bell, “Description of a New Species of Agama, Brought from the Columbia River by Mr. Douglass,” in *Transactions of the Linnean Society of London* 16 (1833), 105–07.
15. Jack Nisbet, *Visible Bones: Journeys Across Time in the Columbia River* (Seattle: Sasquatch Books, 2003), 67.
16. Nisbet, *Visible Bones*, 142.
17. Leiberg to Coville correspondence, National Archives, June 11, 1895.
18. Leiberg to Coville correspondence, National Archives, May 7, 1897a.
19. Leiberg to Coville correspondence, National Archives, October 6, 1898.
20. Paul Russell Cutright, *Lewis and Clark: Pioneering Naturalists* (Lincoln, NE: Bison Books, 1989), 203.
21. John B. Leiberg, “The Bitterroot Forest Reserve,” in *Twenty-first Annual Report of the United States Geological Survey to the Secretary of the Interior, 1899–1900*, Part 5, 386.
22. John B. Leiberg, “The Bitterroot Forest Reserve,” 367–68.
23. John Leiberg, “Is Climate Aridity Impending on the Pacific Slope? The Testimony of the Forest,” in *National Geographic Magazine* 10 (May 1899), 160–181.
24. Eugene Hunn, E. Thomas Morning Owl, Phillip E. Cash Cash, & Jennifer Carson Engum, *Cáw Pawá Láakni: They are Not Forgotten: Sabaptian Place Names Atlas of the Cayuse, Umatilla, and Walla Walla* (Penleton, OR: Tamástlikt Cultural Institute, 2015).
25. Leiberg to Coville correspondence, National Archives: May 13, 1913.



The Columbia: The River of the Corps No More

By William L. Lang

*The confluence of the Snake and Columbia Rivers – the industrial complexity of the American West.
Photograph by Kirk Anderson. kirkanderson.com*

Rivers for all time have been begetters of human civilization, for they are not only the most dynamic part of nature—moving mountains to valleys, nourishing fertile soils, and more—but they are also the most intrinsic organizers of people. Rivers are progenitors of energy, activity, and dream and, in no minor way, shapers of human destinies. They move people and things. For President Thomas Jefferson that image of rivers informed and energized his desire to explore the western half of North America. He conceived the Corps of Discovery as a riverine odyssey that could deliver to the young United States a continental passage by linking the waters of the Missouri and Columbia rivers, an expansion of scientific knowledge that could offer great geopolitical benefits. He made the centrality of rivers clear in his letter of instructions to Meriwether Lewis:

The object of your mission is to explore the Missouri river, & such principal stream of it, as, by its course and communication with the waters of the Pacific ocean, whether the Columbia, Oregon, Colorado or any other river may offer the most direct & practicable water communication across this continent for the purposes of commerce.¹

Jefferson directed Lewis and Clark to be scientific observers and investigators. They were to pay close attention to the conformation and character of the two principal rivers; detail their flows, currents, sandbars, rapids, and cascades; calculate river travel distances; and describe Native uses of rivers.

The captains could not escape centering their attention on moving water, the prime focus of planning, strategies, and cartography. Even when they veered away from the Missouri and the Columbia, they usually followed other river courses to expand their understanding of the landscapes they encountered. They returned to St. Louis with rivers on their minds, filling their journals, and graphically dominating their maps.

More than two centuries later, it hardly needs saying, both of the principal rivers are radically different. If Meriwether Lewis and William Clark magically returned to the Columbia River today, it is fair to expect that they would be shocked to see the river's shape, current, and flow, that they would struggle to find perhaps half of the riverine landmarks they described in their journals and represented on their maps;



The Columbia River Watershed.

and they would be nearly lost, with only the massive walls of the Columbia River Gorge, Beacon and Rooster rocks, and the mouths of a few tributaries to provide orientation.

But that says nothing about their likely reactions to the missing salmon. And perhaps even more disorienting, the captains might wonder: Where are Native people, and why are they so constrained? The massive changes to the Columbia since the Corps of Discovery floated down and ascended the river in 1805-1806 are consonant with the river's industrial transmogrification—the fate for every major river in the US, save the Yellowstone. But the starkly different shape of the Columbia aside, Lewis and Clark would recognize some stretches of the river, especially the section within the reach of tide, and they would remember the dramatic ecological passage from the high and arid interior plateau through the Cascade Mountains in the Columbia River Gorge to the low, rainy floodplain on the river's course to the ocean. And it is important to remember that the captains saw only a fraction of the Columbia's 1,249-mile main stem, essentially from the mouth of the Snake River to the Pacific Ocean, although they briefly scouted out

the Willamette River tributary on their way upriver from the coast in 1806 and inspected the Yakima River. They gained little knowledge of the 259,000-square-mile expanse of the Columbia River Basin, and they missed seeing the river at high flow—May to September—because they descended the Columbia in October and November 1805 and ascended in March and April 1806.

Although the contrast between then and now on the Columbia makes this speculative excursion likely fruitless, the captains' observations in 1805-1806 offer prompts for telling the story of what has happened to the Columbia since the great expedition. What caught their attention, it turns out, has drawn intense interest from residents and users of the river ever since the great expedition.

