

THE COLUMBIA GORGE

A Unique American Treasure

COOPERATIVE EXTENSION
Washington State
 University

The Columbia Gorge

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Cover: Cape Horn on the Columbia. Photo by C.E. Watkins, 1867.

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Introduction

The Columbia River Gorge is one of the most majestic and unique areas in the world. Here the mighty Columbia carved out the only sea-level break through the Cascade Range on its way to the Pacific Ocean. With the Cascades towering as high as 4,000 feet on either side of the river, one finds an everchanging panorama from lush Douglas-fir forests, craggy stands of pine and oak, majestic stone-faced cliffs, and spectacular waterfalls, to windswept plateaus and semi-arid conditions.

It is a unique geological and ecological area. The geologic history of the area can readily be seen, etched in the wind- and water-swept mountains. There is a great botanical diversity of plants within its boundaries, with many rare species, unique to the Gorge area. A variety of wildlife species can also be found within the Gorge, many on the threatened or endangered list.

The Gorge also is rich in history. An ancient, prosperous Indian culture lived in the Gorge for thousands of years. The Gorge provided a migratory path for these Indian tribes. Later explorers, voyageurs, trappers, and settlers used the Gorge as a pathway to develop and settle the Pacific Northwest. Since Lewis and Clark explored the Gorge in the early 1800s, it has become an artery of commerce, a storehouse of timber and mineral resources, a source of electrical energy, and a highly esteemed scenic attraction.

Beginning in 1971, Washington State University Cooperative Extension, recently in cooperation with the Washington Sea Grant Program, has offered an intensive two-day educational tour in the Columbia River Gorge. Entitled Short Course on the Columbia, this educational program has discussed the history, geology, ecology, natural resources, fisheries, and management

issues of the Columbia River Gorge. The purpose of this program has been to provide resource managers, educators, decision makers, and the interested public an opportunity to see firsthand the richness, diversity, and uniqueness of the Gorge.

This booklet is an attempt to bring together the information and materials which are presented during the short course. The goal of this booklet is to give citizens a better understanding of the diversity and unique quality of the Gorge. It is hoped this thumbnail sketch will give the reader a better appreciation of the Gorge as he or she travels through it, and that it will arouse the reader's interest to further explore the past, present, and future condition of the Gorge.

Acknowledgments

Many people have combined their efforts since 1971 to bring the information together for the yearly Short Course on the Columbia River, on which this booklet is based.

Special thanks should go to the people who initiated the Short Course and served as its first instructors: Dick Adlard, Ivan Donaldson, the late Emory Strong, and Ruth Strong.

Other instructors who have contributed time, materials, and knowledge over the succession of short courses include: John Eliot Allen, James C. Barron, Jeff Breckel, Kathryn Brigham, Dave Burkhart, Phil Crawford, Rick Ensminger, Bruce Florea, Bill and Kelsey Gray, Les Hastings, Carl Hawkes, Chuck Henderson, Eric Karlsson, Ralph Mason, Dr. William McAndrew,

Douglas Nosler, Jean Siddall, Esson Smith, Fritz Timmen, Bob VanAtta, and Frank Young.

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The discussion of early Indian life on the Columbia draws heavily on material prepared by the late Emory Strong. A professional engineer by training, he was the author of several books on early Indian cultures in the Gorge, including *Stone Age on the Columbia River*, and edited *Wakemap Mound and Nearby Sites on the Long Narrows of the Columbia River*. For more information on these books, see "Suggested Reading."

John Eliot Allen, the author of the geology section, is Professor Emeritus at Portland State University. His writings include his excellent book, *The Magnificent Gateway: A Layman's Guide to the Geology of the Columbia River Gorge* (see "Suggested Reading").

The section on plants and animals in the Gorge was originally written for the short course by Ruth Strong. It was revised and updated by Nancy Russell and Russ Jolley.

The 130 sites identified as significant features are based on four studies of the Gorge: A 1973 study by Wright, Gildow, Hartman & Teegarden, Architects and Planners; a 1980 study by Ames Associates, Planning Consultants; another 1980 study by the National Park Service, U.S. Department of Interior; and a 1981 study by Jones & Jones, Inc., Planning Consultants.

Photographs courtesy Oregon Historical Society, Portland, Oregon. Geologic diagrams are taken from *The Magnificent Gateway: A Layman's Guide to the Geology of the Columbia River Gorge*, 1979 edition, by John Eliot Allen. Maps are by Nicole Van Ausdle, Graphic Designer, Washington State University Cooperative Extension.

"An Indian Legend" is from *Moods of the Columbia* by Archie Satterfield, Superior Publishing Company, Seattle, 1968.

An Indian Legend*

The Old Men of the tribes say it was Tyhee Saghalie, chief of all the gods, who put the Guardians of the Columbia there, and they say it was an act of harsh justice tempered by the melancholy of a tired old man whose sons took up arms against each other.

They say Tyhee Saghalie and his two hot-tempered sons came down the river from the Far North in search of a land suitable for the Tyhee of all gods, and after a long, arduous trip that was difficult even for a god, they found the land beside the river where the rocks were like stepping stones, which the White Men named The Dalles.

They had never seen a land so beautiful, and Tyhee Saghalie made it his own. But his two sons quarreled over the possession of that land and Tyhee Saghalie settled the dispute by shooting two arrows from his powerful bow; one to the west and one to the north. One son, Klickitat, followed the arrow to the north and made it his land and became the grandfather of a tribe named for himself. The other son, Wyeast, followed the arrow to the west and became grandfather of the Multnomahs who lived beside the river called Willamette.

Then Tyhee Saghalie raised the mountains on both sides of the river for a boundary between the sons' land, but he did not raise any high enough to have a cap of snow, perhaps remembering the cold of the Far North. Then he built the most beautiful structure man had ever seen—Tahmahawis, the Bridge of the Gods—so that his sons and their children might pass across the river in safety and that his family might not always be divided.

Then Tyhee Saghalie did a good thing that led to the destruction of his family. On the river lived a witchwoman, Loowit, who was the ugliest of the ugly crones. But being a woman,

Loowit had a way to make herself needed and wanted: She had charge of the only fire in the world.

She saw how miserable the tribes on both sides of the river were during the long, wet winters with no fire to keep them warm or to cook their fish and venison. It hurt Loowit's heart to see the women always cold and wet and to see the little children sick and dying.

So one day she made a gift of the fire to Tyhee Saghalie. His gratitude was without limit and he offered Loowit anything she wanted.

She asked what any ugly woman would ask and she became the most beautiful maiden in the world. All the young men fell in love with her, but she paid them no attention.

Then she met Tyhee's sons, Klickitat and Wyeast. She could not decide which to marry and their tribes quarreled among themselves over which of their chiefs should have Loowit's hand. Soon war broke out between the brothers' people.

Tyhee Saghalie was sad and angry. He knew that to end the fighting he must destroy the cause. First he destroyed the Bridge of the Gods. Then he put Loowit, Wyeast, and Klickitat to death.

But he felt responsible for the tragedy and he loved all three he had put to death. Because they were beautiful in life, he wanted them to be admired forever.

He made Wyeast into Mt. Hood, Klickitat into Mt. Adams, and Loowit into Mount St. Helens.

And the rocks from the Bridge of the Gods that fell into the river created the great Cascades.

*There are many versions of the Bridge of the Gods legend. Each Indian tribe living in the Gorge had its own version. This version comes from the Klickitats.

History of the Gorge

By Michael S. Spranger

THE INDIANS

The first people arrived in the Americas at least 15,000 years ago, as proven by dated sites. Some authorities believe they came earlier, perhaps about 35,000 years ago when there was an ice-free passage across Alaska and down through Canada to the Great Plains. The first arrivals were hunters; stalking elephants, giant bison, and other megafauna with their puny weapons, they had only the spear and atlatl, a throwing stick for casting a dart. The more efficient bow and arrow did not come into the New World until about 2,000 years ago. From the Great Plains, the Ancient People fanned out to populate the Americas from end to end by at least 6,000 B.C.

For a yet unknown reason, the great animals became extinct in a relatively short time and the hunters of the Great Basin were forced to become gatherers, exploiting the plant life of a sparse and rigorous habitat. The hallmark of the Desert Culture, seed grinding tools, first appeared about 10,000 years ago and the culture existed practically unchanged until the white invasion. It is believed that some members wandered into the Columbia River Plateau, thence to the river, to be the ancestors of the present-day Indians.

The earliest dated trace of these first inhabitants on the Columbia was found by L.S. Cressman and his crew on the Long Narrows or The Dalles. In excavations sunk more than 30 feet deep through refuse discarded over the centuries, Dr. Cressman found modern trade goods in the top layers. In the depths were implements, bones, and charcoal dated at 10,000 years—the oldest continuously occupied village known. Immigrants may have been on the river even earlier. At the end of the Ice Age,

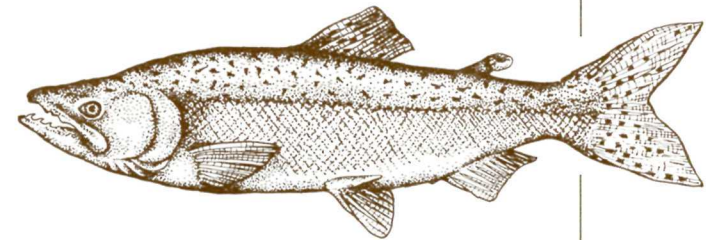
between 19,000 and 12,000 years ago, the collapse of ice dams imprisoning a lake in Montana released a series of great floods that swept across Washington and down the Columbia, filling the Gorge to the brim and extinguishing all life from Pasco to the sea. Some worked material and traces of ancient campfires have been found beneath deposits of the great deluges known as the Bretz Floods.

The Riverine Culture, after the catastrophe, prospered. By 1824, Sir George Simpson was able to write, "The native population on the banks of the Columbia River is much greater than in any other part of North America that I have visited; as from the upper lake to the coast, the shores are actually lined with Indian lodges at the fishing season."

The Columbia, one of the great rivers of the world, is 1,200 miles long, and from May to October the salmon ascended from the sea, even to the headwaters, to spawn. It is difficult, for one who never saw it, to visualize the river boiling with hordes of salmon fighting their way up the turbulent current. Paul Kane was told in 1847 by an Indian that he took 1,700 salmon averaging 30 pounds each in one day. At Celilo, an Indian told Emory Strong he once caught 21 blueback salmon with one dip of the net. Salmon do not return to the sea, but die after spawning. Lewis and Clark wrote "The number of dead Salmon on the Shores and floating in the river is incredible to see." These fish start their journey upstream fat and oily, consuming themselves on the long voyage, for they take no nourishment on the way. By the time they reach the spawning grounds, they are but shadows of their former selves, their poor noses all bent and flesh frayed and bruised from the rocks. The Indians traveled downstream as far as they dared to get the choice fish. Salmon were the staff of life of the river people, and the reason for the large and prosperous population.



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Left: fishing camp, 1884.
 Sketch by Everett Stuart.
 Above: Chinook salmon.

Salmon could be taken almost any place along the river but the most productive places were the rapids, for the fish would follow well-defined channels and rest in the eddies where it was easy to net or spear them. In some pools they would lie in shoals; the thrust of a spear at random into the depths was sufficient to impale one. The Long Narrows, Cascades, and Celilo Falls were all famous fishing sites, but best of all was the Long Narrows or Grand Dalles.

The Indians caught thousands of pounds of fish at these locations, having perfected their method of dip-netting from precarious platforms and scaffolds above the churning rapids. The Lewis and Clark Expedition in 1806 described the great fishing grounds at the Long Narrows and Celilo in the following manner:

Here is the great fishing-place of the Columbia. In the spring of the year, when the water is high, the salmon ascent the river in incredible numbers. As they pass through this narrow strait, the Indians standing on the rocks, or on the ends of wooden stages projecting from the banks, scoop them up with small nets distended on hoops and attached to long handles, and cast them on the shore.

They are then cured and packed in a peculiar manner, first exposed to the sun on scaffolds erected on the river banks. When sufficiently dry, they are pounded fine between two stones, pressed into the smallest compass, and packed in baskets or bales of grass matting about two feet long and one in diameter, lined with the cured skin of a salmon. The top is likewise covered with fish skins, secured by cord passing through holes made in the edge of the basket.

Packages are then made, each containing twelve of these bales, seven at bottom, five at top, pressed close to each other, with the corded side upward, wrapped in mats and corded.

The expedition estimated that over 10,000 pounds of salmon were stacked up on the river bank at the Indian village of Wishram. This was a small portion of the salmon that were caught, since this was in the fall after all but the permanent residents had already left, taking their salmon with them.

The Long Narrows was an important fishing site, but more importantly, it was the great trade mart of the Oregon country.

The Columbia River valley is separated into two distinct areas by the Cascade Mountains, and each area fostered a culture that intermingled at the market and bartered the bounties of their particular region. To the west, all life centered on the river. Dense forests, extending from Alaska to California, smothered all life except where the canopy was ruptured by the river, burns, or marshes. To the east, since most rain clouds failed to surmount the Cascade barrier, a semi-desert sustained a semi-nomad population, wandering by foot and canoe from root field to berry patch, and to the river when the salmon came (the horse did not arrive until about 1720, drastically changing the culture of those residents of the plains—but for only an instant of their total time on the Columbia).

Trade goods from long distances arrived at Long Narrows because of its key location on the travel corridor between the increasingly different cultures separated by the mountain range. Trade goods found near Wakemap Mound included pipestone from Minnesota, turquoise from the Southwest, dentalium from Vancouver Island, and copper that must have come from Alaska, Canada, or the Great Lakes.

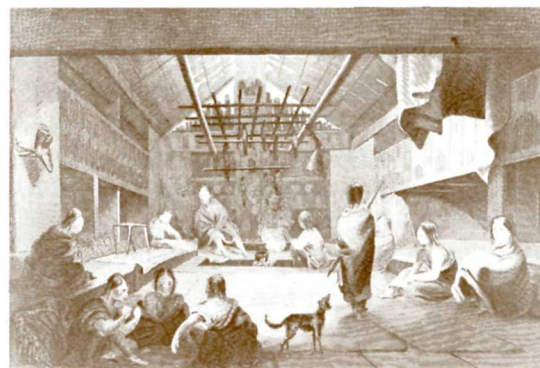
From downriver, the coast, and Puget Sound came dried clams and mussels, whale and cedar products, shells (especially

precious dentalia), beads, canoes, baskets, and, after the whites arrived, such trade goods as the beloved Hudson's Bay Company blankets. From the south came baskets, obsidian, wocas (water-lily seeds), Indian tobacco, and slaves. From the plateau to the east came animal robes (including buffalo), meat, kouse and other plants, pipestone, feathers and, after 1730, horses and plains-style garments.

The trade mart was a colorful affair. Indians gathered by the hundreds, even thousands. Fishing was important but the greatest attraction was social intercourse—travel, trade, match-making, athletic contests, and gambling; most of all the gambling. Alexander Ross wrote, "The main camp of the Indians is situated at the head of the Narrows and may contain, during the fishing season, 3,000 souls, or more; but the constant inhabitants of the place do not exceed 100 persons. The rest are all foreigners from different tribes throughout the country, who resort hither for the purpose of catching salmon, but chiefly for gambling and speculation not in fish, but in other articles." Primitive peoples the world over love to wager and have invented some intricate games of skill and chance in which they

Chinook lodge, 1845.

Sketch by A.T. Agate.



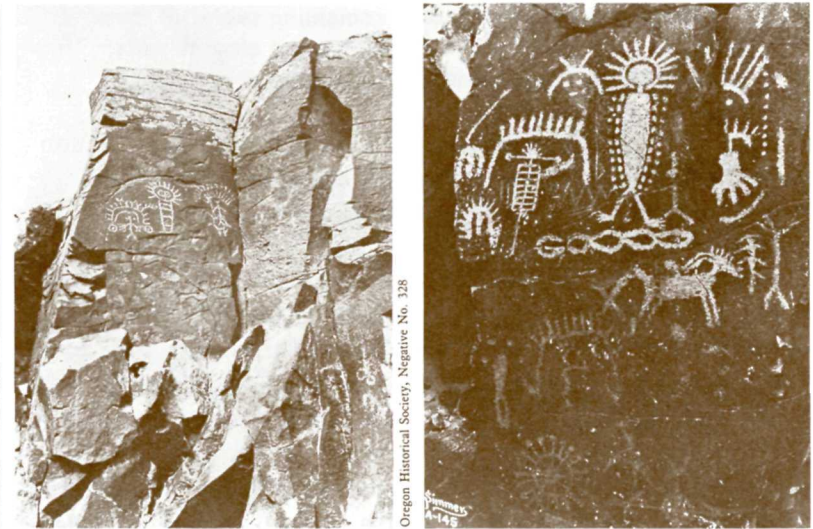
risk native fortunes. Several different types of stone and bone dice, counters, and gaming pieces have been excavated from about the Long Narrows.

When the white people first arrived, the Chinook Nation of several different tribes and villages claimed the Columbia from the sea to The Dalles. Above were the Sahaptin people—Yakima, Umatilla, Walla Walla, and others. The Chinooks lived in permanent villages built from split cedar planks. Some were quite large. Quathlahpootle, near Ridgefield, Washington, had 14 houses and 900 residents in 1805, and Clackstar, near St. Helens, Oregon, had 1,200. There are more than 60 known village sites between St. Helens and The Cascades.

The Sahaptins usually lived in lodges formed of rush mats spread over a wood frame. There were some semi-subterranean houses, a pit 4-6 feet deep and 16 feet wide roofed with poles, grass, and earth. A few of these “cellars” can still be seen along the river. There were few permanent villages above The Dalles; there was no wood for fuel, and the winter winds were fierce. The natives moved back to sheltered valleys such as the Yakima and Klickitat.