To begin, though, we should acknowledge the poor impression the Columbia made on Lewis and Clark, especially as they paddled their way on the last 100 miles to the Pacific during the rainy season in 1805. Near today's Point Ellice in mid-November, for example, Clark recorded:

The rainy weather Continued without a longer intermission than 2 hours at a time from the 5th in the mornng. until the

*16th is eleven days rain, and the most disagreeable time I have experienced. Confined on a tempest Coast wet, where I can neither get out to hunt, return to a better Situation, or proceed on.*²

Their nearly four-month stay at Fort Clatsop—December 1805–March 23, 1806—day after day in the rain and often at the mercy of heavy wind suggested terror and prompted hyperbole. On December 16, Clark wrote:

*The winds violent Trees falling in every direction, whorl winds, with gusts of rain Hail & Thunder; this kind of weather lasted all day, Certainly one of the worst days that ever was.*³

“One of the worst days that ever was”? It is hard to ignore such a negative reaction to the Columbia. Nonetheless, the notations he and other Corps members made about the great river proved to be perspicacious, while others, not surprisingly, can seem naïve today, considering the industrialization that relentlessly transfigured the Columbia during the twentieth century.

On August 12, 1805, Meriwether Lewis wrote in his journal, “Thus far I had accomplished one of those great objects on which my mind has been unalterably fixed for many years,” the passage from the “endless Missouri” to the periphery of Columbia’s waters. It was a personally thrilling achievement. Topping a ridge, he looked to the west and saw:

*immense ranges of high mountains . . . their tops partially covered with snow. I now descended the mountain about ¾ of a mile which I found much steeper than on the opposite side, to a handsome bold running Creek of cold Clear water. Here I first tasted the water of the great Columbia river.*⁴

Lewis did not know it, but he had articulated an important characteristic of the Columbia River and its watershed: the western side of the Continental Divide was unlike the eastern or Missouri River side, and many tributaries to the Columbia flowed in steep gradient.

Lewis and Clark would soon find that they had entered the basin in the mountain portion of the Columbia’s course. The river begins in the Canadian Rockies from snowpack and icefields and runs for more than 200 miles on a gentle grade before dropping several feet per mile for the next 800 miles. The Columbia finishes its long stretch to the sea for 146 miles, all within the reach of tidal effect. Lewis had a copy of Lt. William Broughton’s 1792 map of the lower 120 miles of the river and Shoshone men had told him about the big falls on the Columbia some distance away, but he could not have imagined the cascade-riven and at times hair-raising descent he and his men would experience. From the Nez Perce village near present-day Orofino, Idaho,

where the Corps put to water in new log canoes, they passed through twenty-nine serious rapids in 154 miles of travel to the confluence of the Snake and Columbia Rivers.

Once on the main stem of the Columbia, Lewis and Clark encountered additional canoeing challenges near the mouths of the Umatilla, John Day, and Deschutes Rivers. Clark noted in his log:

*passed a very bad rapid at 2 miles [near John Day River] this rapid Crowded with Islands of bad rocks difficult & crooked passage . . . passed many rugged black rocks in different parts of the river; and a bad rapid . . . at the expiration of this course a river falls in on the Lard. 40 yds wide Islands of rocks in every direction in the river & rapids.*⁵

Three days later the structure of the river became more perilous for the Corps, testing their abilities to navigate their log canoes and steel their nerves. Clark’s description, dated October 24, 1805, vividly expressed a confrontation with the Columbia’s terrors:

*I Set out with the party at 9 oClock a m at 2 ½ miles passed a rock . . . 1 mile below and Confined the river in a narrow channel of about 45 yards this continued for about ¼ of a mile & widened to about 200 yards, in those narrows the water was agitated in a most Shocking manner boils Swell & whorl pools, we passed with great risque. It being impossible to make a portage of the canoes, about 2 miles lower passed a very Bad place between 2 rocks one large & in the middle of the river . . . I put all the men who Could not Swim on Shore.*⁶

They had passed through the Long Narrows, downstream from the massive basaltic falls at Celilo, where Native fishers had taken tons of salmon every year for ten millennia. And yet another blockage at the Cascades loomed, where an entire mountain had slid from the north bank of the Columbia and strewn boulders across the river, creating a rugged, descending flow that was too obstructed to float. Clark recorded: “we got all our baggage over the Portage of 940 yards,” and on his map he labeled the place “the Great Shoote or Rapids 150 yards wide and 400 yards long.”⁷

Lewis did not forget the Corps’ passage down the Columbia, nor the necessity for numerous portages. In his letter to President Jefferson in September 1806, reporting on the practicality of the expedition’s course to the Pacific as a commercial route, Lewis declared that it would be impracticable to attempt to ascend the Columbia with heavy cargoes above the reach of tide. The captains’ report dashed Jefferson’s dream of a continental water route.⁸ A half-century after the expedition, the impediments on the Columbia had not been surmounted. Steamships connected

*“Patience is the river that finds its way to the sea,
by flowing through many confluences.”*

Mladen Dorđević, Svetioničar - Pritajeno zlo



Worlds in collision – the Columbia Gorge today. Courtesy Wiki Commons.