The permanent inhabitants of the Narrows were the Wishrams, the easternmost Chinookan peoples. “Scattered promiscuously” at the head of the Long Narrows, Lewis and Clark found a bustling village of 21 huge houses (“the first Wooden houses since we left those in the vicinity of the Illinois”) inhabited by a few hundred year-round residents. This village was Nixluidix, the famous Wishram of Washington Irving’s Astoria. Across the river, near the oldest mound, were the longhouses of the Wishrams’ powerful cousins, the Wascos.

Excavations conducted by archaeologists before the backwaters of The Dalles Dam flooded this area indicate that the Indians had continuously occupied this ideal fishing and trading site for the last 10,000 years.



Petroglyphs still visible on rocks.

The white invasion brought death to the Indians, for they lacked immunity to diseases. A smallpox epidemic around 1800 carried off thousands and a great pestilence in 1830-35 almost depopulated the lower Columbia. John K. Townsend wrote in 1835: “Probably there does not now exist one, where, five years ago, there were a hundred Indians; and in sailing up the river, from the cape to the Cascades, the only evidence of the existence of the Indian, is an occasional miserable wigwam, with a few wretched, half-starved occupants. In some places they are rather more numerous; but the thoughtful observer cannot avoid perceiving that in a few years the race must, in the nature of things, become extinct; and the time is not far distant when the trinkets and toys of this people will be picked up by the curious, and valued as mementos of a nation passed away forever from the face of the earth.” Because of sickness and death there was little conflict with the white invaders. The

dispirited remnants of a great and prosperous nation were easily herded onto lands no one wanted.

The Columbia River Indians, over the centuries, developed an aesthetic art form characterized by the “exposed skeleton” motif—the ribs and vertebrae are emphasized. Many massive stone sculptures, delicate bone and antler carvings, decorated ornaments, stone beads, and embellished utilitarian articles have been found and are on display at Maryhill and other museums. Some sculptures are considered as fine as any found in the United States. Early explorers record that some houses were carved and painted, and wood figures were displayed about the houses and graves. Most stone carvings are found east of the Cascades; tribes to the west utilized the beautiful, durable, easily worked western redcedar. At Ozette, Washington, where a native house was preserved complete with all contents, when overwhelmed by a mud slide, many fine wood art objects were recovered.

One of the most dramatic and plentiful of the art forms was found on cliffsides along the Columbia—carved or painted designs called petroglyphs and pictographs. All but a few were wantonly destroyed during highway and dam construction; vandals soon will deface the few remaining, some of which are splendid examples of primitive art.

Few traces of this vast culture remain. There was some salvage archaeology, an attempt to save as much as possible before sites were flooded by rising waters behind the dams. Amateurs flocked along the river banks laid bare by low water before The Dalles and John Day dams were complete, salvaging with equipment varying from flour sifters to jeeps with bulldozer blades. Tons of material were found, but the work only attested to the once numerous population. Many of these treasures are secreted in someone’s basement. Maryhill museum has fine displays of artifacts of the ancient people, particularly baskets. Some petroglyphs are preserved and displayed at The

Dalles Dam. The Oregon Historical Center, located in Portland, Oregon, has a major interpretive exhibition, which includes artifacts and rare historic photographs. The Oregon Archaeological Society occasionally publishes booklets and papers, has exhibits at the Oregon Museum of Science and Industry, also in Portland, and gives illustrated talks to school children and groups. County museums located along the Columbia River also have exhibits which depict the cultural history of the Columbia River Gorge.

THE EXPLORERS

The Columbia River Gorge and the mighty river which flows through the Gorge were, for eons, a land and river of mystery known only to the Indians of the Pacific Northwest. The first “discovery” and exploration of this area by white man came from the sea in the late 18th century; land expeditions followed in the early 19th century.

Soon after Columbus discovered America in 1492, many nations began exploring its coastline looking for inland waterways. After Balboa’s discovery of the Panama Isthmus and Pacific Ocean in 1513, many nations explored the Pacific Coast, but it was not until 1792 that the mythical river of the west, the Columbia, was “discovered” by Capt. Robert Gray.

Early Spanish and British explorers often sailed past the mouth of the Columbia, but none entered its waters. In 1602, a Spanish squadron under Vizcaino reportedly sighted a “great and abundant river with a current too strong to enter.”

In 1775, the small Spanish schooner “Santiago” under the command of Capt. Bruno Heceta approached the mouth of a great river. He detected fresh water and a strong current flowing

against the tide, but because of his small ship, he decided against investigating further.

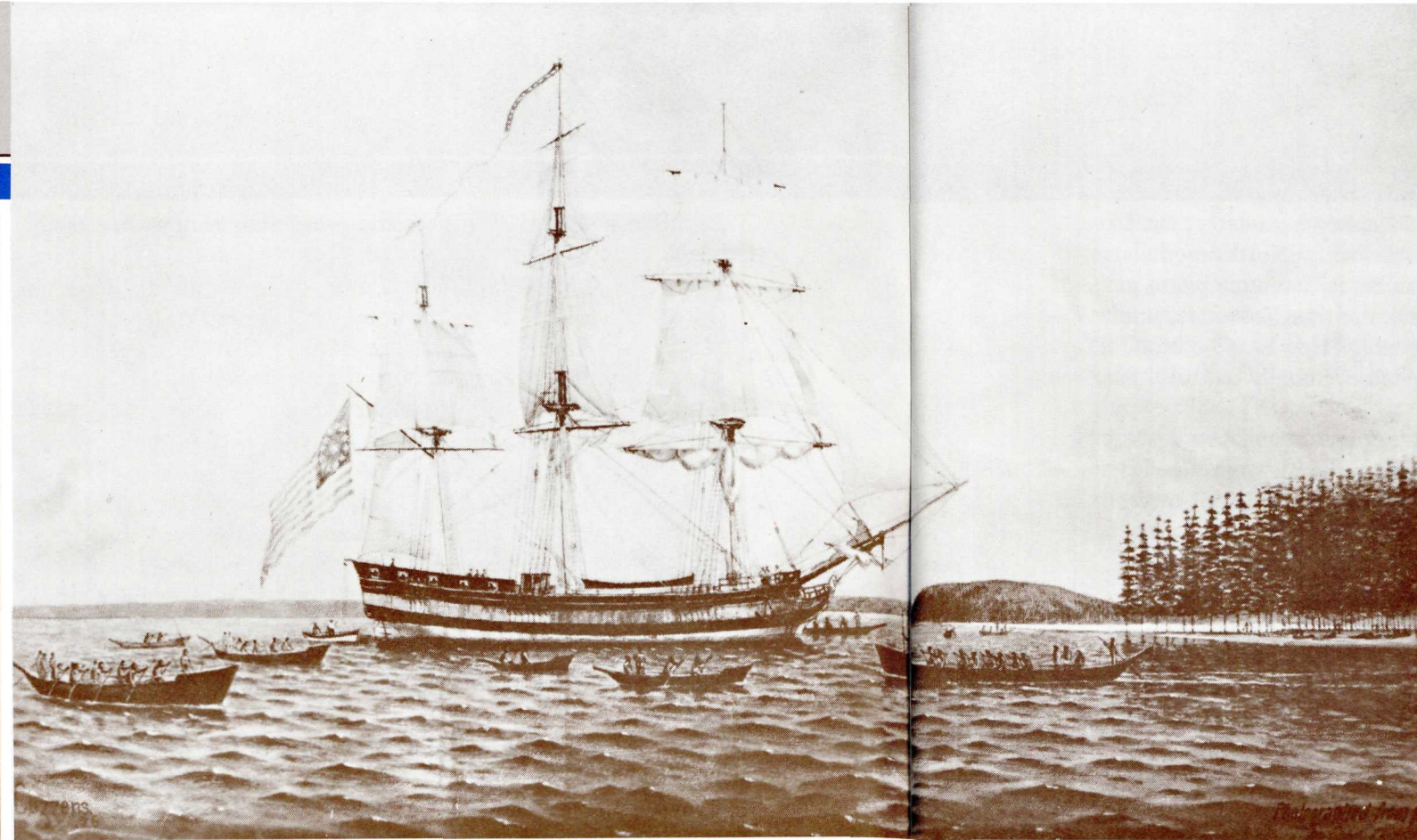
In the late 1700s, the British government offered a reward of 20,000 pounds sterling to any captain who could find an inland passage from the Northwest waters into Hudson Bay. In these years, Spanish, British, Russian, French, and American vessels sailed along the coast, but all failed to "discover" this mighty river.

Finally, in 1792, both the Americans and British "discovered" the Columbia. The first to enter the Columbia River was a Bostonian, Capt. Robert Gray, who named the river after his ship, the "Columbia Rediviva." He attempted to sail up the Columbia, but his ship drew too much water.

Later the same year, the British explorer, Lt. William Broughton of Capt. George Vancouver's expedition entered the river. Broughton was the first white explorer to leave any record of the Columbia, upriver from its mouth. Anchoring his ship, "The Chatham," securely in the Columbia River estuary, Broughton took a ship's deck boat to explore this new territory. Powered by a crew of oarsmen, Broughton explored the river for a distance of 100 miles, as far east as the Sandy and Washougal rivers, nearly to the mouth of the Columbia River Gorge. Along the way, Broughton encountered many Indian villages; he also named Mt. Hood in honor of Vice Admiral Samuel Lord Hood of the British Navy.

As soon as other captains heard of the discovery by Capt. Gray, many ships came to trade with the Indians and to obtain fresh drinking water. Soon the mouth of the Columbia became a major trading center, especially for sea otter and beaver pelts; European goods were traded upriver to the Gorge.

This trade brought more prosperity and riches to the Indians. However, it also brought misery. Smallpox and other diseases also came up the river with these goods and killed about half of the Native American population on the lower Columbia before 1800.



In 1804, President Thomas Jefferson sent out the Lewis and Clark expedition to explore the Northwest, to find a convenient route between the Missouri and Columbia rivers, and to help establish the U.S. claim to the disputed territory. They also were charged to carefully document the flora, fauna, and native people of the West. Their journals describe in detail a fascinating wilderness, and record the first encounters many tribes had with non-Indians. Although the members of the famous Lewis and Clark expedition are generally considered the first white people to journey through the Gorge, they did meet Soto, the friendly red-haired chief of a Columbia Gorge village

Spanish metalsmith who had survived a shipwreck decades earlier. Meriwether Lewis and William Clark journeyed down the Columbia in 1805, noting its prominent natural features as they descended. They found salmon drying and a large number of Indians camped at Celilo Falls, and shortly after portaging around this obstacle, they reached The Dalles (the Long Narrows) which Clark described as an "agitated gut swelling, boiling, and whirling in every direction." They passed their heavy boats successfully through this "agitated gut," to the amazement of the Indians. Along their trip to the coast, the expedition made many maps of the area, and named many of the geologic features, including Beacon Rock. They traded with the Indians



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Left: "Columbia Rediviva."
Middle: Meriwether Lewis.
Right: William Clark.

and found them to be very hospitable.

The Expedition came to the mouth of the Columbia in late fall and remained there for the wet winter, in their hastily constructed Fort Clatsop. They had hoped that a trading ship would arrive to take them back to the United States, but none came.

The following spring (1806), the Expedition departed Fort Clatsop along a route that again took them through the Gorge. This time, the Expedition had a much harder time. Many of the villages were short of food, with starving residents, and the first salmon were not due for several months. Trading between the Expedition and the Indians became difficult and frustrating. Eventually, the Expedition returned to Washington, D.C., and gave its accounts of the Great Northwest. Other explorers soon followed.

The next explorer through the Gorge was David Thompson, a fur trader with the Canadian North West Company. When Thompson reached the mouth of the Columbia in 1811, he found a newly arrived group of Americans building a fur trading post for John Jacob Astor. Ft. Astoria became Ft. George when the North West Company took it over during the War of 1812. Thompson, along with a party of Astorians, travelled inland to the Gorge, seeking to build an inland fort and post for the

rapidly expanding trade with the Indians. At this time, there was intense, often violent, competition among the British, Americans, and Indians in developing this lucrative fur trade. Britain merged the North West Company into the Hudson's Bay Company in 1821 to end the increasingly violent competition.

In 1825, Hudson's Bay Company moved its Northwest headquarters to Ft. Vancouver, just west of the Gorge. Under the leadership of Dr. John McLoughlin, trade expanded throughout the region. However, conflict remained. The portage around the Cascades was a crucial part of the fur-trading route and was the scene of many conflicts between the fur traders and the Native Americans.

Not all the early explorers of the Columbia Gorge were motivated by monetary gain. A few were interested in scientific inquiry. David Douglas, a Scottish botanist, was directed by the Royal Horticultural Society of London to study the Northwest flora in the 1820s. He was known among the Indians as the "Grass Man," a reference to his tireless plant collecting. Douglas had tremendous stamina and climbed up and down the Gorge heights for two years.

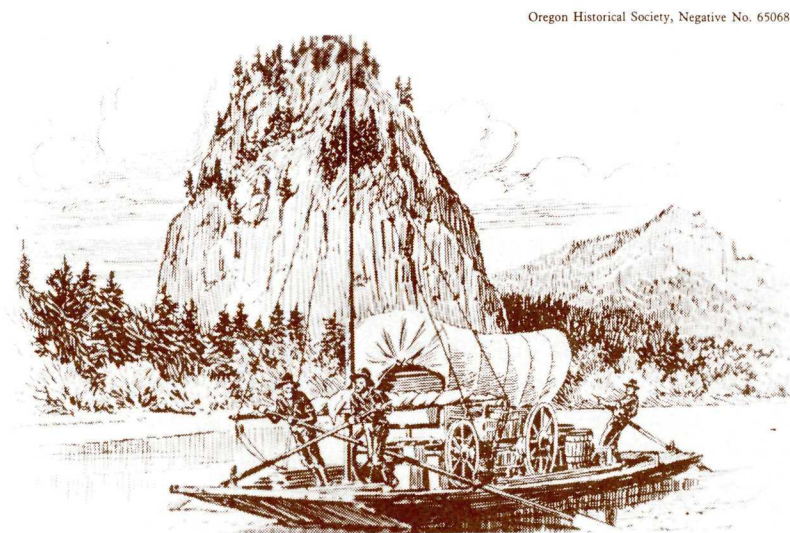
In 1834, a physician/ornithologist named John Townsend and a botanist named Thomas Nuttall explored the Gorge. Known as the "Bird Chief" by the Indians, Townsend spent several years in the Gorge area. He worked as a doctor part of the time, but spent the majority of his time documenting the bird life of the Northwest. His journals also sadly describe the pestilence and disease that swept through the area between 1830-1835, which killed most of the remaining Indians downstream from The Dalles.

In addition to monetary gain and scientific inquiry, religious revivalism motivated some early explorers to come to the Northwest. Favorable reports of the Northwest began to circulate in the East in the 1830s and helped to convince many people to settle there. At the same time that this information was being

disseminated, Protestant sects in this country became convinced of the need for missionaries among the Pacific Northwest Indians. Boston trader Nathaniel Wyeth made two attempts to establish fur-trading posts and canneries on the Columbia, but was unable to break the British monopoly. However, he brought the first settlers and missionaries, which eventually led to U.S. control of the Northwest.

In 1834, Methodists Jason and Daniel Lee established a small settlement in the Willamette Valley. They began work among the neighboring Indians, and encouraged by their initial success, they constructed a complex of buildings, the Wascopam mission, on some high ground at The Dalles in 1838. These may have been the first structures built by white people in the Gorge, and they became the nucleus for the emerging community there. By 1847, the Lee people decided to withdraw from the site and sold it to Marcus Whitman, leader of a Presbyterian mission centered around Walla Walla. Catholic priests soon set up competing missions, which greatly confused the Native Americans.

Whitman, his wife, and several others were killed by a band



Oregon Historical Society, Negative No. 65068

of Cayuse Indians in late 1847. The Indians killed them in retaliation to the dreaded diseases that were decimating the Indian population and in retaliation to the influx of white settlers who were destroying their way of life.

The murder of the Whitmans prodded Congress in 1848 to establish the Oregon Territory, the first formal territory west of the Rockies. The territory included the present states of Washington, Oregon, and Idaho, plus parts of Montana and Wyoming. U.S. troops came to the area, established forts, and secured the land for the increasing influx of settlers to the Northwest.



Oregon Historical Society, Negative No. 21577 Watkins

THE SETTLERS

White settlers closely followed the explorers in populating the Northwest. The wave of white immigration started slowly. The first white settlements in the Gorge were the result of attempts to Christianize the native Indians. Early missions were established in The Dalles. The Wascopam Methodist Mission, founded in 1838 by Rev. Daniel Lee, was the first permanent white settlement in the Gorge.

In addition to centers of religious activity, these missions served as aid stations to the increasing numbers of white settlers who traveled through the Gorge. With the promise of large tracts of land available at little or no cost, particularly in the fertile Willamette Valley, many settlers came to the area.

In the 1840s, growing numbers of rugged pioneers made the arduous, 2,000-mile trek along the Oregon Trail, arriving battered and weary between The Dalles and Rowena. Although their destination, the fertile Willamette Valley, was near, the settlers had one more price to pay in their long journey. They had to deal with the treacherous rapids found in the Columbia River Gorge.

At the Cascades, family possessions usually were loaded onto wagons and transported around this hazardous stretch of river. The local Indians derived income from the toll levied on each family using the trail; additional monies were obtained by the Indians when they assisted emigrants making this difficult portage. Some pioneers tried to run the rapids, usually with disastrous results. Until the steep Barlow Toll Road was built up and around Mt. Hood in 1845, the settlers had only the

Far left: from 1843 to 1846, covered wagons came down the Columbia from The Dalles on rafts or barges.

Immediate left: view of Dalles City from Rockland, 1867.



Oregon Historical Society, Negative No. 21118 Watkins

choice of running the rapids or portaging around them.

For these weary settlers, it was necessary to assemble the wagons, if they came on rafts, load their possessions, and begin the terrible passage over the Cascade Slide in the cold rains of September and October. Some weary travelers launched their boats too soon in the treacherous currents. Mrs. Elijah White, in the spring of 1838, fatigued beyond endurance after two miles on the terrible trail, embarked holding her baby in her arms. She was thrown into the turbulence and her baby drowned. Only by the providence of Indians swimming from the shore was she saved. Chief Factor Douglas told her later at Ft. Vancouver that a short time before, he had lost a Hudson Bay canoe with seven men, all good swimmers.

The diaries of pioneers tell harrowing details. John Minto in 1844 said that he “found men in the prime of life lying among the rocks” seeming ready to die. Mrs. Elizabeth Smith in November 1847 wrote, “We have five miles to go...It is the worst road...I carry my babe and lead, or rather carry another through the snow, mud and water to my knees...cold and numb...I can scarcely speak or step...after dark...I find my husband sick.”

Nearly all pioneers continued on to the Willamette Valley—already much publicized as an agricultural paradise and depopulated of Indians by diseases. After the 1845 opening of the Barlow Road, many settlers chose not to float down the Columbia, but instead continued overland on the steep toll road from the vicinity of The Dalles to the Willamette Valley.

The Dalles developed rapidly during these years because the military erected an important fort there in 1850 and because it was the terminus of the Oregon Trail. By 1852, the incipient community included two drygoods stores, a few houses, a blacksmith shop, and wharf facilities for large flatboats and shallow-draft steamboats. The Dalles became an important wintering spot and supply center for soldiers and miners.

Also in the early 1850s, the first steamboats appeared on the Columbia River. The first steamboat on the river—aply named Columbia—was launched at Astoria in 1850, forerunner of more than 450 to ply the waters of the River of the West. However, the Cascades, Long Narrows, and Celilo Falls were impassible barriers. In 1851, Justin Chenoweth built the first portage tramway, a car pulled on wooden rails by a single mule, to transport goods around the rapids. This was the first railway constructed in Washington State. Chenoweth’s prices were high, so a competing portage railroad was built by W.R. Kilborn, and soon acquired by Col. Joseph Ruckel, on the opposite Oregon shore. Cutting cord wood for the steamboats became the main source of income for pioneers around the Cascades. Wood was carried to the river in flumes, and the scows which took the wood to The Dalles often had to wait days for a wind.

In the 1850s, there was violent conflict between the white settlers and the native Indians. With establishment of the Oregon Territory in 1848, the remaining Indian tribes were forced to sign treaties insuring peace for the area.

Preceding page: view from Eagle Creek, Oregon. Portage Railroad; sawmill in foreground, 1867.
Right: Bridal Veil Lumber Co. flume.



Oregon Historical Society, Negative No. 40914



Gifford

Oregon Historical Society, Negative No. 48553



*Clockwise from top left: Celilo Falls.
 Floating fishwheel, Cascades.
 Steamer "Cascade" at lower
 Cascade Landing, 1867.
 Opening of the Cascade Locks, 1896.
 Special Edition,
 Morning Oregonian.
 Next page: Oregon Pony.*



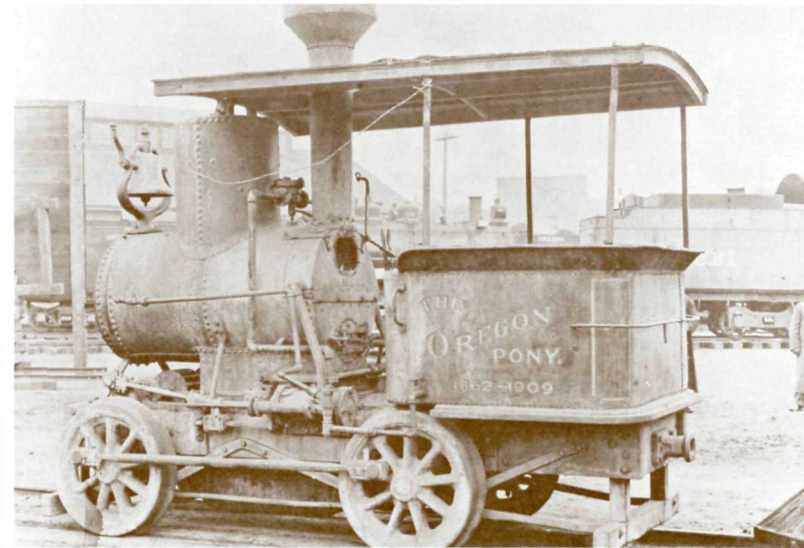
Oregon Historical Society, Negative No. 48109

But violations in the mid-1850s soon led to the Yakima War. One of the major battles was in the Columbia Gorge when Yakima and Klickitat Indians attacked Ft. Rains and the north bank settlements in 1856. Reinforcements from The Dalles and Ft. Vancouver finally drove off the attackers and put the local Native Americans (those not hanged) on a temporary reservation between the White Salmon and Klickitat rivers. After hostilities ended, settlements at The Dalles and the Cascades were among the largest in the Northwest.

The Dalles boomed, not only because of the war, but also due to the opening of the Idaho gold fields in the 1850s. Tremendous amounts of gold passed over the portages around The Dalles. In six months during 1861, \$2,293,656 in gold passed through the area. In fact, the U.S. government built a mint at The Dalles because so much gold from Idaho was coming through the town, but the mines fizzled out before any coins were ever minted.

For more than 50 years, steamboats dominated the Columbia River until the advent of the railroads. The arrival of a boat at a landing often marked the only communication between the settler and his market, and the sound of the whistle brought news to many a homesick woman.

The Oregon Steam Navigation Company gained a monopoly on Columbia River transportation during this time. Not only did its ships travel the river, but it also controlled all the portages. In 1862, the company brought the Oregon Pony, the first locomotive in the Northwest, to the south side of the Cascades to carry its passengers between steamboats. Also in 1862, the north side of the portage railroad was extended to 6 miles. The Ann, a locomotive modeled after the Oregon Pony, began operation as north shore activities expanded. Remnants of the original railway trestle and a military road built by Lt. Derby still exist, as do remains of the town of Lower Cascades and Ft. Cascades. The U.S. government began to construct locks to bypass the Cascades in 1878, but the project was not finished until 1896.



Oregon Historical Society, Negative No. 3425

The canal bypassing the Narrows and Celilo Falls was not done until 1915. By then the sternwheelers had been replaced by the railroad.

The Oregon Railway and Navigation Company began a railroad into the Gorge in 1880, and in 1883, a transcontinental link was completed through to St. Paul, Minnesota, via the Northern Pacific, providing farmers with more markets. A year later, the Union Pacific was connected to the ORN, providing a more direct transcontinental route. Railroad baron James J. Hill built his Spokane, Portland, and Seattle railroad (now the Burlington Northern) along the north bank of the Gorge in 1908.

The completion of the Gorge railroad network accelerated the settlement of the Gorge and its environs, enabling people to obtain needed equipment and supplies and to sell their produce in distant markets for high prices. Single family farms still predominated and subsistence farming was still common, although



Oregon Historical Society, Negative No. 11710

many people began to specialize in the last decades of the 19th century, and wheat emerged as a major cash crop. Livestock grazing, first cattle and then sheep, also became a major industry.

Commerical cultivation of fruit trees began in the 1850s. Farmers increasingly concentrated on the production of apples and by 1917 ranchers on both sides of the Columbia were producing about 600 million barrels yearly. This figure has increased greatly since then, partially because of improved agricultural practices. Refrigerated rail cars and trucks have enabled farmers to ship their crop all over the country.

The Columbia River salmon canning industry reached maturity and then declined somewhat in the last decades of the 19th century. As the supply of salmon diminished—accelerated by the widespread use of fishwheels—canneries increasingly mechanized their operations and some even formed protective associations. As their position became more precarious, they established hatcheries and finally convinced the U.S. Fish Commission in

the late 1880s to undertake a program of artificial propagation work on the Columbia.

Lumbering became a major industry in the Gorge as transportation improved and the eastern forests were depleted. Flumes and incline railways (“steam donkeys”) were used to get the timber from the Gorge’s steep slopes down to the river. Many of the slopes in the Gorge were quickly denuded by clearcutting and fires, especially the infamous 1902 Yaocolt Burn.

As the 19th century came to a close, the Gorge could no longer be considered a frontier area. The frontier was closed. The settlement and development of the area had changed the region from a land of harsh wilderness to an area where settlement and development continued to occur, to the present day.

Left: Beacon Rock.

*Next page: Indians viewing
Celilo Falls, 1899.*



Geology of the Gorge

By John Eliot Allen

Gateway to the Northwest since before the time of Lewis and Clark, the Columbia River Gorge has furnished a pathway for river, railroad, highway, and pipeline from the Inland Empire of eastern Washington and Oregon to the West Coast. Sculptured by the mighty Columbia River, second in volume and seventh in length of all rivers in this country, the geologic history of the Gorge may be read not only by the geologist but also by the casual tourist whose visit may originally have been prompted more by the scenic wonders than by the story of the past exhibited in the walls of this great gash through the Cascade Range.

These recorded events began in the late Eocene period of geologic history, some 40 million years ago, and culminated near the end of the Ice Age only a few thousand years ago in catastrophic floods and landslides which were responsible for the present steepness of the canyon walls. Volcanism played a leading role in much of the story, as the river has had to cut its way repeatedly through flows of lava from eastern Oregon, piles of volcanic ash from local volcanoes, and lava dams from volcanoes up tributary valleys. The canyon walls now expose several deep throats of ancient volcanoes. Great landslides, some of them still active, have also temporarily dammed the river, doubtless giving rise to the Indian legend of a "Bridge of the Gods."

The present course of the Columbia River is carved in this spectacular 85-mile-long canyon through an upland surface (best developed south of the Gorge) which is a broad arch rising 133 feet per mile from near Troutdale to 4,000 feet at its crest near Benson Plateau, and then dropping steeply towards Hood River. This surface is surmounted by several volcanic shields such as

Larch Mountain and Mt. Defiance which rise another thousand feet or more. The upland surface south of the Gorge is deeply dissected by 11 narrow V-shaped canyons; of these, only Eagle Creek canyon is more than 10 miles long. At least two former buried canyons of the ancient Columbia River lie south of the present Gorge.

Possibly the greatest concentration of high waterfalls in North America appear on the south walls of the Gorge, mostly near the mouths of side canyons. Twenty-five falls are well enough known to be mapped, and 11 over 100 feet high can be seen from the freeway or scenic highway. Another 13 lie from 2-7 miles up the canyons. Many of these falls occur in the center of alcoves or amphitheatres much wider than the falls themselves.

Isolated pinnacles and promontories, the favorite and perilous haunts of rock climbers, punctuate the landscape every few miles. The most spectacular of these was named Beacon Rock by Lewis and Clark in 1805. It is a vertical-walled pinnacle 850 feet high. Another 200-foot-high pinnacle named Rooster Rock occurs below Crown Point on the south shore. It was given a more earthy, phallic name by pioneers! Wind and Shellrock Mountains are the highest of all, rising 2,000 feet on either side of the river and have aptly been titled "Twin Guardians of the Columbia." Mitchell Point, 4 miles west of Hood River, once rose so steeply from the water's edge that the original scenic highway tunneled through it, with windows cut along the cliff face. Tooth Rock at Bonneville had also to be penetrated by a tunnel and bypassed by a bridge.

The north side of the valley does not present the almost continuous cliffs of the south; it is less steep, very little of the upland surface remains, and cliffs that do appear are usually landslide-produced, and farther from the river. Of the central 25

miles of the north shore between Cape Horn and Dog Mountain, 16 miles, or 65%, has been greatly modified by land-sliding, some of which extends back more than 4 miles north of the river. The total area affected by landslides in the Gorge is over 50 square miles, of which about 5 square miles is now actively moving each year.

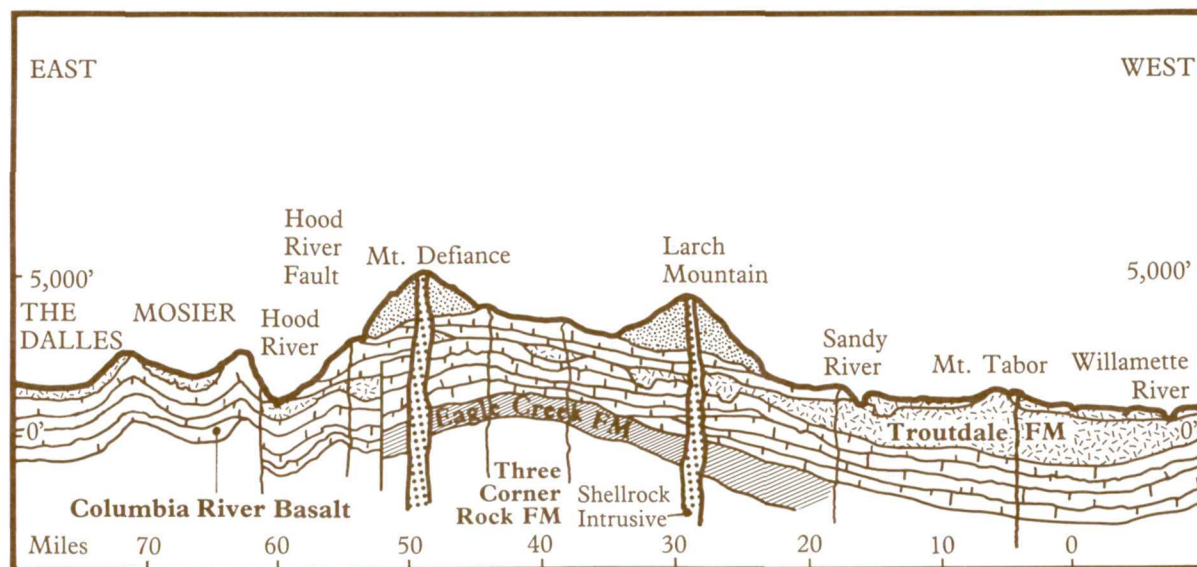
Few waterfalls appear north of the Columbia River, partially as a result of the landsliding and partially because the Yakima Basalt, of the Columbia River Basalt group, the chief cliff-and-waterfall-maker, covers only relatively small areas north of the Columbia. Five rivers enter from the north, the Washougal, Wind, Little White Salmon, White Salmon, and Klickitat, whereas only two rivers, Sandy and Hood, enter from the south.

This "cross section" through the Cascade Range has been of interest to geologists ever since it was studied by Dr. Thomas

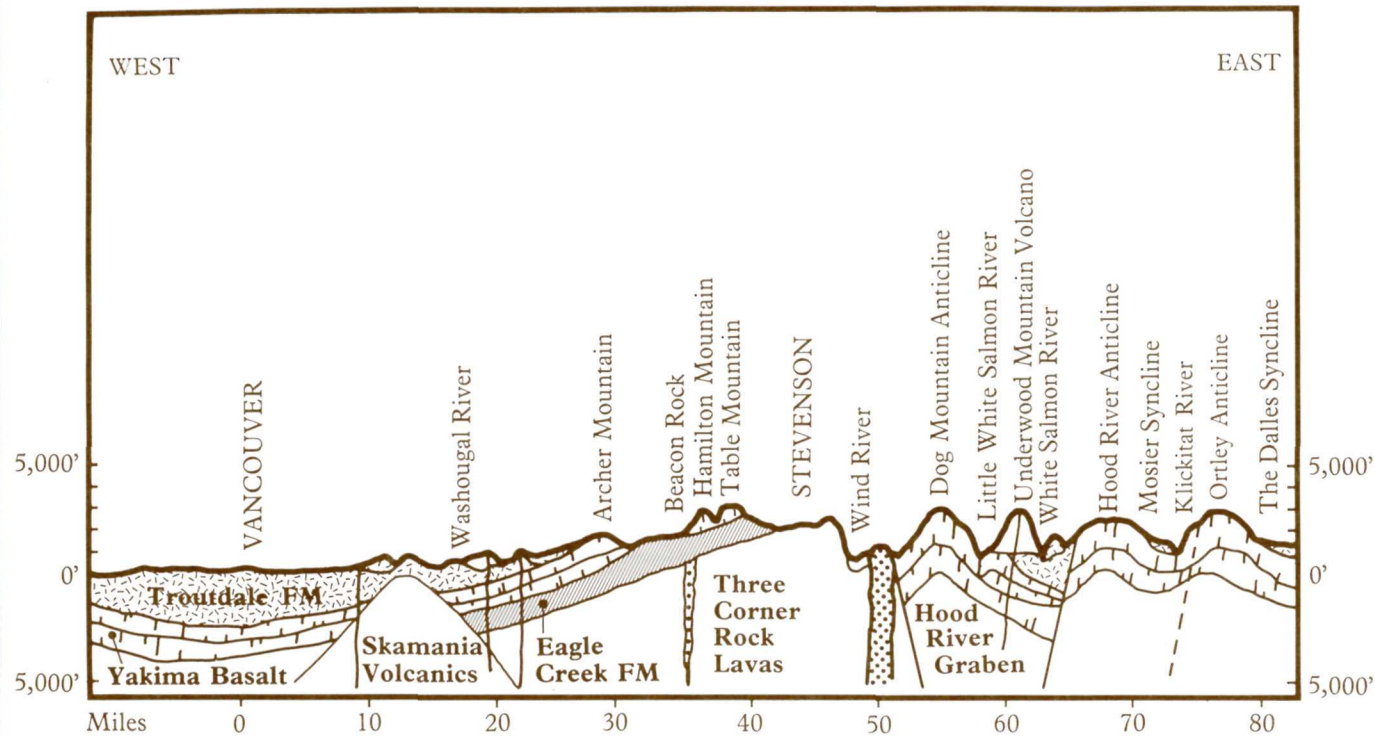
Condon, pioneer Oregon geologist, who collected fossil leaves from Eagle Creek in 1868. His popular talks throughout the state established a tradition of letting the public in on the mysteries and wonders of geology. This tradition has carried down to the present among geologists in the Northwest, and has resulted in many popular publications on geology (see Suggested Reading).