Oregon communities with San Francisco, and steamboats plied the lower Columbia and the Willamette rivers to Portland. By 1860, capitalists had begun a transformation of the Columbia by securing portage landscapes and building railroads around river obstructions in the Gorge and by that means effectively making a modified form of water transportation to the interior feasible. These developments did not fulfill the Jeffersonian vision of an interior water route across the continent, but the desire did not die. By the early 1920s, the federal government had built canals that bypassed the Cascades rapids, the Long Narrows, and Celilo Falls, allowing steamboats to navigate all the way to the mouth of the Snake River. During the months when the Columbia carried its greatest volume, boats could pass over the smaller rapids, but even then the vision of a causeway to the interior remained only partially realized.

It took the Great Depression to create sufficient political incentive to remake the Columbia into what historian Richard White has called an “Organic Machine,” an industrialization of the river that prizes hydropower generation, navigation, irrigation works, and flood control. Beginning in 1933, when Congress authorized building Grand Coulee

Dam, at river mile 597, and Bonneville Dam, at river mile 146, the US Army Corps of Engineers and the Bureau of Reclamation built run-of-the-river structures that changed the Columbia’s flow from a seasonally variable volume to a controlled stream that maximizes hydropower and aids navigation. In 1938, federal engineers proposed flooding the rapids and falls on the Columbia to the mouth of the Snake River and building four dams on the lower Snake to create a slack-water transportation route to Lewiston, Idaho, 465 miles from the Pacific Ocean. By 1975, with the last dam—Lower Granite—completed, towboats could push cargo-laden barges from downriver ports deep into the interior Pacific Northwest, by overcoming the structural impediments in the rivers that had so bedeviled the Corps of Discovery and, in a minor way, creating a part of Jefferson’s visionary water route.⁹

Engineering the transformed Columbia during the 40-year building spree, however, did not come without controversy. In fact, the process might be better perceived as a successful industrializing interlude in a longer history of near incessant contention, from the 1870s and continuing to the present day. The struggle, put in its simplest terms,

pitted the advocates of development against the defenders of traditional human uses of the river. At issue was riverine health, the ecological sustainability of the Columbia for humans and broader nature. By the mid-twentieth century, the disagreements about public policies affecting the river had been reduced to the formula “Fish versus Dams,” but the infection was more viral than that label, effecting political and economic decisions at all levels of society and in every corner of the massive river basin. Industrialization came first on the lower river through extractive harvest of fish and timber, the canning of salmon at Eagle Cliff on the north bank of the river in 1866 with fish gathered up from the massive, seasonal spawning runs of anadromous species, and the felling of easily cut fir, spruce, and cedar trees that were milled or sent as logs to distant buyers. Sending the steam-powered harvests to world markets led to the earliest remaking of the river structure during the 1870s, when dredging operations cut a 17-foot navigation channel from the estuary to Portland harbor on the Willamette River.¹⁰

Making navigation improvements on the Columbia—the dredging, construction of wing dams to limit sand bars at the mouth of the Willamette, and harbor alterations—generated little opposition. The dams, however, were a different story. Even as Bonneville Dam rose, concrete block by concrete block between 1934–1937, politicians and interest groups tangled over who would control the distribution of electricity generated by Bonneville’s turbines, and other disagreements erupted over the destruction of scenic values in the Gorge, “the slaughter of our beautiful fir trees,” one conservationist complained to authorities, and the prospect of smoke-generating factories lining the Columbia River near the dam. Politicians responded by creating the Bonneville Power Administration to manage the distribution of electricity throughout the Pacific Northwest, and the agency decided to sell kilowatts at a uniform rate, thereby discouraging damside factories and delivering power to public utility districts at reduced cost. By the 1960s, the investment in hydropower dams on the Columbia had won near universal favor in the region. Those critical of the Depression-era investments were forgotten, but controversy did not evaporate.¹¹

Salmon harvest numbers had long threatened fish sustainability on the Columbia. Within a decade of the establishment of the Eagle Cliff salmon cannery, sixteen additional canneries juttied into the lower Columbia. Worries about declining fish numbers in the river spurred the building of the region’s first hatchery.¹² In 1923, after more than forty canneries had operated on the lower river for two decades, natural fish numbers had declined so severely, in

part because of the use of fishwheels that skimmed chinook salmon in prodigious numbers, that a cannery owner stated: “Civilization is the enemy of wildlife . . . and seriously menaced the future of the fishing business.”¹³ By 1930, before the big dams, fish catch numbers had been halved from their peak in 1911, and nearly everyone declared that “a crisis confronts the salmon fisheries.”¹⁴ Oregon and Washington voters outlawed fishwheels by 1935, and Congress passed legislation in 1937 to fund a phalanx of hatcheries in the Columbia River Basin to artificially augment fish numbers. But the numbers of fish returning to the Columbia continued to drop, and once the dam-building resumed after WW II—three more on Lewis and Clark’s Columbia River route and four on the lower Snake River—even more hatcheries could not restore the fish runs. From the early 1970s on, fisheries experts, conservationists, Native tribes, and the general public demanded change, which finally came in 1991 when the federal government listed three salmon runs as endangered under terms of the 1973 Endangered Species Act.¹⁵