THE GEOLOGIC HISTORY

The oldest rocks in the Gorge, known as the Lavas of Three Corner Rock, make up the great southwest-dipping ridge north



"Cross-section" from The Dalles to Portland, showing geologic formations which may be seen on the south side of the Gorge. The vertical scale is exaggerated about 10 times.



"Cross-section" from Vancouver to The Dalles along the north side of the Gorge. Note that the vertical scale is exaggerated about 10 times.

of Stevenson. Here and farther north, a total thickness of at least 2 miles of lava, mudflows, and ash tell the story of great volcanic eruptions 45–21 million years ago, far exceeding in violence the more recent activity of Mount St. Helens. These rocks were so deeply buried before later uplift and exposure by erosion that they have been altered by heat and pressure so that new, colorful green minerals were formed in them.

Above these rocks, and making up the light-colored, relatively flat-lying, bedded lower cliffs beneath Hamilton and Table Mountains and Greenleaf Peak, is the Eagle Creek Formation,

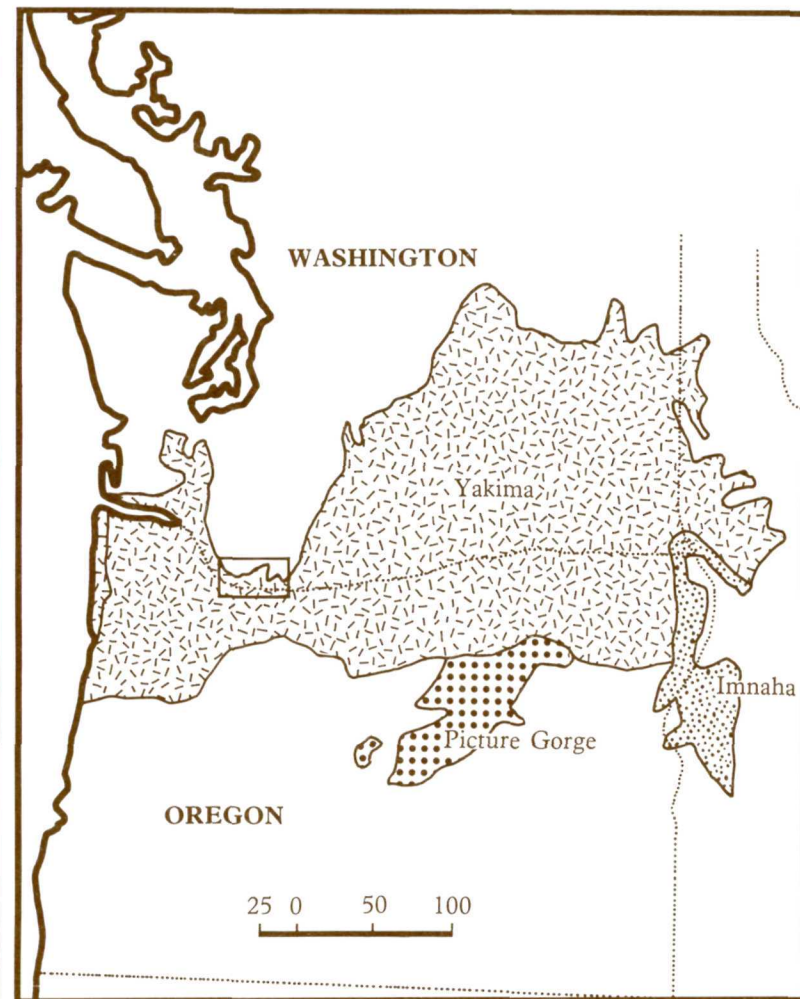
21–18 million years old. It is well exposed on the south side of the Gorge in road cuts along the freeway for several miles east and west of Bonneville, and actually underlies the basalt cliffs as far east as Shellrock Mountain at elevations up to 350 feet. It is largely composed of bouldery mudflows a thousand feet thick (those on the Toutle River were 250 feet thick!) and contains many petrified logs and wood fragments.

Before uplift and folding in western Oregon began, perhaps 6

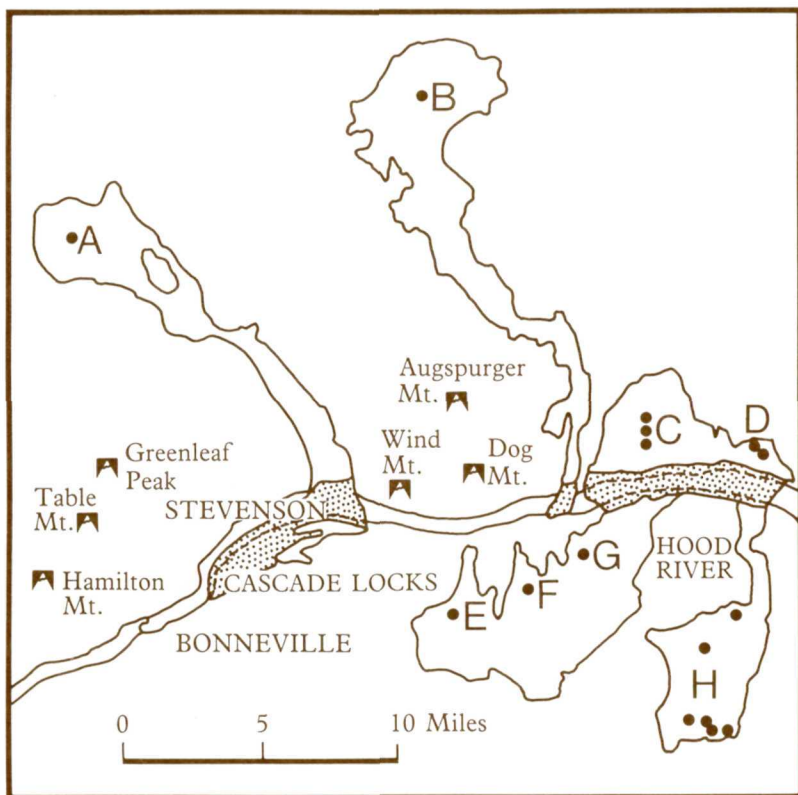
or 7 million years ago, the Columbia River occupied a broad valley several miles south of the present Gorge. Far to the east, near the Idaho border, great, miles-long, north-south fissures opened up, and unimaginably voluminous floods of black, fluid basaltic lava poured out in flow after flow to eventually cover 50,000 square miles of eastern Washington and Oregon to a depth of up to a mile (half a mile in western Oregon). These flows filled the ancestral Columbia Valley, and repeatedly showed the river north to near its present course, and continued on over the present site of the Coast Range to complete their 300-mile trip into the sea. This Yakima Basalt Formation, 16–10 million years old, now forms the lower cliffs on the south side of the Gorge, fills side valleys cut in the Eagle Creek Formation to make up the crests of the peaks on the north side of the Gorge, and comprises the great folded ridges at Dog Mountain and between Hood River and The Dalles.

The river reestablished its course along the northern margin of each of several floods of Yakima Basalt, cutting canyons up to 500 feet deep. As the Rocky Mountains far to the northeast rose, these canyons were filled with thick beds of gravel, known as the Troutdale Formation, 7–4 million years old. Folding began to form the Tualatin, Portland, Hood River, Mosier, and The Dalles basins, and the gravels began to fill them, but some gravels were lifted up to elevations of over 2,000 feet in the Cascade arch.

During the last 4 million years, volcanism again dominated the scene. First, large Cascade shield volcanoes such as Larch Mountain and Mt. Defiance south of the Gorge, and Mt. Sylvania and Highland Butte west and south of Portland, along with dozens of small cinder cones, collectively known as the Boring Lavas, erupted. Later, during the last 700,000 years, the high Cascade peaks of Mt. Hood, Mt. Adams and Mount St. Helens began to rise. Faulting uplifted the Portland Hills and the 2,000-foot-high ridge east of Hood River. Volcanoes up



Subdivisions of the Columbia River Basalt Group. The oldest (Imnaha) flows are restricted to western Idaho and the extreme eastern edge of Oregon. The next oldest (Picture Gorge) occupy the John Day Country in Oregon. The last flows are the Yakima Basalt. Yakima Basalt covers the largest area of all, and reached the sea. The basalt which covered the site of the Coast Range was eroded away during its uplift in the last six million years.



Intracanyon lava flows that reached the Gorge and may have dammed the river. Dotted pattern shows where they have been eroded away. Volcanic sources are shown by dots, as follows: A. Trout Creek Hill, source of the Carson or Wind River flow. B. Big Lava Flow crater, source of Little White Salmon River flow. C. Underwood Mountain vents. D. White Salmon vent. E. Mount Defiance. F. Viento Ridge vent. G. Mitchell Ridge vent. H. Cinder cones in the lower Hood River Valley.

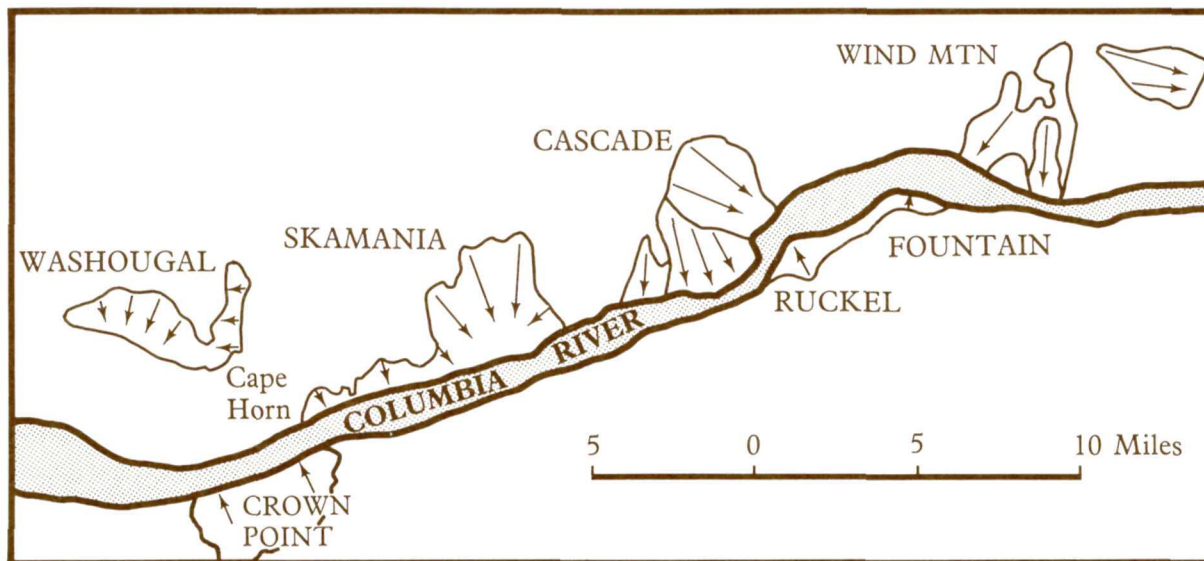
tributary valleys north and south of the Gorge repeatedly dammed the river. Eroded remnants of large volcanoes form Wind and Shellrock Mountains and Beacon Rock.

The Ice Age, beginning about 2 million years ago, consisted

of at least three major advances of the continental ice sheets from Canada down into northwest Washington. Extensive records exist of only the last advance, 53,000–12,000 years ago, and the Gorge itself records only the last 7,000 years of Ice Age events (19,000–12,000 years ago).

At that time, and probably also during earlier advances, a lobe of ice coming down the Purcell Trench in northern Idaho flowed up the canyon of the Clark Fork River, forming a 2,000-foot-high ice dam, and ponding an enormous lake, known as Lake Missoula, which extended for hundreds of miles up the valleys in western Montana. The lake contained 500 cubic miles of water, half the amount of present-day Lake Michigan. Each time the water level reached the crest of the dam, it broke out catastrophically and poured across eastern Washington, scouring out the dry falls and coulees which now characterize the plateau. The massive floods then surged through the Gorge, etching out many of its characteristics, as described later in the section on the Great Floods.

The oversteepening of the Gorge walls, particularly on the north side where the easily eroded Eagle Creek Formation formed the lower slopes, has since resulted in landslides covering over 50 square miles. The greatest slide area, north of Bonneville, covers 14 square miles. One lobe of this slide, which came down in about 1260 A.D., shoved the river a mile to the south and formed a 200-foot-high dam (Bonneville Dam is only 70 feet high!). It took perhaps 10 years for the lake behind the dam to fill and overflow, undoubtedly giving rise to the Indian legend of "The Bridge of the Gods." When the dam washed away, it left the Cascades of the Columbia.



Landslides cover an area of about 50 square miles in the Columbia River Gorge. The Cascade slide dammed the river about 1260 A.D.; the remnants of the slide formed the Cascades of the Columbia, now covered by the Bonneville dam impoundment.

A GUIDED TOUR

As one travels through the Gorge, evidence of outstanding geological events in the 50-million-year history of the Columbia River can be easily observed. The following is a sectional breakdown of the Gorge, describing the major geologic features that can be seen.

Portland to Crown Point. Traveling eastward on I-84 near Portland, one can view the flood plain of the Columbia River and the terraces flanking it. East Portland and the Troutdale area are underlain by gravels deposited by the Columbia when it stood at higher levels during the past million years. Even now,

about a million tons of sands, silt, and gravel are carried down the Columbia every year, and during past glacial ages, the Columbia "conveyer belt" probably carried more than ten times this amount of debris. The 1200-mile-long Columbia River and its tributaries are wearing the earth away in all of the State of Idaho, two-thirds of the State of Oregon, three-fourths of the State of Washington, and parts of Wyoming, Nevada, Utah, and British Columbia! This is an area of 250,000 square miles. An

average volume of 80,000–675,000 cubic feet of water per second flows past Vancouver, Washington.

Beneath the Terrace Gravels, there is a thick deposit of sands and gravels which geologists call the Troutdale Formation. This is a huge gravel fan deposited by the ancestral Columbia River as it debouched into the Willamette basin while struggling to maintain its course across the growing Cascade Range and through actively erupting late Pliocene-Pleistocene volcanoes. The 750-foot-thick section of Troutdale gravels exposed on the north bank across from Crown Point (west of Cape Horn) has large cobbles which are over 95% Yakima Basalt (Columbia River Basalt Group lavas). More significant, however, are the quartzite cobbles and pebbles which have been brought from extremely ancient rocks in the Rocky Mountains of British Columbia!

In the eastern part of the Gorge, near The Dalles, similar gravel deposits are called The Dalles Formation. Other, still older, sedimentary deposits of silts, sands, and gravels deposited by the ancient river can be found between flows of Yakima Basalt in eastern Washington.

The fact that the Cascade mountains are arched upward by folding of the earth's crust is clearly evident as you trace the Troutdale gravel deposits eastward through the Gorge. At Portland, the Troutdale gravels are well below sea level, under eastern Portland. Eastward in the Gorge, the formation is found at higher and higher elevations until at Bonneville, it is found at elevations of 2,000 feet above the Columbia River.

Crown Point to Bonneville. Along both the Oregon and Washington sides of the river east of Crown Point and Cape Horn, the black lava flows of Yakima Basalt are exposed and are continuously displayed along the Columbia River from here almost to British Columbia. Columbia River Basalt Group lavas poured out in a series of three major groups of lava flows, originating 200 miles to the east, and spreading out to eventually, over a period of 7 million years (17–10 million years ago),

cover over 50,000 square miles of eastern Washington and Oregon. One succession of lava floods, the Yakima Basalt, reached the sea south of Astoria. Some lava flows came only part way down the ancestral valleys.

One particularly interesting feature is the great bluff of basalt at Crown Point and the eroded basalts exposed at the Multnomah Falls area. These are remnants of a flow of Late Yakima Columbia River Basalt that filled an early river canyon more than 580 feet deep. These basalts now record one of the earlier courses of the ancestral Columbia River.

Bonneville Through Cascade Locks. The north side of the Columbia River from Cape Horn to 2 miles east of Wind Mountain is bordered almost continuously by extensive landslide debris flows. The debris flows head in the cliffs of the higher peaks and ridges. Of these, the largest and most typical is the Cascade landslide, between Bonneville and Cascade Locks. This 14-square-mile slide produced the Cascades of the Columbia about 700 years ago; now the Cascades are drowned by Bonneville Dam. Another great slide between Wind Mountain and Dog Mountain on the Washington shore is still active, moving up to 35 feet per year and causing much distortion of side roads, highway, and railroad. It is also forcing the Columbia River against the Oregon shore, as can be seen from the bulging toe of the slide on the Washington side of the river. The slide forced abandonment of a power transmission line (now relocated around the slide's upper end). Other landslides and debris flows of the same kind, but of a smaller volume, fill the lowlands between Cape Horn and Prindle, between Prindle and Archer Mountain, and between Archer Mountain and Beacon Rock.