The new Columbia, as Richard White noted in 1995, “was not the river salmon evolved in. This new river produces carp and shad.”¹⁶ Arguably the greatest losers in the steep decline of anadromous fish in the river were Native fishers and their people, who had taken fish from the Columbia since time immemorial. In October 1805, Clark described the Indians’ salmon harvest near the Yakima River:

*the number of dead Salmon on the Shores & floating in the river is incredible to Say and at this Season they have only to collect the fish Split them open and dry them on their Saffolds on which they have great numbers.*¹⁷

Paddling on, the Corps came to Celilo Falls, the precipitous basalt blockage of the river, where they portaged and described the scene:

*The waters is divided into Several narrow channels which pass through a hard black rock forming Islands of rocks . . . on those Islands of rocks as well as at and about their Lodges I observe great numbers of Stacks of pounded Salmon neatly preserved in the following manner; ie after Sufficiently Dried it is pounded between two Stones fine, and put into a speses of basket neatly made of grass and rushes . . . those 12 baskets of from 90 to 100 w. each form a Stack. Thus preserved those fish may be kept Sound and Sweet Several years.*¹⁸

The salmon harvest at Celilo and other prime dipnet fishing areas centered the Native life along the great river; and long after the explorers had first described the place, enterprising commercial fishers built cable cars to aid Native fishers’ access to the river islands, where they

continued hauling tons of salmon in traditional ways but now sold to the cannery. Millennia-deep relationships between Native people and salmon enriched the tribal community and the cannery, but there was no equality in wealth gleaned from the river. As historian Katrine Barber puts it, the white cannery owner “and Indian dip netters regarded one another, from the position of their conflicting interests, as buyers and sellers, respectively of salmon,” an exchange that consistently compromised the sellers.¹⁹

The unequal but mutually beneficial relationship between Native fishers and white canners prevailed for just over two decades at Celilo Falls, but it all ended catastrophically in the spring of 1957, when the Corps of Engineers closed the gates to The Dalles Dam, a mile-long stretch of concrete, navigation locks, and upstream fishways that created a 24-mile-long river impoundment. Among the dams built on the Columbia and its major tributaries, The Dalles Dam is still the most controversial and socially disruptive. Gone are the thundering falls. Gone are the more than a thousand Native fishers, who wheeled themselves on cable cars to precarious fishing platforms and muscled long-handled dipnets to lift out heavy chinook salmon. Gone is arguably the most productive fishing place in North America. The loss for Native fishing tribes cannot be calculated, because there is no measurement for spiritual and cultural deprivation. The pain has not abated.

Native tribes along the Columbia who had befriended Lewis and Clark exasperated the Corps in trade and rightfully considered their homelands critical to their sustenance. The mass invasion of Oregon Trail migrants to the region fostered conflict between whites and Natives and led to land cessions by the tribes that effectively pushed them away from the river, as federal and state governments took control and pursued the industrialization of the Columbia. The salmon crisis on the river ironically provided an opportunity for Native fishers to claw back some measure of self-determination in fishing and a partnership with whites in managing the Columbia. Beginning with victories in federal courts—especially the so-called Boldt decisions of 1974 and 1980—Native fishing treaty tribes (Nez Perce, Yakama, Confederated Tribes of the Umatilla Indian Reservation, and Confederated Tribes of Warm Springs) worked together to play an increasingly important role in crafting solutions to the diminishment of salmon runs. In 1977, the tribes created the Columbia River Inter-Tribal Fish Commission, which has become a critical resource in creating policies for the management of the river. Today, a court-managed consultation places the tribes on an equal footing with conservationists, dam operators, irrigation interests, and navigation and port authorities in pursuit of salmon restoration on the Columbia.

The effort to protect remaining salmon runs is part of a larger concern for riverine landscape preservation. The Columbia River Gorge, upriver some forty miles from the Portland metropolitan area, became a popular recreation area during the late nineteenth century and the location of one of America’s first tourist motor highways, the Columbia River Highway, officially opened in June 1916. The waterfalls cascading from basalt cliffs a thousand feet above the river, especially the 611-foot Multnomah Falls, drew tourists and became the most visited tourist location in Oregon. But even in that iconic landscape, controversy prevailed. Logging was the main worry, but potential for industries, the unplanned growth of municipalities, and the development of recreational facilities worried the Friends of the Columbia Gorge, a Portland-based preservation organization founded in 1980. The Friends organization promoted hiking and other environmentally light use of the Gorge; so when a proposed river-level resort on the Washington side of the river became evident, they began lobbying for legislation to put the riversides and adjoining landscapes under protection. After six years of political action, the Friends and allied organizations prevailed on Washington and Oregon politicians in 1986 to back a multi-layered and detailed plan to essentially halt unwanted and unplanned development in the Gorge, encompassing 123,240 acres in Oregon and 169,390 in Washington, six counties, and thirteen urban areas. In 1991, the regulations for land management in the Gorge under the Columbia River Gorge National Scenic Area outlined dozens of regulations, from visual appearance of private housing in the Gorge to prohibition of tramways and other large recreation structures. Federal government agencies, counties, cities, and a representative Columbia Gorge Commission have managed the 100-plus miles of riverine landscapes for more than twenty-five years, with a surprising low incidence of legal and political conflicts.²⁰