The culprit in most cases is the thick clay soil developed on the surface between the Three Corner Rock Formation and the Eagle Creek Formation, which slopes gently (2–10°) toward the south and is deeply weathered to a slippery red clay. The slides on this old weathering surface have forced the Columbia River

southward against the Oregon shore, helping to produce the high cliffs on the south side and the more gently sloping surface on the north side. Rainwater penetrating the overlying permeable Yakima Basalt along numerous columnar and hackly fractures is transmitted deeper by fractures in the Eagle Creek conglomerates and sandstones. When the water reaches the Three Corner Rock formation, the clay absorbs the water and becomes plastic. As the Gorge was cut by the River, the vertically jointed formations above begin to fall, tilt, and slide downslope on this unstable and well-greased skidboard. This simple mechanism accounts for most major landslides and debris flows along the north side of the river.

Prior to the building of the modern dams, the Columbia floods were powerful enough to carry the debris away in most cases. The great Cascade Slide did force the river against the southern bank, causing a big, rounded bulge in the otherwise straight course of the river and the rapids at Cascade Locks. Prior to the building of Bonneville Dam, a canal with locks had to be built here to get around these rapids. The Cascades are the eroded remnants of a 200-foot-high temporary landslide dam which could be the basis of the Indian legend of the "Bridge of the Gods." Earlier lava dams are definitely too old to account for the legend.

Between Cascade Locks and Shellrock Mountain on the south side of the Columbia River, the outcrop trend of the slippery top of the Three Corner Rock Formation is just below river level, but the weight of the great overlying pile of basalt has squeezed it out to produce a bulge that has lifted up the freeway 50 feet.

Shellrock and Wind Mountains. These two gray masses of rock stand east of Cascade Locks as twin guardians of the Columbia River. Whereas most of the igneous rocks of the Columbia River Gorge have been formed from surface extrusions of mostly

basaltic lava and fragmental volcanic debris, these masses of dioritic igneous rock were forced up as liquid and cooled and solidified beneath the surface. At that time, more than 6 million years ago, the surrounding basalt formation still covered this area. The mighty Columbia has since cut down through the gray mass of diorite between Wind and Shellrock mountains, carving them into the separate peaks we now see.

Shellrock Mountain to Hood River. More than a hundred thousand years ago, Wind River Canyon, on the Washington side of the river, was filled up to an elevation of over 500 feet by gray basalt flows which poured down the canyon from Trout Creek Hill, 10 miles to the north, and entered the Columbia River on a front over a mile wide. Possibly reinforced by lava flows from local volcanic vents on the south side of the river, the flows blocked the Columbia River with a lava dam. The Wind River then built a delta at least 150 feet thick and a mile long into the lake above the dam before the Columbia River destroyed it.

West of Hood River another lava dam, built partly of yellow, glassy, basaltic, fragmental debris, which includes some "pillows," came from several different basalt volcanoes located on both the north and south sides of the Columbia. A remnant of this dam is well displayed in roadcuts just at the top of the grade west of Hood River. The rock is orange brown and looks more like a sediment than a lava rock. This rock was probably part of the Underwood Mountain volcano. The crest of Underwood Mountain can be seen above the cliffs across the Columbia River. The broad shield of this volcano is exposed in the cliffs beneath it, overlying east-dipping outcrops of Yakima Basalt.

Hood River to The Dalles. East of Hood River is a great north-south trending escarpment, marking the location of the Hood River Fault, the east side of which has been uplifted more than 2,000 feet. Looking across to the Washington shore farther east, we can see gently arched layers of Yakima Basalt, revealing the presence of a giant fold in the earth's crust. Such an uplift is

called an anticline and a downwarp is called a syncline. The Hood River Fault has been intermittently traced from 15 miles south of Hood River (where it disappears under younger lavas) to near Bend, in central Oregon, a distance of approximately 200 miles. Several small volcanic cinder cones and shield volcanoes are on the trace of the fault.

The Dalles. The Dalles (from a French word meaning “flagstone gutter”) describes the Long Narrows of the river here. Cliffs in The Dalles Formation contain remnants of an old lake bed. These beds have been dated on the basis of vertebrate fossils as about 5 million years old. East of The Dalles can be found the folds of The Dalles syncline and Ortley–Columbia Hills anticline in the Yakima Basalt.

Also around and in The Dalles can be found the best example of scablands. Possibly as many as 40 Bretz floods between 19,000–12,000 years ago swept across the Big Bend of the Columbia, ripping out The Dalles Formation. The floods washed away this formation in the syncline and tore out the underlying basalt columns and blocks, producing characteristic elongated little table lands, separated by undrained channels.

Around The Dalles there are many evidences of these floods which are better preserved in this semi-arid climate than farther west. The “waterline” appears high on ridges west of town; high gravel terraces can also be seen across the river to the north.

THE GREAT FLOODS

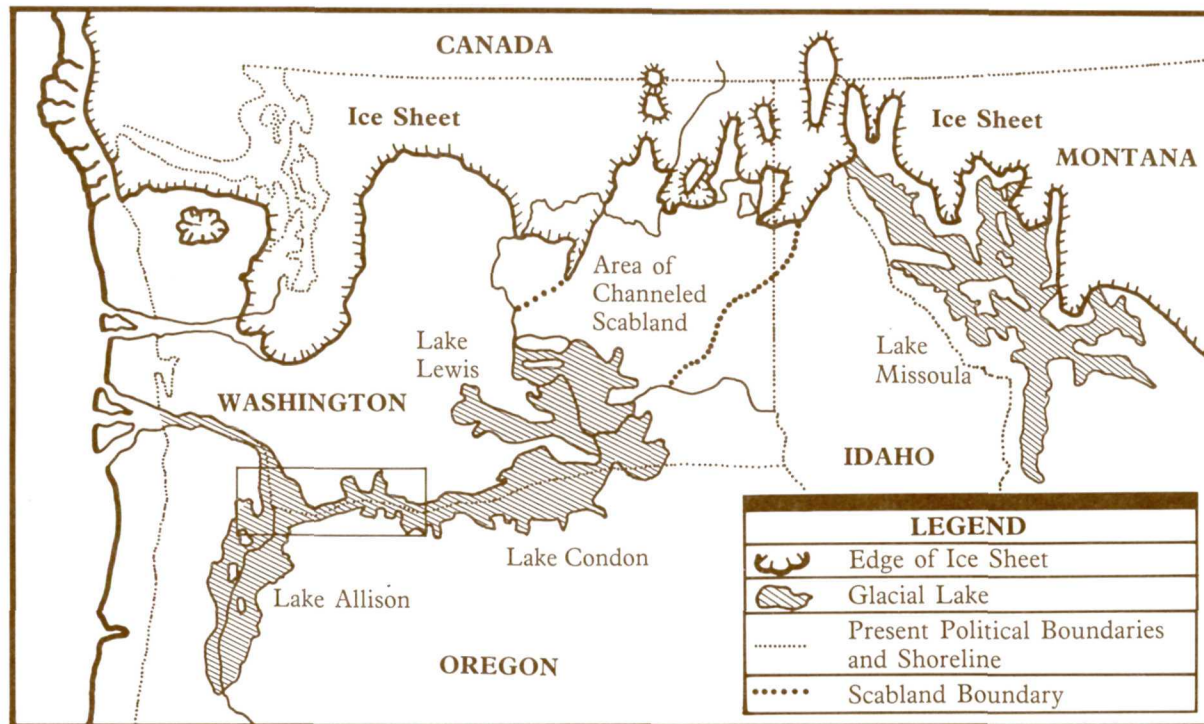
Towards the end of the Ice Age (19,000–12,000 years ago), a series of culminating catastrophies occurred in the Northwest when nearly 16,000 square miles of the Columbia River drainage basin was repeatedly sculptured by some of the greatest

floods known to humanity.* At least six times and possibly as many as 40 times, advances of the ice sheet from Canada into northeast Washington came far enough south to block the canyon of the Clark Fork River east of Lake Pend Oreille and form up to 2,000-foot-high ice dams. Behind these dams there formed a 3,000-square-mile lake extending at the 4,000-foot elevation for 250 miles to the east into Montana. This huge lake contained half the volume of Lake Michigan (500 cubic miles of water).

When the warming climate about 19,000 years ago reduced the height of the ice, and water overtopped the dams, they were swept away in a few hours and the Bretz Floods resulted. An estimated 380 cubic miles of water then poured out each time at a maximum rate of 9½ cubic miles per hour for at least 40 hours over the Big Bend country of eastern Washington, sweeping southwesterly across the Columbia Plateau. Ten times the combined flow of all the rivers of the world (60 times the flow of the Amazon River) carved out the soft silt (loess) and the basalt of the plateau beneath it into the multitude of dry coulees, falls, and barren channels which are characterized by the term “scablands.”

The floods first ponded in the Pasco basin, the low point on the plateau, and formed Lake Lewis. They poured upstream and ponded in the Yakima, Walla Walla, and Snake River valleys, and finally sought outlet down the Columbia River through the Wallula Gap into Oregon. It has been estimated that they came through the gap at a rate of 1.66 cubic miles of water an hour for two or three weeks. In comparison, the total water of the largest historical flood on the Columbia (1894) was about 2 cubic miles; the Bretz Floods were about 190 times this volume.

*These were first called the “Spokane Floods” from their origin somewhere north of Spokane; then “Missoula Floods” from the lake which covered Missoula, Montana. Prof. J. H. Bretz first described the features produced by the floods 50 years ago. The last series of up to 40 floods which occurred 19,000–12,000 years ago should be named after him. When earlier floods are referred to, we will use “Spokane.”



The southern extent of the last ice sheet is shown by the hachured line. South of the ice, nearly 16,000 square miles was flooded or ponded in four temporary lakes: Missoula, Lewis, Condon, and Allison. The Pacific shoreline was many miles west of its present position, due to lowered sea level.

The flood crests at Wallula Gap were about 1,200 feet; they spread out in Oregon to cover an area of 1,300 square miles in the Umatilla Basin, forming Lake Condon. The water poured down the Columbia, widening the valley and cleaning off all soil up to elevations of 1,000 feet as far as The Dalles. Blocks and boulders of granite and schist were floated along, frozen in icebergs to strand in tributary valleys. Hundreds of these "erratic" rocks have been found along the course of the flood. The lakes in The Dalles Basin covered nearly 100 square miles, in-

cluding the waters backed up in the valleys of Fifteenmile, Eightmile, Threemile, Mill, and Chenoweth Creeks. One large erratic was found at 970 feet elevation 10 miles from the mouth of Eightmile Creek. Deposits of poorly sorted gravels and lake silts occur in many of the tributary canyons along the Gorge up to elevations of 800 feet. In the Big Bend of the river at The Dalles, the floods removed substantial amounts of The Dalles

Formation, which once occupied much of the basin, and cut scabland channels and depressions into the underlying basalt, some to 225 feet below sea level! The lack of any soil below 1,000 feet on the valley walls is still easily observed.

The floods overtopped the Mayer State Park viewpoint and formed now-dry channels at several points on their way to the Hood River valley. At Hood River and downstream, there is little evidence that the floods rose to over 900 feet; the highest erratic found in the Hood River valley is at 800 feet.

Between Mosier and Crown Point, the surface of the Bretz floods dropped from 1,000 to probably a little over 700 feet. Many waterfalls in the Gorge top out at about 400 feet in elevation, suggesting that they are, in part, a result of the widening of the valley floor during these and preceding Spokane floods; the floods cut away the lower courses of the tributary streams and left high on the valley walls the hanging notches from which the falls drop.

The broad, recessed alcoves in which the major waterfalls lie could not have been formed by the floods or by water erosion that undercut massive lava flows in zones of weakness in the rocks. The alcoves are undoubtedly the result of spray from the falls, which seeped into the cracks of the finely jointed basalt, freezing and popping out small, brickbat-sized blocks of basalt. Over the thousands of seasons during and since the upper Ice Age, the several hundred feet of retreat could easily be accomplished, since the shaded south wall of the Gorge could repeatedly freeze and thaw during winter months. Spring freshets could then remove the finer material collected at the base of the alcoves.

In the Willamette Valley, floodwaters poured out into the Portland area and spread south as far as Eugene, forming Lake Allison, which covered 3,000 square miles. The waters rose, according to the evidence of erratics which have been found throughout the valley, to almost 400 feet.

In summary, the approximate elevation of the Bretz floods as they passed through the Gorge was 1,000 feet in the gap west of The Dalles, 900 feet just east of Hood River, 800 feet at Wind and Shellrock Mountains, 700 feet at Crown Point, and 400 feet in the Willamette Valley. North of Mt. Scott, only Mt. Tabor, Rocky Butte, and Kelly Butte stood above the waters.

The energy released by dropping 380 cubic miles of water from 4,000 feet elevation to 300 feet below sea level is equivalent to the explosions for 10 days of one fission bomb every 4 seconds, a hydrogen bomb every 36 minutes, or a Russian super bomb every 27 hours. If a flood came down during a 40-hour period, these would be multiplied by a factor of six.

If compared to the energy released by some major earthquakes, we get the following: 1½ times the energy generated by the largest known earthquake (magnitude 8.6); 9½ times the 1964 Alaska earthquake (magnitude 8.4); 191 times the 1906 San Francisco earthquake (magnitude 8.2); and 19 million times the largest earthquake felt in Portland (1962).

Plants and Animals of the Gorge

By Ruth Strong

The Columbia River Gorge is a unique ecological area. The Gorge is the only sea-level break in the Pacific Northwest's dominant mountain range, the Cascades, which rise as high as 4,000 feet on either side of the river. The mountains act as a "catch basin" for moist air moving off the Pacific Ocean.

Because of this catch-basin effect, there is a tremendous difference in the amount of precipitation within the Gorge. Average annual rain and snowfall at east Portland (airport) is 42 inches; this average increases rapidly eastward to over 100 inches at Wind River and 150 inches in the Bull Run area, immediately south of the Gorge; it then drops rather abruptly to 29 and 14 inches at Hood River and The Dalles respectively. Fall and winter account for 70 to 80% of the precipitation; springs and summers are relatively dry. Every few years, freezing winter rain (locally called "silver thaw") can make the highways in the Gorge almost impassable.

Temperatures seldom go below freezing for more than a few days at the lower elevations, but when they do, freezing spray from the waterfalls makes unusually spectacular ice displays. A particularly hard freeze in 1964 produced so much ice below Multnomah Falls that a miniature glacier over 500 feet long and 30 feet thick moved down the canyon below the falls and broke the abutments of the highway bridge east of the lodge. During the colder climate late in the last century, the entire river froze over many times.

PLANT LIFE

The Gorge is a diverse botanical area. Because of the shifting wind, the range of elevation, and varying precipitation, one finds an unusual distribution of plant growth. The prevailing southwest wind is carried up the river from the humid forest of the Pacific coast toward the arid semi-desert of the interior at The Dalles. Wintery east wind brings an arctic blast close to sea level below the 4,000-foot elevation of Benson Plateau and Nesmith Point. The Oregon side of the Gorge is furnished with shaded cliffs, deep-cut chasms, and wind-flung, year-round waterfalls. The Washington side depends on rainfall and catches on its unprotected shoulders the winds from both directions in the great trough. When you reach Shellrock Mountain and its twin across the River, Wind Mountain, you meet the influence not only of the interior desert, but the northernmost reach of the Californian-Klamath floral element, and also the plant migration from the Rocky Mountains. In less than one hundred miles between Portland and The Dalles, you have moved through western flora of incredible variety.

This complex gradient of vegetative communities within a small and well-defined area is of great interest to the botanist, and this botanical diversity also enhances the scenic qualities of the Gorge.

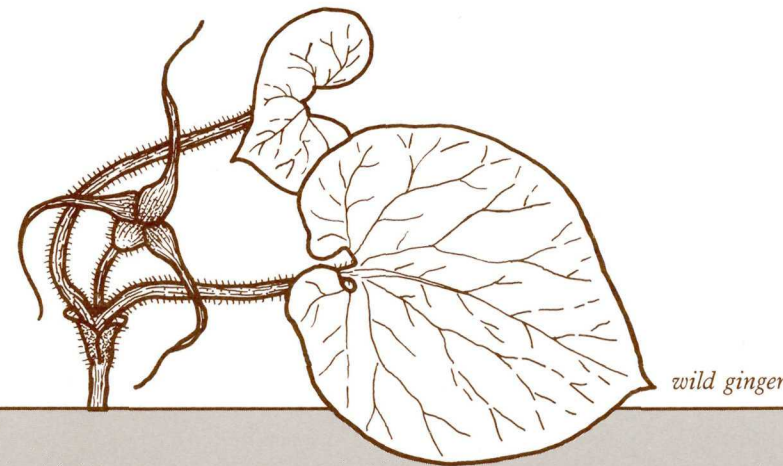
A significant characteristic of the Gorge is that 31 plant species which usually occur at elevations above 4,000 feet are found in the Gorge almost always below 1,600 feet. These plants, which are limited to the steep bluffs and cool canyons characteristic of the south wall, are isolated from the main portion of their populations. This interesting distribution is important in ecological studies.

One of the more interesting aspects of the Gorge is the many rare plant species it contains. Nine species can be found only within the Gorge. In addition, approximately 58 candidate

threatened and endangered species can be found in or near the Gorge. According to a survey of the Gorge study area done in the late 1970s, there are four sites within Oregon which are relatively unmarred and contain at least three of these proposed threatened or endangered species. These sites are owned either by the State of Oregon or the Nature Conservancy: John B. Yeon State Park, Crown Point State Park, Mayer State Park and Gov. Tom McCall Preserve on the Rowena Plateau. The Rowena Preserve is described as a pristine area with very few introduced species. Narcissus shooting star, Hall's goldenweed, and Thompson's ballhead waterleaf have all been found there.

As one travels through the Gorge, its botanical diversity can easily be observed. The following is a sectional breakdown of the Gorge, describing the diversity of ecological zones and characteristic plants found in these areas.