Efforts to preserve river landscapes, restore salmon runs, modernize dam operations, integrate solar and wind power to the electrical grid, and counteract the looming effects of climate change point to continuing disagreement over how people in the region should treat the river. Some years ago, when the ongoing salmon crisis on the Columbia faced one of its many critical moments, a public policy discussion drew a broad audience to a downtown Portland meeting space. All manner of panels and presentations offered up many schemes that just might answer the Columbia’s conundrum: How can we restore the health of our river? A fisheries biologist rose and offered a clear response: everyone who has come to the Pacific Northwest to enjoy the great benefits of the river needs to leave. He wasn’t joking. People, he argued, are the

problem, or more correctly, what people do with and to the river is the problem. No one in the audience got up to leave the region. Instead, the people of the Columbia River, indigenous populations and everyone else who has migrated to the place, have committed themselves to a never-ending effort to protect the river from additional harm to its nature and spiritual power. ■

William L. Lang is emeritus Professor of History at Portland State University and author or editor of eight books on Pacific Northwest and Columbia River History, including Great River of the West (1999) and Two Centuries of Lewis and Clark (2004).

Notes

1. Thomas Jefferson to Meriwether Lewis, June 30, 1803, in Donald Jackson, ed., *Letters of the Lewis and Clark Expedition with Related Documents, 1783-1854*, 2nd ed. 2 vols. (Urbana: University of Illinois Press, 1978), Volume 1:61.
2. Gary E. Moulton, ed., *The Journals of the Lewis and Clark Expedition*. 13 vols. (Lincoln: University of Nebraska Press, 1983-2001), 6:48.
3. Moulton, *Journals*, 6:126.
4. Moulton, *Journals*, 5:74.
5. Moulton, *Journals*, 5:315.
6. Moulton, *Journals*, 5:328-329.
7. Moulton, *Journals*, 5:369-370.
8. Meriwether Lewis to Thomas Jefferson, September 23, 1806, in Jackson, *Letters*, 2:320-321.

9. Richard White, *The Organic Machine: The Remaking of the Columbia River* (NY: Hill & Wang, 1995); Keith C. Petersen, *River of Life, Channel of Death: Fish and Dams on the Lower Snake* (Lewiston, Idaho: Confluence Press, 1995).

10. For Eagle Cliff cannery in Washington State, see Courtland L. Smith, *Salmon Fishers of the Columbia* (Corvallis: Oregon State University Press, 1979), 17-22; for early dredging, see William F. Willingham, *Army Engineers and the Development of Oregon* (Portland: Portland District, US Army Corps of Engineers, 1983), 16-28.

11. On protecting the Gorge, see Carl Abbott, Sy Adler, Margery Post Abbott, *Planning a New West* (Corvallis: Oregon State University Press, 1997), 33-37. On Bonneville Power Administration and early policies, see Charles McKinley, *Uncle Sam in the Pacific Northwest* (Berkeley: University of California Press, 1952), 157-229; Gus Norwood, *Columbia River Power for the People: A History of Policies of the Bonneville Power Administration* (Portland: BPA, 1981), 47-96.

12. Joseph Taylor III, *Making Salmon: An Environmental History of the Northwest Fisheries Crisis* (Seattle: University of Washington Press, 1999), 105.

13. Smith, *Salmon Fishers*, 101.

14. White, *Organic Machine*, 89.

15. William L. Lang, "River of Change: Salmon, Time, and Crisis on the Columbia River," in Joseph Cone and Sandy Ridlington, eds., *The Northwest Salmon Crisis: A Documentary History* (Corvallis: Oregon State University Press, 1996), 348-363.

16. White, *Organic Machine*, 90.

17. Moulton, *Journals*, 5:287.

18. Moulton, *Journals*, 5:325.

19. Francis Seufert, *Wheels of Fortune* (Portland: Oregon Historical Society, 1980), 40-41; Katrine Barber, *The Death of Celilo* (Seattle: University of Washington Press, 2005), 46-47.

20. For details of the Columbia River Gorge National Scenic Area, see Abbott, Adler, Abbott et al., *Planning a New West*.

LCTHF Holds White Cliffs Canoe Trip

The Lewis and Clark Trail Heritage Foundation, Portage Route Chapter, and Montana River Outfitters (MRO) are offering a Missouri River Canoe Trip experience through the White Cliffs along the Lewis and Clark National Historic Trail. **Join us July 15 to 17, 2019, for a fun, historic, "glamping" trip.** Trip cost is \$1,500 and includes nightly tent set up and breakdown, cot with air mattress, and three delicious meals prepared for you while you and friends old and new paddle, hike, explore, read the journals around the campfire, and enjoy pristine vistas as seen by Lewis and Clark. A \$500 Deposit due with RSVP and remaining \$1,000 due by June 15, 2019.