Troutdale to Shellrock Mountain. Leaving the metropolitan sprawl of Portland at the Sandy River, on the Oregon side of the Columbia, you enter the river bottomlands below Crown Point. Here you find a community of deciduous riparian vegetation. In these poorly drained, annually flooded areas, you will find black cottonwood (*Populus balsamifera* var. *californica*; *P. hastata*), Oregon ash (*Fraxinus latifolia*), and red alder (*Alnus*



wild ginger

rubra), along with various willows (*Salix* sp.), as the characteristic species of this community.

Looking up at the mountains from Rooster Rock, one sees the heavy forest cover with Douglas-fir (*Pseudotsuga menziesii*) predominating. There is an occasional stand of noble fir (*Abies procera*) and mingled silver fir (*Abies amabilis*) at high elevations from Larch Mountain to Benson Plateau. Near Angel's Rest is a grove of quaking aspen (*Populus tremuloides*) and along the skyline may be spotted the mountain species of alder (*Alnus sinuata*).

The moist, shady cliffs, the narrow, cool canyons, the sheltered, damp talus slopes present singular communities of plants. Here, you can see many types of ferns, such as sword fern (*Polystichum munitum*), licorice fern (*Polypodium glycyrrhiza*), and maidenhair fern (*Adiantum pedatum*).

Other plants that can be found include: wild ginger (*Asarum caudatum*), miner's lettuce (*Montia perfoliata*), wake-robin trillium (*Trillium ovatum*), fringe-cup (*Tellima grandiflora*), bishops-cap (*Mitella caulescens*), fairy-bell (*Disporum hookeri*), dutchmen's breeches (*Dicentra cucullaria*), bleedingheart (*Dicentra formosa*), and monkey-flower (*Mimulus* sp.).

Near Oneonta Gorge grow *Romanzoffia sitchensis*, which has no common name, and Howell's fleabane (*Erigeron howellii*), an endemic, beautiful plant, named after Thomas Howell, an early plant explorer. In some of the canyons on steep cliffs grows the rare mountain primrose (*Douglasia laevigata*). The bright blue camas (*Camassia quamash*) is on the rock ledges at Bridal Veil; the showy Nuttall's dogwood (*Cornus nuttallii*) flowers abundantly around Cascade Locks in early May. Each of these plants carries its own history in its Latin name.

Shellrock Mountain to Rowena Loops. The mountains change in appearance as the river widens above the ancient cascades of the Columbia. No longer forest covered and green, the mountains are now bare and brown in summer. Here the advance guard of yellow pine (*Pinus ponderosa*) straggles into openings and scrub



Douglas-fir

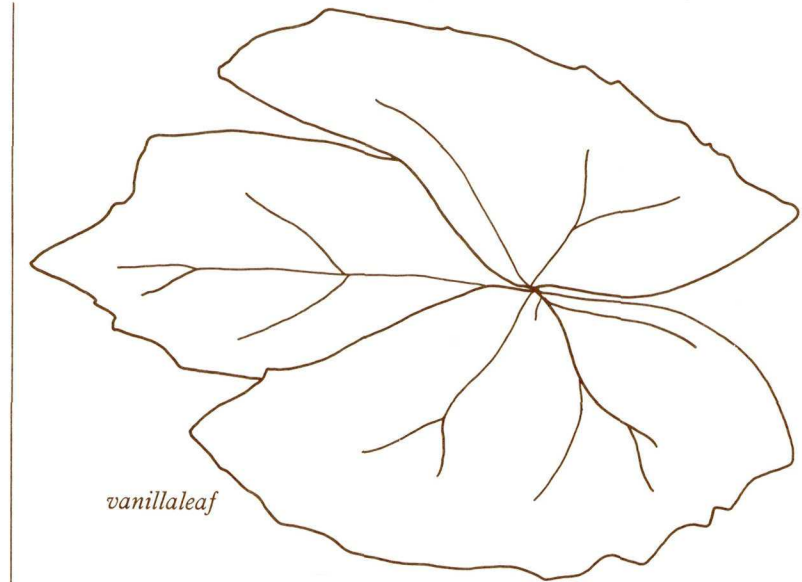
oak defends the dry rock ledges. These twisted pines are the same that grow in splendid array in the desert country south of Bend; this is the same oak (*Quercus garryana*) which lifts its proud head 90 feet into the sky in the deep, rich, alluvial soil of Sauvie Island just to the west of Portland. Here among the rocks grows that dreaded member of the sumac family, poison oak (*Rhus diversiloba*). In this area, most of the plants bloom in early spring.

Typical plants that can be found in this area include: serviceberry (*Amelanchier alnifolia*), reflowering currant (*Ribes sanguineum*), shooting star (*Dodecatheon poeticum*), prairie star (*Lithophragma parviflora*), bluedicks (*Brodiaea congesta*), purple parsley (*Lomatium columbianum*), and yellow bells (*Fritillaria pudica*). Every spring pilgrims return to the Mosier hills to delight in fields of *Erythronium grandiflorum*, each calling the flower with his or her own childhood name for the dogtooth-violet-fawn-lily, adder's-tongue, lamb's-tongue, trout-lily, or spring-lily.

Cape Horn to Wind Mountain. The traveler who starts up the River of the West at Vancouver on the Washington side will find his or her reward at the viewpoint at Cape Horn. From



Erythronium grandiflorum



vanillaleaf

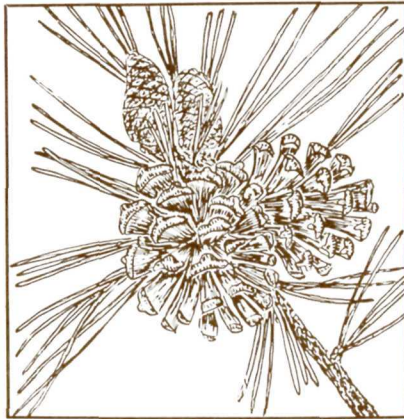
this vantage you see the whole sweep of the river as it cuts through the mountains. As you follow the north bank, you can find an early display of trillium in April, and the forest of Douglas-fir is mixed with western redcedar (*Thuja plicata*) and shaggybark yew (*Taxus brevifolia*). There are few waterfalls or creeks on this side, and they dry up after the spring runoff, but the undergrowth is heavy and green until late summer.

Species found in these areas include: cascara or chittam bark (*Rhamnus purshiana*), indian plum or osoberry (*Oemleria cerasiformis*), red elderberry (*Sambucus racemosa*), hazelnut (*Corylus cornuta*), ninebark (*Physocarpus capitatus*), bittercherry (*Prunus emarginata*), snowberry (*Symphoricarpos albus*), Oregon grape (*Berberis nervosa* and also *B. aquifolium*), and salal (*Gaultheria shallon*).

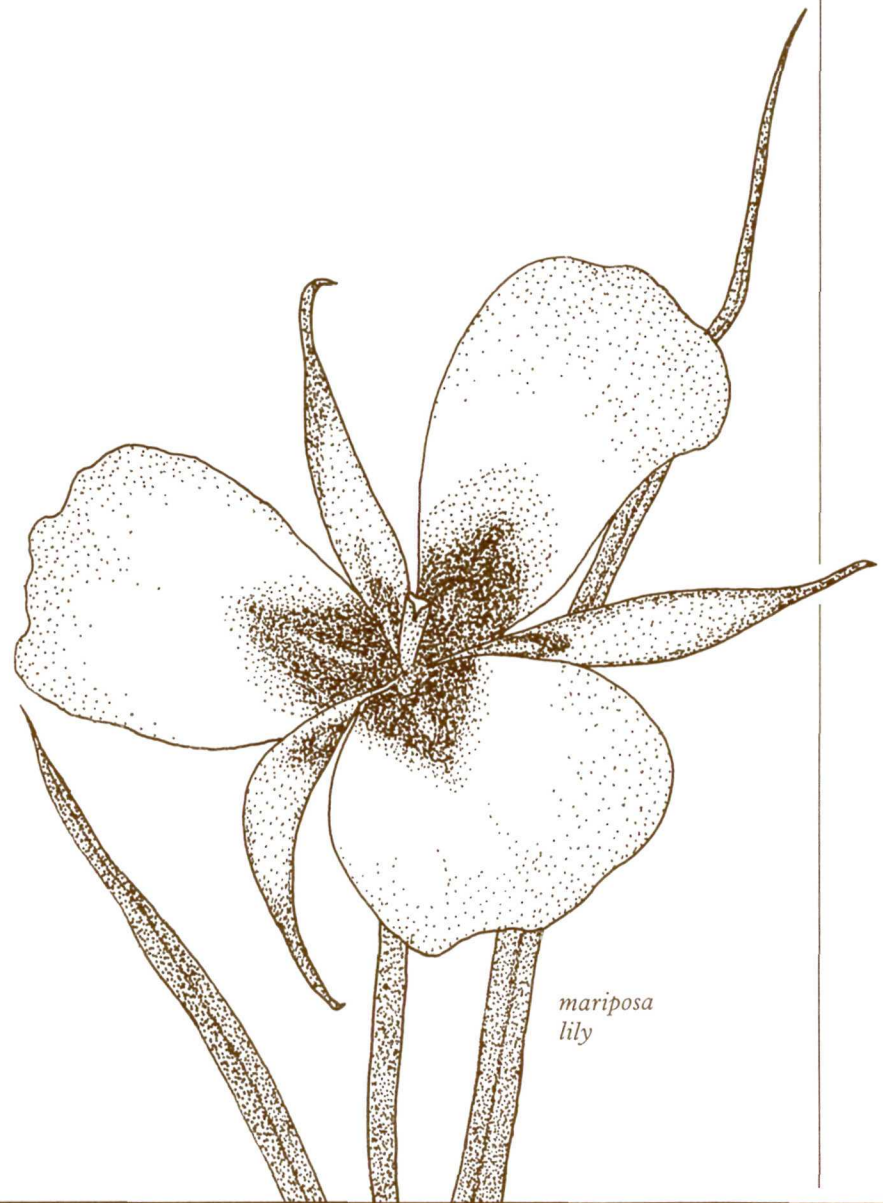
On the forest floor is an abundance of spring flowers which include: inside-out-flower (*Vancouveria hexandra*), twinflower (*Linnaea borealis*), vanillaleaf (*Achlys triphylla*), foamflower

(*Tiarella unifoliata*), bead lily (*Clintonia uniflora*), dwarf dogwood (*Cornus canadensis*), yellow violet (*Viola glabella*), spring beauty (*Cardamine pulcherrima*), and mission bells (*Fritillaria lanceolata*).

Wind Mountain to Bingen. At Wind Mountain as you continue along the north bank the composition of the forest gradually shifts from Douglas-fir to ponderosa pine. Looking up to the 2,400-foot level on Dog Mountain, you can see wide, bare slopes which are covered in early June with balsamorhiza (*Balsamorhiza deltoidea*). In the dry talus rockslides of Wind Mountain beside the highway is the lemon yellow blazing-star (*Mentzelia laevicaulis*), which may be found in the plains of Montana south through Nevada and Utah. On the hillsides near Bingen is the California poppy (*Eschscholzia californica*), keeping company with another migrant from the south, the blue and white wild-lilac (*Ceanothus integerrimus*), reaching from Baja California to the Klickitat River. Among the lava ledges can be found such species as: camas (*Camassia quamash*), wild onion (*Allium* sp.), death-camas (*Zigadenus venenosus*), mariposa lily (*Calochortus macrocarpus*), clarkia (*Clarkia quadrivulnera*), western haw (*Crataegus douglasii*), and *Sedum spathulifolium*.



*ponderosa
pine*



*mariposa
lily*

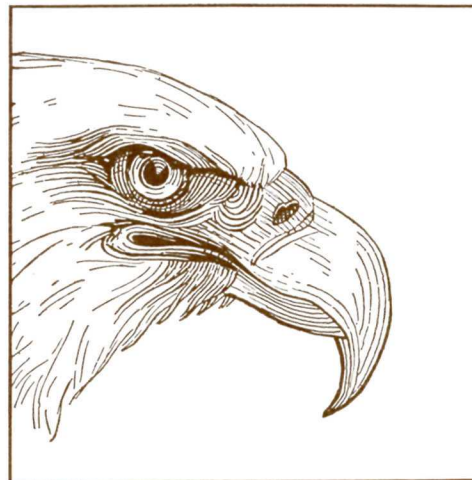
Bingen to Wishram. The lava terraces in this area provide a peculiar habitat for spring-blooming plants. In winter, the arctic east wind refrigerates the barren slopes; in summer the same wind brings the hot, dry air from the interior desert, but in the spring there is a fast, heavy runoff from high-ridge drainage. On this anticline is one of the few widespread displays of bitterroot (*Lewisia rediviva*) west of the Rocky Mountains. Barrett's penstemon (*Penstemon barrettiae*) and several species of desert parsley (*Lomatium* sp.) precede the spread of balsamroot (*Balsamorhiza* sp.). Sagebrush (*Artemisia* sp.) is a conspicuous announcement of dry scabland, but along the river are often fine, large bushes of syringa or mock orange (*Philadelphus lewisii*), and on a sand bank opposite Memaloose Island is a magnificent golden currant (*Ribes aureum*). Hackberry (*Celtis reticulata*) makes an obstinate appearance in the inhospitable rocky canyons. The ancient origin of the hackberry may suggest to the traveler that in this short reach of less than one hundred miles from Vancouver to The Dalles he or she has moved through a rendezvous of plants arranged as if for display to the learner's eye.

This summary does not indicate exclusive range of a plant mentioned, nor does it include more than a few species that grow in this area. But it does give a taste of the rich botanical variety and diversity of the Columbia River Gorge.

ANIMAL LIFE

There is a great diversity of wildlife within the Gorge, largely because of the great variety of vegetative communities and the variance in climatic conditions.

A number of threatened or endangered species are found in the region. Some of these are included on the U.S. Fish and



bald
eagle

Wildlife Service's *List of Candidate Endangered and Threatened Wildlife and Plants*. Five of these species—western spotted frog, northern spotted owl, northern bald eagle, Arctic peregrine falcon, and Aleutian Canada goose—may currently be found within the Gorge. The last two are only winter migrants. Two other species, American peregrine falcon and the Columbian white-tailed deer, were historically present in the Gorge.

The western spotted frog is considered by the Oregon State Department of Fish and Wildlife to be threatened. This frog is being outcompeted in western Oregon by the introduced bullfrog, and in eastern Oregon it may be threatened by competition from the leopard frog.

The northern spotted owl is also considered by the Oregon Department of Fish and Wildlife to be threatened. This rodent-eating owl depends on dense old-growth stands for habitat. Logging has reduced the amount of old-growth stands throughout Washington and Oregon, and therefore threatens the northern spotted owl population.

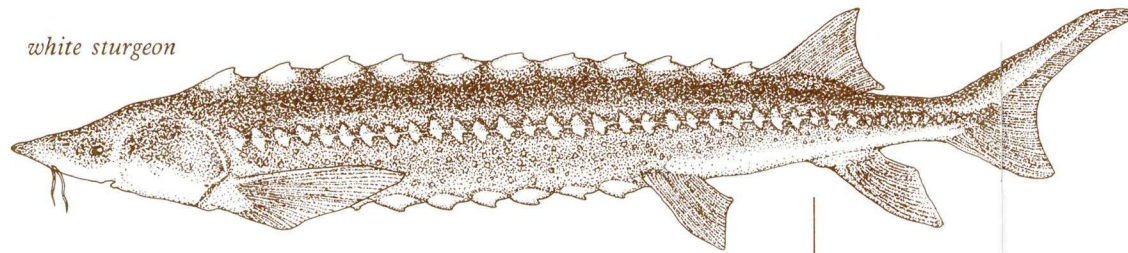
In this area the northern bald eagle is considered by both the U.S. Fish and Wildlife Service and the Oregon Department of Fish and Wildlife to be threatened, and it is included on the list of species of special interest in the State of Washington. It has been suggested that the decline in the bald eagle population within this area is due to the loss of nesting habitat, and the decline in salmon fish.

The American peregrine falcon is also considered by both federal and state authorities to be endangered, and it is on Washington's list of species of special interest. This bird historically bred in Oregon, although no active nests are now known. A two-year survey of historical nest sites was initiated in 1978, and a recovery plan is being developed for the Pacific Coast states.

Although the State of Oregon recognizes only 12 species as threatened or endangered, 17 other mammals, reptiles, and amphibians, and all nongame birds except the starling and house sparrow, are also protected from any hunting, trapping, buying, or selling by the state Fish and Wildlife Commission's administrative rules. These mammals, reptiles, and amphibians include: the fisher, pika, collared lizard, leopard lizard, short-horned lizard, sharp-tailed snake, Larch Mountain salamander, Oregon slender salamander, and tailed frog.

Many species of both game and nongame fish can be found in the Columbia River drainage. The largest fish found in inland waters of the United States, the white sturgeon, is most numerous in the Columbia and Snake rivers, although its range extends in the Pacific from Alaska to California. Both the flesh and the roe of this species are highly valued for food. Overharvesting in the past has necessitated careful regulation to ensure the maintenance of a fishable population.

The salmon is another fish of prime recreational and commercial importance to the area. The chinook, coho, sockeye, and chum salmon are all found in the Columbia River. These fish require unspoiled water. The construction of dams, overfishing,

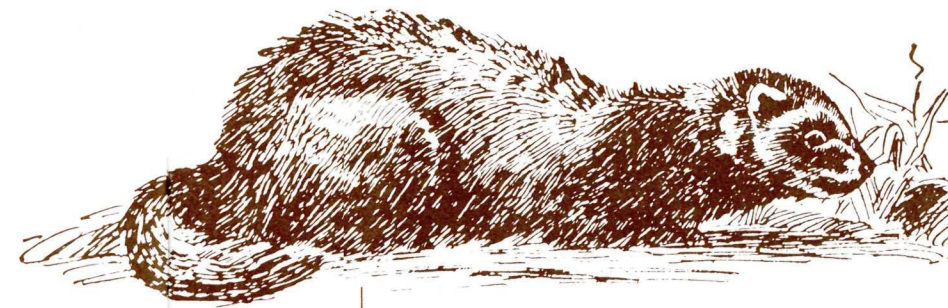


white sturgeon

and poor land management practices have caused a tremendous reduction in the number of salmon once found in the river.