On Thursday, July 18, we will spend a half day at the Lewis and Clark National Historic Trail Interpretive Center in Great Falls, followed by lunch, and then a trip to the First Peoples Buffalo Jump. On Friday, July 19, we meet Larry Epstein at the Fight Site for a narrated tour you won't want to miss! You will receive a donation receipt for \$500 from the LCTHF. For more information on the trip, email lindyh@lewisandclark.org call the office 888-701-3434. Don't forget to bring your Golden Age Pass. *Top photo by Lee Ebeling. Bottom photo by Ethan Glaubiger.*



The WPO Interview

The Power of the Columbia: A Conversation with Blaine Harden

by Clay S. Jenkinson

Editor's Note: I had the opportunity to interview Blaine Harden in the spring of 2019. Our subject was the Columbia River. The first minutes of the conversation are printed here. To read the entire interview, go to lewisandclark.org, or jeffersonhour.com or clayjenkinson.com.



Blaine Harden

WPO: If you could be dropped onto the shores of the Columbia River in 1805, what would you see that you don't see today?

BH: An astonishing number of fish. Sixteen million salmon migrated up that river. It was the greatest salmon highway on earth. You would see fish in staggering abundance. People talked of being able to walk across the Columbia on the backs of these amazing migrations of fish.

There would also be massive numbers of Indians. In 1750, before the infections of small pox and measles and dysentery got to the Pacific Northwest, tens of thousands of Indians migrated to the shores of the river for the fish migrations. They used the dried fish to support a trading system involving Indians all the way to eastern Montana. It was one of the most vibrant, healthy, and relatively peaceful places for Native Americans in all of North America. These Indians ate an average of three pounds of salmon a day, so they were incredibly well nourished. The fish were important to their traditional migratory patterns, but also to their religions and

belief systems. The relatively peaceful patterns of their lives were based on those fish.

The fish were there until overfishing started at the turn of the twentieth century. This was followed by dam construction in the 1930s, which really changed everything for the fish.

WPO: As you stood by the river, would you be aware of the thousands of fish?

BH: You would see dead fish everywhere. They were spawning in every stream that came into the main stem of the Columbia. The river had a series of small falls. One of the biggest was the Dalles, big slabs of rock where the fish had to jump up twenty feet through a waterfall against an incredible volume of water coming down. The river was really wild and dangerous and cold. It was not a friendly river; it wasn't the kind of place you go to recreate. It was too powerful and too cold, with water mostly from the Canadian Rockies but also from the Cascades and the Rockies in Idaho. It was this incredible powerful stream.

Size is not the most important measure of the Columbia. It is long, 1200 miles, and nearly ten miles wide as it enters the sea, and it drains an area about the size of the eastern seaboard from Maine to Virginia. It's not a small river by any means, but what distinguishes it from any other river in North America is its power. In half the distance of the Mississippi, it falls twice as much. It has this almost nuclear energy capacity to turn turbines for electricity. It is said that every half-hour, the Columbia expends as much energy as was released by the Hiroshima bomb. It contains a third of all the hydro-electrical potential in all of the United States. That's what is amazing about it.

When Easterners saw it back in the era of dams, their first instinct was that we had to build dams on this river. Franklin Roosevelt came out and looked at the Columbia in 1920 when he was campaigning for the Vice-Presidency. "As we were coming down the river today," he said, "I could not help but think of all that water running unchecked down to the sea. Those great stretches of physical territory now practically unused must be developed by the nation."

That's the story of the river that I know, having grown up in the Columbia Basin. The construction of Grand Coulee Dam started in the mid-thirties and was finished in 1942. At the time it was the biggest concrete structure in North America, and it's still the biggest concrete structure in North America. By itself it produces a third of all the electricity in the entire Pacific Northwest. It is the key to the prosperity

that Seattle and Portland have seen in the eighty years since the dam went it. It was finished as World War II came along. All of a sudden we had these massive amounts of unused electricity potential that could be taken over the mountains to Boeing to build bombers and to Portland to fabricate ships. At the same time, the U.S. Government was trying to figure out how to hurriedly and secretly build atomic bombs. They grabbed a hunk of empty desert land south of Grand Coulee Dam at a place called Hanford near what is now the Tri-Cities, and they secretly built a plutonium factory using massive amounts of power from Grand Coulee Dam. It worked, and Nagasaki was blown up. 100,000 people were killed, all from the electricity produced by the Columbia River.

That unused potential also led to the construction of a lot of aluminum plants, and then Boeing took off, the University of Washington took off, and with irrigation from Grand Coulee Dam, agriculture took off. It didn't really give birth to Bill Gates, but it gave birth to the University of Washington's wealth and nurturing for a lot of the engineers that have helped turn Seattle into the home of the most money of any big city in America. Gates's money, Amazon, Starbucks, Nordstrom, Costco. It's not all because of Grand Coulee dam, but it really did help.

To get back to the fish, this was an enormous resource for the Native Americans up and down the river. Grand Coulee Dam was built without fish ladders. This meant that all the salmon that spawned and whose genes wanted to take them upstream to northeast Washington and on up into British Columbia were dead at the dam. They swam to the dam and died, and that gene pool was lost. These were the biggest, most amazing salmon. Some weighed between 80 and 100 pounds. They called them June Hogs, these big Chinook salmon. They disappeared.