Many salmon runs are nearing extinction. Efforts by federal and state agencies and Indian tribes are under way to protect and enhance the dwindling salmon stock in the Columbia River drainage area. A 20-year plan designed to "preserve, protect, and enhance" the anadromous fish of the Columbia River is being implemented under the Pacific Northwest Power Act of 1980.

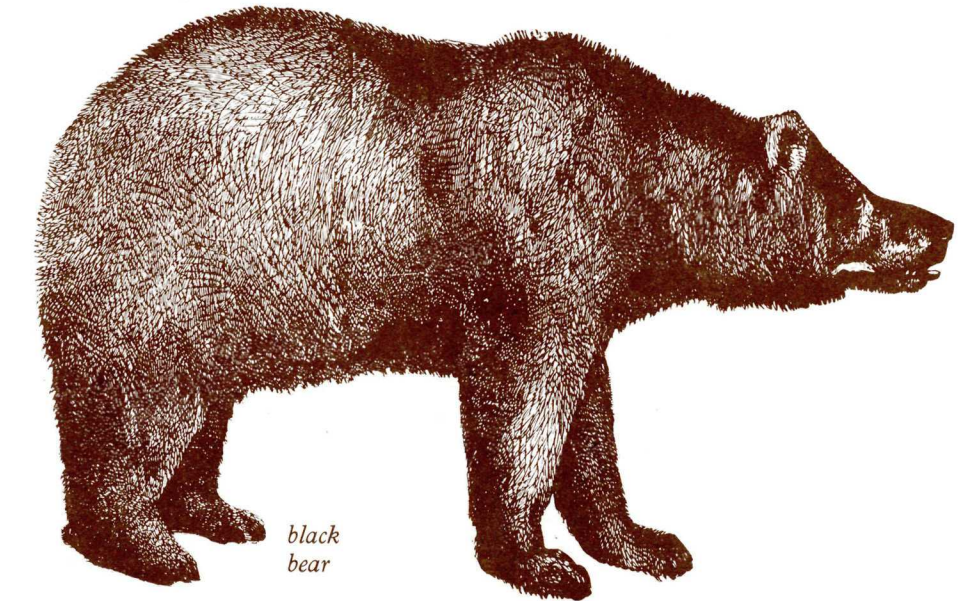
The white sturgeon, American shad, eulachon, and Pacific lamprey are all migratory fish of commercial and recreational importance. Lamprey are of cultural interest to local Native American populations. Other fish found in the area include the northern squawfish, chiselmouth, peamouth, and many species of suckers, sculpis, sticklebacks, daces, and shiners. Many of these fish are included on the Washington Department of Game's list of species of special interest. Other warm-water game fish which are found in the river and backwater sloughs include bass, varieties of panfish, and the walleyed pike.



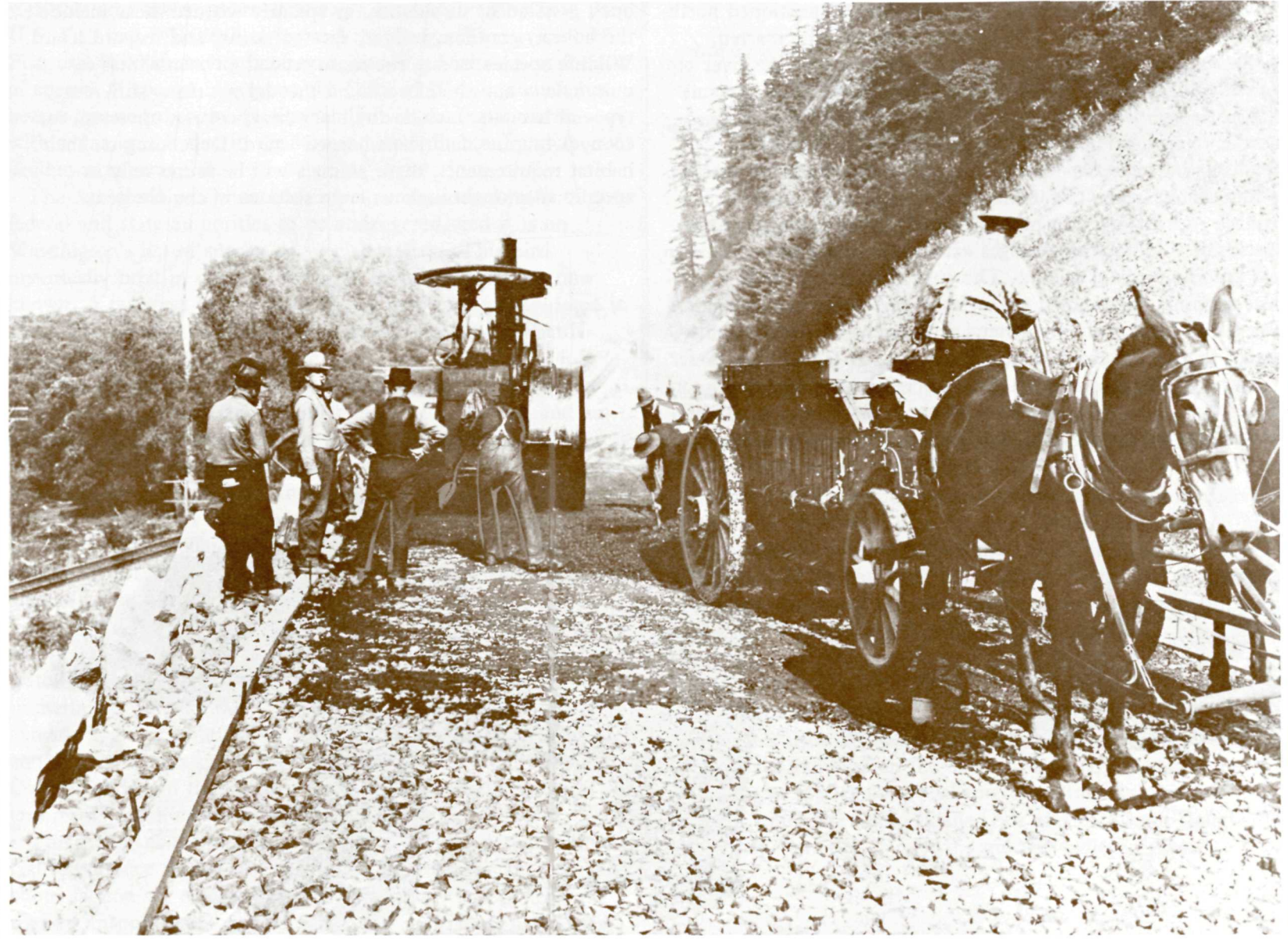
otter

Some wildlife species, such as the previously mentioned northern spotted owl, require very specific habitats. The marten, mountain lion, fisher, lynx, and to a certain degree the river otter, all require extensive wilderness areas. Beaver need streams and lakes with hardwood trees on the banks. The Oregon slender salamander is found in moist Douglas-fir, maple, hemlock, and redcedar forests. The Larch Mountain salamander is found only in the Columbia River Gorge at the base of basaltic rock outcrops in moist, dense Douglas-fir stands. Other species of wildlife whose ranges extend into the area can exist in less specific types of habitat. The striped skunk, mountain beaver, mink, sharp-tailed snake, and short-tailed and long-tailed weasels all have relatively general environmental requirements, except that all require areas close to water. A few species prefer mixtures of forests and open areas, especially the edges between these vegetation types; they include the mule deer, black-tailed deer, white-tailed deer, elk, and red fox. Species that range in

open grasslands, shrublands, or sparsely wooded areas include the bobcat, gray fox, badger, spotted skunk, and leopard lizard. Wildlife species having the most general environmental requirements, and therefore found throughout many different types of habitats, include the black bear, coyote, opossum, raccoon, porcupine, and short-horned lizard. Depending on their habitat requirements, these animals will be found only in specific sites or throughout large sections of the Gorge.



black bear



Oregon Historical Society, Negative No. 11770

Development of the Gorge

By Michael S. Spranger

EARLY SETTLEMENTS

Recent archaeological studies show that men and women have lived in the Columbia River Gorge for the past 12,000 years. One of the earliest settlements was found near The Dalles, where archaeologists found remnants of a village site that was flourishing over 10,000 years ago.

These first village sites were semi-permanent, due to the migratory nature of the early people. However, as they became more dependent upon the Columbia River fishery, semi-permanent and permanent villages became prevalent along the river. The river became both a food provider and a highway for these people.

Anthropologists state that the Columbia River banks from The Dalles to Cascade Locks once were lined with longhouses, built from cedar planks and usually sunk 2 to 4 feet into the ground. These houses were large (25 by 40 feet was a common size). They were usually occupied by more than one family, or by an extended family, separated by wooden partitions. A fire pit extended down the center of the lodge and sleeping platforms were built along the walls.

The early explorers, such as Lewis and Clark, encountered many Indian villages as they traveled through the Gorge in 1805-06. In fact, the first descriptions of this ancient civilization came from the journals of Lewis and Clark, for the Indians left no written record.

Road building. Early Columbia River Highway.

Prior to the white explorers, it is estimated that there were many thousands of people permanently settled between The Dalles and the Cascades. This was one of the most densely populated areas in the United States prior to European settlement and expansion. These Indian settlements thrived on the tremendous bounty of the natural resources in the Gorge. They lived off the resources of the river and forests, depending on hunting, fishing, and gathering.

European settlement of the Gorge came about in the mid-1800s. The white settlers, in a short time, effectively eliminated the Indian population and settlements, through disease (such as smallpox) or by displacing and relocating the people on Indian reservations.

The early settlers came to the area with the promise of a new life on new land. Western migration was stimulated by the Donation Land Claim Act in 1850, the California gold rush, railroad land grants in the 1850s and 1860s, and the Homestead Act of 1862. Traveling along the Oregon Trail, many of the settlers passed through the Columbia River Gorge on their way to the fertile Willamette Valley.

But some settlers did not go as far as originally intended, and settled in the Gorge. Reasons varied as to why people settled in the Gorge. Settlements were founded because of planned and unplanned events, such as an irreparable wagon axle, an ailing offspring, or a disheartened spouse. Wherever settlements grew, there was some underlying reason or economic value attached to the local resource base which promoted this growth.

For example, the first permanent white settlement, the Wasco Methodist Mission, was established in 1838. Established primarily to "convert" the Indians, the mission also served as an aid station to early settlers. Now the present-day The Dalles, this was the end of the Oregon Trail. Settlers too tired to travel any further began to settle in this area. Construction of a fort in 1850 increased the livability of the area. Also, The Dalles was the end of the line for early steamboat travel, and the supply

business prospered. The city became an important trading center in the 1860s in response to the gold rush in Idaho and eastern Oregon. The Dalles became a favorite wintering spot for soldiers and miners. In the 1860s there were over 25 saloons in the city to occupy their time.

The city of Cascade Locks began as a small sawmill operation established by Roger Attwell. By 1860 over 50 people lived in the area; many were single men who worked in a boat building yard, helped construct a portage road around the treacherous rapids, or worked in the logging camps. Known as The Cascades, the name of the city was changed to Cascade Locks in 1878 when the federal government began construction of a canal and locks around the rapids.

The city of Hood River was first occupied by white settlers in the 1850s. The first permanent settlers, among them Nathaniel Coe, filed a donation land claim in 1854 on land which is now in the present-day city. This was only one of four such claims which were approved. The first school was built in 1863, and in 1867 a road from The Dalles was completed. By 1880, there were 17 families living in the area. In 1881 the town was platted.

To anyone who agreed to erect a building immediately, land was given at no charge. However, a "prohibitory whiskey" clause was inserted in these early deeds, presumably to prevent the spread of saloons in the city center. The town was incorporated in 1894.

At the site which became known as Warrendale, Frank Warren constructed a salmon cannery in 1876 to take advantage of the tremendous runs of salmon. The cannery prospered with the emergence of the fishwheels in the 1880s. The swift water along the Cascades created a number of these profitable fishwheel sites. Settlements soon sprang up nearby. For example, the settlement of Dodson, named after Ira Dodson, was the site of P. J. McGowan's salmon cannery, constructed in the 1880s. Other canneries and small settlements were established near the



Dalles City, 1867.

Cascades and Celilo Falls.

Many of these early settlements no longer exist; those that do may have different names. For example, the first official town on the Washington side of the Gorge was known as Cascades. This settlement was the landing place in portaging around the impassable Cascade Rapids.

The Cascades Post Office was established in 1851 and was the only post office on the Washington side of the Gorge for 13 years. Also in 1851 Francis Chenoweth built the first "railroad" in the Gorge. This railroad had wooden rails with a small four-wheel flatcar pulled by a mule. It was built to help the early settlers carry their precious belongings over the two-mile portage around the rapids.

With the Washington Territory legislature creating Skamania



Warrendale Cannery.

County in 1853, Cascades became the county seat. The settlement prospered until it was nearly wiped out by a flood in 1894. The previous year, the county seat had been moved to Stevenson under mysterious circumstances.

Cascades became known as North Bonneville in the 1930s with the construction of the Bonneville Dam. In the late 1970s, the town was leveled to make way for the second powerhouse at the dam. North Bonneville was relocated several miles downstream from its original location.

Stevenson, the present county seat of Skamania County, was originally known as Shepherd's Point by the early rivermen. Here, thousands of cords of wood were loaded on scows, the wood to be used to fuel the steamboats which burned over four cords an hour. In 1853, only one white family lived in this area. In 1863, a small, log-cabin school was built by Felix Iman and

John (Nels) Nelson near Rock Creek. In 1893, George Stevenson, a fisherman, purchased part of the Shepherd land claim and platted out a new town which he named after himself. He soon sold lots to the pioneers, and by 1896 there were over 28 people living in the new town. Also in 1896, the first store was established in Stevenson; settlers no longer had to row across the river to Cascade Locks to purchase groceries.

Many of these early settlements took the name of early pioneers and explorers. Wyeth, a small railroad station, took its name from Nathaniel J. Wyeth, an early American trader and patriot. The community of Underwood took its name from Amos Underwood who came to the Gorge in 1852 at the young age of 18. Other early settlements had their names changed frequently, as settlers moved in and out. For example, the little town of Skamania has been known as Fresedale, Marrs Landing, Mendota, Butler, Butler's Landing, Edgewater, and Skamania in its 100 years of existence. Also, Dallesport has been known as the Falls, Grand Dalles, Rockland, North Dalles, and Dalles Fort, over its 150-year history.

Thus, early settlements occurred in the Gorge largely in response to the resources and resource-based industries which developed in the late 1800s. Many of these early settlements grew, paving the way for further development, bringing the Gorge into the 20th century.

TRANSPORTATION

Transportation networks have played an important part in the development of the Gorge. Transportation systems were developed originally to aid in the movement of people and supplies through the obstacles (rapids and rough terrain) in the Gorge. These systems also served to break up the isolation of

the early white settlers in the Gorge, tying them to the rest of the continent. Development of these systems also accelerated settlement of the region.

The first transportation in the Gorge was by foot or water. For centuries, Indians traveled by foot along trails carved out of the rugged terrain, or by canoe on the Columbia River. These routes were well traveled and well known.

Thousands of Indians traveled along these routes each year, bringing their trade goods to the trading area at the Long Narrows. Here, many different Indian cultures mingled, traded, fished, and played.

Early white explorers, such as the Lewis and Clark Expedition, used these same trails as they traveled through the Gorge. Lewis and Clark established the Gorge as the transportation corridor for the white settlers who soon followed.

After an arduous 2,000-mile journey along the Oregon Trail, these early settlers had to find a way around the treacherous rapids in the Gorge. At The Dalles, they often loaded their

belongings onto rafts or boats and began the precarious journey down the turbulent Columbia. Portages had to be made at river trouble spots, such as the Great Cascades of the Columbia. Local Indians often assisted these families, deriving income from a toll they levied on each family using this trail.

The Great Cascades was the main roadblock in traveling through the Gorge. For approximately 100 years (1840s–1930s), new transportation systems were developed to ease passage through and around this trouble spot.

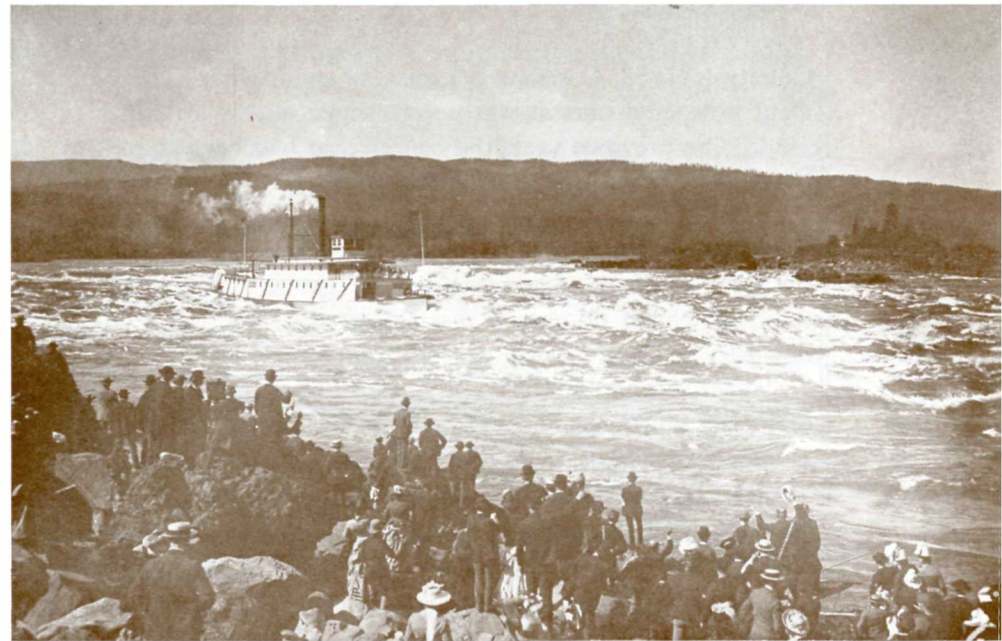
In 1845, the Barlow Toll Road was developed. This steep toll road was built up and around the south side of Mt. Hood, connecting The Dalles with the Willamette Valley. After the road was established, many settlers chose this arduous overland route, rather than risking the float down the Columbia River.