The Native American civilizations in the United States and British Columbia who depended on those fish for everything from their spiritual beliefs to their food supply to what they did with themselves daily all new year long were wiped out. It was a genocide through the killing of salmon. Earlier this year I went up to British Columbia and talked to the First Nation people up there, three generations now since the death of all these fish. There were poets and artists and engineers and townspeople, and they were so angry that it was almost impossible to have an objective conversation with them about the dam. Grand Coulee was an incredible success as America defines success, but they really do see it as genocide, which is understandable.

WPO: Could we have built a fish ladder? It would have been costly, which was one of the concerns, but could we have done it?

BH: Yes. Dams cost a lot of money. This was the biggest project on earth at the time. Certainly they could have built a fish ladder. The first dam on the main stem of the Columbia was Bonneville, built a few years before Grand Coulee. Its original design contained no fish ladders. Bonneville is just up the stream from Portland. If that dam had been built with no fish ladders, all of the salmon in the Snake and Columbia system for Idaho, much of Oregon, all of Washington and British Columbia, the entire salmon ecosystem, would have been wiped out. It only changed because of a stubborn and clever biologist at the University of Washington who saw the plans and pointed this out and suggested that it really wasn't that difficult to build a fish ladder. The engineers looked at it, and they built a perfectly fine fish ladder.

The problem with fish in dams is not going upstream. They can jump up waterfalls that are twenty feet high. They can go up a fish ladder like nobody's business. The problem is coming down, finding safe ways for them to go through a dam without being compressed and then dying from it. Over time they figured out those problems too. It's just that now there are so many dams that create so much slack or still water between the dams that the migration times have increased, the water has gotten warmer, and mortality has gone up. But the thing is that if you're a good enough engineer to build a dam, you're a good enough engineer to figure out how to get salmon up and down a river if you want to.

WPO: If we had the will and put in the effort, could we create fish ladders all the way up the Snake and all the way up the Columbia and restore some significant part of that fish flow?

BH: Probably. There are two main-stem dams now with no fish passage, Chief Joseph and Grand Coulee. The cost of putting in fish ladders at this point, the way they are being engineered, would be high. It would be a very complicated process.

The other part of this has been done at great cost, and with great political infighting. The tribes and environmentalists working with engineers at the Bonneville Power Administration, reluctantly for the engineers and the power side, have figured a way to use this river that has dramatically improved fish survival when the weather cooperates. That has been the good news story of the past twenty years. Science has figured out how it works, and the engineers can solve the problems if they are forced to, if the political will exists. And it does now.

WPO: You could say now that having harnessed the Columbia to create the most profitable foundation for a

Northwest civilization imaginable, we could use a portion of that extraordinary wealth to do the right thing, to go back in and reengineer the river to make it a more welcoming place for salmon. If that narrative played itself out, wouldn't it be a great success story?

BH: Yes. I think in quiet ways this has partially been done for part of the river. But I have never really heard the environmentalists or the tribal leadership talk about getting these changes made for the two big dams that don't have fish passage because they don't see it as politically realistic. I frankly have not asked that question in a determined way. But it is a good question.

WPO: In reading your book, one gets the sense at the end that maybe you thought we couldn't do it even if we engineered it. It seemed that you were suggesting that it may be too late, that the gene pool has shrunk too much, that habits have changed, and that it may not be possible to restore the fisheries.

BH: The salmon are very vibrant. And when you finish a book, that doesn't mean you understand everything. The salmon are very vibrant. They've knocked out dams around here lately, like the Elwha River, and the fish have come back like gangbusters. The Klamath River is going to have all of its dams removed, and there is no doubt that that river is going to become a vibrant salmon resource again. Nobody is going to remove Grand Coulee, and I don't know if anyone can figure out a way financially to build the fish ladders there.

WPO: At this point, in 2019, I think I hear you saying, if we did it, the robustness and the vibrancy of the salmon means there would probably be significant return.

BH: Yes. But there are also four or five monstrous dams in British Columbia. Because Grand Coulee obviated the need for fish passage, there are no fish ladders there either. So that is also an issue.

Right now everyone is focused on trying to maximize flows in the river where the dams have fish passages. That's a lot of territory, all the way to the Snake. You know about the deaths of the orcas in Puget Sound and their need for Chinook salmon, so there is a desire to remove the four main-stem dams on the Snake to increase the flow of that river and improve fish passage. That is a political nightmare to solve because the politicians on the east side of Oregon and Washington will go to the mat on that one. It doesn't look like it will happen. But all the money and all the political power are for it. It's just the political representatives of eastern Washington and Oregon that see this as impossible.

WPO: Lewis and Clark met more than fifty Indian tribes, mostly in the Columbia Basin. They were not particularly fond of what they saw in the lower Columbia. They thought these Natives were higglers and that they had been debased by contact. There was peace because of the sheer abundance. It was not a zero-sum game for protein, so there could be peace. What accounts for the peacefulness of that bioregion?

BH: That is part of it, the amount of nutritional wealth available in that river, in conjunction with other resources. They could go buffalo hunting at certain times, and then come back and trade their fish for all the things that other tribes had. Some of the biggest markets in the Native American world were near the Columbia River because the fish flows were regular. They could count on it, and they would have this pemmican, this dried salmon, to trade. They traded with everybody.

Part of it had to do with the dominant tribe in the Columbia Plateau, the Nez Perce. They were a well-managed political entity, politically and physically safe from invaders. They had a calming presence on the rest of the region. Smaller tribes used the Nez Perce language, which took over as other tribes were marginalized. Their leadership, which was localized – they didn't have one big Platonic leader – used their resources well. They were peaceful. They greeted Lewis and Clark with real interest. They knew that traders were around. They had gotten horses in the seventeenth century. They had seen some technology come up the river. They saw Lewis and Clark as useful adjuncts to make their lives more comfortable and perhaps even to increase their spiritual powers. They were constantly trying to supplement their powers. They had a rich spiritual life, and they saw that the whites had one too. They wanted a piece of it, not because they wanted to believe the whole thing, but because they wanted what might be useful to them.

Once people like Marcus Whitman and Henry Spalding and the Catholic priests brought in their religion, most of the Nez Perce and most of the other tribes thought it was a little too much. They were not going to do all that. They didn't want to change their lives and become white people, though they were happy to hear about it. That was basically their attitude.

To read the entire interview, go to lewisandclark.org, or jeffersonbour.com or clayjenkinson.com. ■

Blaine Harden is the author of a number of books, including A River Lost: The Life and Death of the Columbia. He was featured in an 2012 episode of the PBS program American Experience about Grand Coulee Dam and the Columbia River. He lives in Seattle.

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James Morton (Jim) Peterson, 1925-2018

The LCTHF is greatly saddened by the loss of Past President James Morton “Jim” Peterson, 92, who died on June 26, 2018, at his home in Vermillion, South Dakota, and was laid to rest in the Ponca (NE) Cemetery.

Born on Nov. 21, 1925, in Sioux City, Iowa, to Oscar and Helen (Welsh) Peterson, Jim grew up in Ponca. Upon graduation from Ponca’s high school in 1943, he received a Regents’ Scholarship to the University of Nebraska and the Danforth Award for scholarship although he never got to use them. Jim volunteered for the US Army Air Corps on June 28, 1943, and worked on the flight lines in B-17 and B-29 bombardment squadrons. After his honorable discharge on February 23, 1946, he served in the US Army Air Force Reserve until 1952.

Jim attended the University of South Dakota (USD) and was graduated from the School of Law in 1951. He and Jeanne E. Wallace were married in Sioux City on June 27, 1952, and had two children: Kim Elizabeth and James Scott. Jim first worked for the United States Fidelity and Guaranty Company and then joined the faculty of the USD School of Business in 1959. A professor of business law, Jim taught both graduate and undergraduate courses at USD until 1991. He was elected chairman of the University Senate four times. The USD Student Body Association honored Jim as Teacher of the Year in 1977.

Jim had a life-long love affair with the Missouri River. He navigated the Missouri from the headwaters at Three Forks, Montana, to the river’s mouth near St. Louis, Missouri, three times and authored numerous articles in a variety of national magazines about boating on the Mighty Mo. In the summer of 1971, twenty-seven Green Berets, volunteers from their base in North Carolina, traveled up the Missouri River to retrace the trail of the Lewis and Clark Expedition. When they arrived at the “wild and scenic” stretch from Ponca to Yankton with all the sandbars, snags, and sawyers, they discovered that their jetboats, meant for open water, were not suitable for that kind of navigation. Jim became their rescuer, guide, and teacher and got them

safely through. They made it to Astoria in early September. Jim assisted many boaters over his lifetime and, owing to his knowledge, was often sought after as a source for many newspaper and magazine stories about the river.

Jim was past president of the Lewis and Clark Trail Heritage Foundation and, as a holder of a US Coast Guard Motorboat Operator’s license, of the Missouri River Bank Stabilization Association. He also served as a member of the Missouri National Recreational River Advisory Board, US Coast Guard Auxiliary, Missouri River Society, Spirit Mound Trust, Salem Lutheran Church in Ponca, Omadi Lodge 5 A.F. & A.M., Nebraska Bar Association, State Bar of South Dakota, and Clay County Park Board.

Jim presented programs about Lewis and Clark and the river to numerous organizations. Countless individuals have memories of the boat trips they took with Jim at the helm, as the self-proclaimed “river rat” navigated the challenging waters of the Missouri. Owing to his knowledge of the

Missouri and his presidency of the Lewis and Clark Trail Heritage Foundation, Jim was instrumental in 1996 in helping Ken Burns shoot scenes along the 59-mile stretch of the Missouri River from Ponca to Gavin’s Point Dam for the director’s PBS documentary on the Lewis and Clark Expedition. For his work with Burns, Jim was invited to the White House where he met then-President Bill Clinton. Throughout the years, Jim took thousands of photographs of the ever-changing river and spent many hours at his Black Acre property on the Missouri west of Vermillion.

He is survived by his son James “Pete” Peterson and wife Jill of Yankton, South Dakota, and many relatives and devoted friends. Jim was preceded in death by his mother and father, stepfather Roy Bivens, daughter Kim and wife Jeanne, brother John, and sisters Joan, Kidwell, and Elizabeth.

Contributions may be made in Jim’s memory to the Lewis and Clark Trail Heritage Foundation at lewisandclark.org or by contacting the office at 1-406-454-1234. ■





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