The Great Cascades, 1895.

Oregon Historical Society, Negative No. 329



Steamer going over the Cascades.



In 1851, Francis A. Chenoweth built a wooden-railed portage around the Great Cascades to move people and goods around these rapids. This was the first “railroad” in Washington, consisting of a four-wheeled flatcar pulled by a mule.

Steamboat travel began on the mid-Columbia in 1850. Steamboats soon dominated travel on the Columbia and in the Gorge. In fact, they were often the only means of communication for early settlements. Steamboats also provided a livelihood for many settlers. Since the steamboats burned up to four cords of wood an hour, cutting cordwood became the main source of income for many. Wood was carried to the river by flumes, with scows sailing much of this wood up to The Dalles.

Steamboat traffic transformed the Columbia River into a busy commercial highway; however, even these powerful stern-wheelers could not ascend the falls and rapids of the Gorge, so control of steamboat travel on the river depended on control of the portages at the Great Cascades and Celilo Falls (The Dalles).

In the early 1860s, the Oregon Steam Navigation Company was formed by a group of competitive rivals under the leadership of Capt. John Ainsworth. Through shrewd business deals and helped by several floods, the OSN gained a monopoly on Columbia River transportation, including all of the portages. In 1862, the company brought the Oregon Pony, the first locomotive in the Northwest, to the Eagle Creek–Cascade Rapids portage to carry its passengers between steamboats. Also in 1862, the north side portage railroad was extended to 6 miles. The Ann, a locomotive modeled after the Oregon Pony, began operation as north shore activities expanded.

These steamboats were a boon to developing the Gorge, but they only served the main route through the Gorge. People journeying to communities away from the river had to walk or rent horses and wagons from livery stables. Several stage coach lines



OSN works, lower Cascades, 1867.

Oregon Historical Society, Negative No. 21103 Watkins

were developed between areas such as White Salmon–Trout Lake and Dallesport–Goldendale. Also, ferry service was developed to link both sides of the Gorge together. Ferry boats began service at important crossings such as the Cascades, Hood River, Underwood, The Dalles, and Maryhill. Some of these ferries remained in service until the 1950s.

Steamboats dominated travel in the Gorge until the 1880s when the first railroad was completed through the Gorge. Henry Villard’s Oregon Railway and Navigation Company began a railroad into the Gorge in 1880, and the transcontinental railroad was completed in 1883, connecting Portland to Minnesota, via the Northern Pacific. The following year, the ORN was connected to the Union Pacific. Railroad baron James J. Hill built the Spokane, Portland, and Seattle Railway, now the Burlington Northern, along the north bank of the Gorge in 1908. Competition was so fierce that railroads were built up both banks of the Deschutes for many miles before a compromise was reached.

Completion of the railroad network accelerated settlement of the Gorge and its environs, enabling people to obtain needed equipment and supplies and to sell their produce in distant markets for high prices. The railroads had finally provided a safe, efficient land route through the Gorge, around the treacherous rapids.

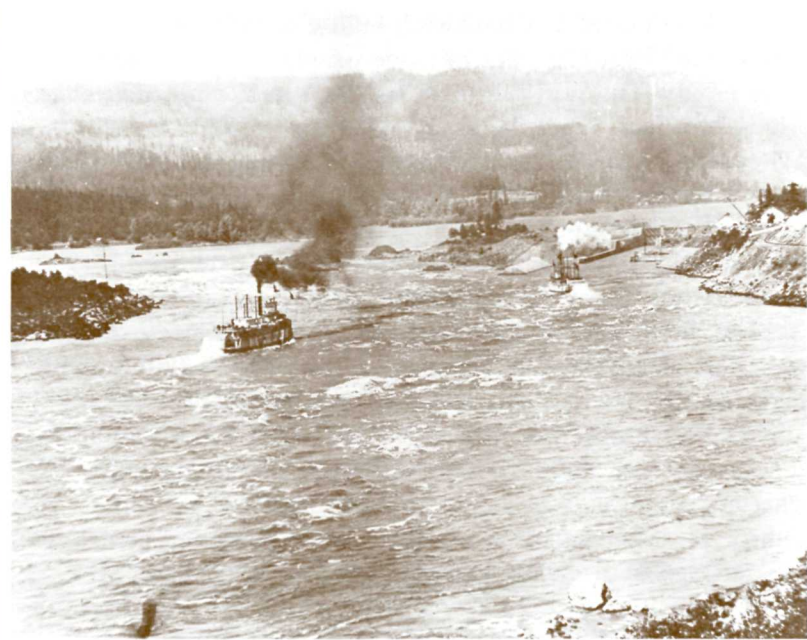
The federal government was also trying to find a way to circumvent these rapids, providing a safe water route through the Gorge. In 1874, Congress authorized a study of the cost and practicability of a canal and locks to bypass the Great Cascades of the Columbia. This would make the land portages unnecessary.

Work began on the canal and locks in the fall of 1878. However, due to mismanagement, poor weather, shortages of materials, and lack of federal funds, the locks and canal were not completed until November 1896. The canal was 90 feet wide, and 3,000 feet in length, and consisted of two locks. The new canal and locks meant that steamboats could now travel as far as The Dalles. However, by this time river travel had begun to decline because of competition from the railroads. Remnants of the canal and locks can be seen today at Cascade Locks.

The federal government also provided funds for a canal and lock at the Long Narrows and Celilo Falls. Authorization for this canal was given by Congress in 1904. In 1915, an 8-mile-long canal, 65 feet wide, consisting of a series of five locks, bypassed the Narrows and Celilo Falls. Unobstructed river passage was now possible as far as Lewiston, Idaho. However, river travel had nearly vanished at this time, due to the railroads. River traffic would not have a resurgence until major dams with locks were built on the Columbia between 1930–1970s.

The Long Narrows and Celilo Falls canal and lock system were flooded after completion of The Dalles Dam in 1957. As the 19th century came to a close, the Gorge could no longer be considered a frontier area. In the early 20th century, people became aware of the need for better roads in the Gorge. A drive to build a highway into the Gorge on the Oregon side began in 1909, but interest waned after only a few short sections were completed.

An influential railroad attorney, Sam Hill, son-in-law of the



wealthy railroad baron, James J. Hill, revived this project several years later. Sam Hill was obsessed with building a quality road similar to the roads of Europe. With the hiring of the famous engineer, Sam Lancaster, and with the support of influential leaders, such as John B. Yeon and Simon Benson, Hill was able to secure the necessary public funds from people on the Oregon side of the Gorge and construction of the highway began in 1913. In less than two years this highway was completed, connecting Portland with Hood River. Upon completion, the highway became the first major paved road in the Pacific Northwest, and with its stone bridges, tunnels, and harmonious setting, was immediately recognized as an aesthetic work. In constructing the highway, artisans from Europe were brought over to help build the dry masonry sections of the highway.

In 1916, President Woodrow Wilson, seated in Washington, D.C., pushed a button which unfurled a flag at Crown Point, officially dedicating the highway. This also marked the beginning of the construction of the Vista House, a memorial to the early pioneers, at Crown Point. This structure was dedicated in May 1918. The Columbia River Highway opened up the Gorge for expanded recreational uses, causing a great tourist trade to flourish. Tourism pressure spawned the development of many state and federal recreational sites, and encouraged the construction of Multnomah Falls Lodge and many other tourist facilities.

Today about one-third of the old highway is still in use in the two scenic loops over Crown Point and Rowena Crest. After 1949, two-thirds of the original roadway was abandoned or destroyed between Warrendale and Mosier, with the construction of a low-level Gorge highway. Many miles of abandoned highway exist today, with bridges, stonework, and roadway intact but endangered. Between Hood River and Mosier, nearly 5

miles of highly scenic abandoned roadway exist. The highway is a National Historic Landmark.

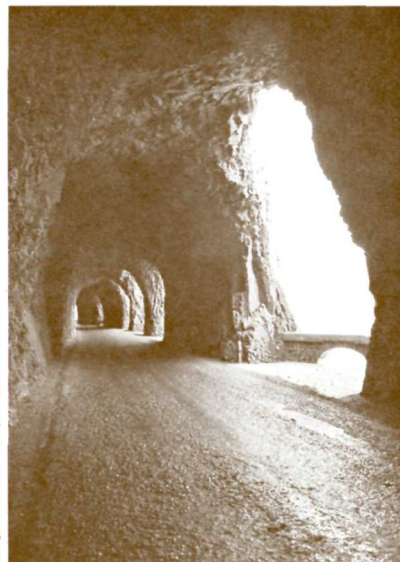
A lesser-known, but equally interesting, highway was constructed on the Washington side of the Gorge. Now known as the Lewis and Clark Highway (Washington 14), it never equalled the beauty or construction firsts of the Columbia River Highway. But when it was completed it was heralded as Washington's answer to connecting western and eastern Washington together by roadway.

The original idea for this road came shortly after the Indian Wars of 1856–1858. The government felt a military road should be built between Ft. Vancouver and Ft. Walla Walla, where there still was some Indian unrest. A survey was made in the 1860s, but there was little construction. By this time, steamboats had become the preferred mode of travel. However, by the 1900s, the numbers of new settlers who were homesteading in Washington made legislators realize that a road was needed on the north side of the Gorge.

Money was set aside by the state legislature and work started



Oregon Historical Society, Negative No. 42381



Oregon Historical Society, Negative No. 38745



Preceding page:

Cascade Locks, 1908.

Left: Crown Point Vista House.

Middle: Mitchell Point Tunnel, Columbia River Scenic Highway.

This tunnel no longer exists. It was destroyed during construction of the modern, water-level highway.

Right: approach to Mitchell Point Tunnel.

on the north-bank highway. Deciding there was no longer a need for a road to Walla Walla, the road was to now link Vancouver with Pasco. Completed in 1907, the first roadway was little more than a goat's path—narrow, rock-studded, and dangerous—but it did connect the Washington communities in the Gorge together.

In 1929, the "Shed Bridge," as it became locally known, was built along the cliffs of Cape Horn. For years, the cliffs had been an obstacle to road construction. This bypassed the old Washougal Valley section of the highway. Today, tourists can still travel through the Columbia River Gorge on this highway, part of Washington's Scenic Highway System.

In the 1950s, a modern, water-level highway (now Interstate 84) was completed on the Oregon side, greatly shortening travel time and increasing the availability of the Gorge and its resources to the Portland metropolitan area. In 1982, the I-205 bridge was completed between Portland and Vancouver, just below the start of the Gorge. This bridge will increase the demand for recreational opportunities within the Gorge and may spur additional development on the Washington side.



Left: bridge at Latourell,
Columbia River Scenic Highway.
Right: Bonneville Dam construction,
1936.

Oregon Historical Society, Negative No. G1 817

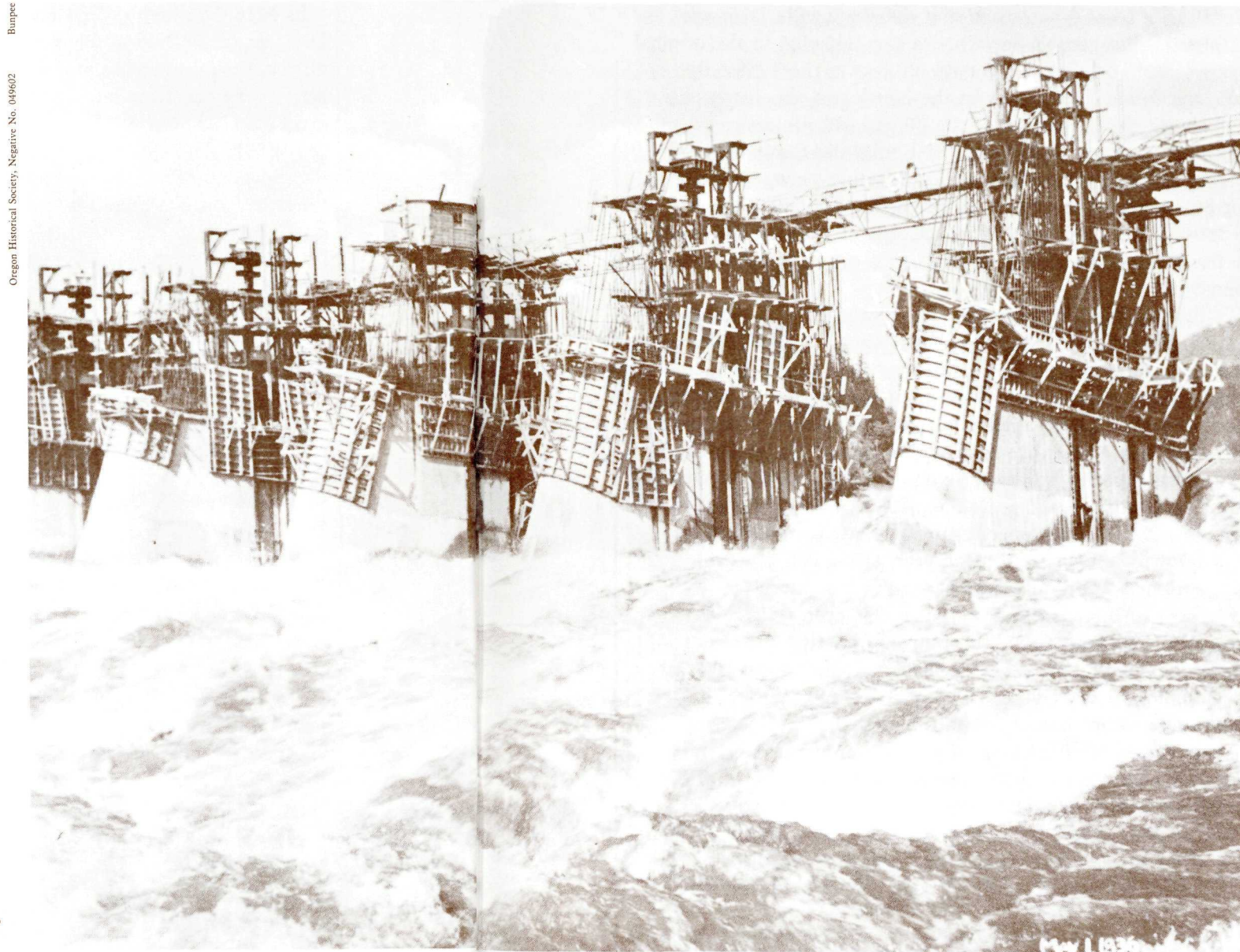
WATER DEVELOPMENT

The early development and settlement of the Gorge area was similar to other regions of the nation, in that water was the key to settlement—to facilitate transportation and to satisfy personal needs. Early water development projects were aimed at improving the transportation capability of the river. The locks constructed at the Cascades (Cascade Locks) and the Long Narrows (The Dalles) around the turn of the century improved the ability to transport goods and services along the Columbia. However, competition from the railroads prevented a viable water transportation network until the construction of the major dams between 1930-1970.

The construction of the Bonneville Dam, which began in the 1930s, drastically changed the shape and character of the Gorge. The dam marked the dawn of hydropower in the region. It provided jobs during the Depression years, increased the navigational capability of the river, and generated electricity for use in the home, farm, and workplace. It also had negative effects. It disrupted the life cycle of the salmon, destroyed traditional Indian fishing grounds, drowned the turbulent, but beautiful, rapids, and marred, to some extent, the wild scenic qualities of the Gorge.

The Bonneville Dam was constructed in the Depression years, due to the efforts of Senator Charles McNary of Oregon and President Franklin D. Roosevelt. McNary wanted a dam to provide upriver navigation. Roosevelt wanted a dam to provide jobs and power. He felt the energy would be needed for farm, home, and industry. Industry would come to the region because of the available electricity, and take the Pacific Northwest off its roller-coaster economy.

Construction of Bonneville Dam provided over 3,000 jobs for workers employed under the Public Works Act. President



Bumpe

Oregon Historical Society, Negative No. 049602

Roosevelt approved starting construction in the summer of 1933. Congress did not “legalize” construction of the dam until August 30, 1935, with passage of the River and Harbor Act. The Dam was dedicated by President Roosevelt in September of 1937 at a completed cost of \$31 million. It was named after Capt. Benjamin Bonneville, West Point graduate, mountainman, explorer of the Oregon country, and hero of Washington Irving’s book, *The Adventures of Captain Bonneville*.

The building of Bonneville Dam and Grand Coulee Dam, which was constructed at the same time, marked the beginning of the most active water development period in U.S. history. During the next 30 years, the Columbia River and its tributaries were dammed more than 190 times for power production, irrigation, flood control, navigation, and recreation.

Today, the river system has been developed into the largest hydroelectric energy system in the world, despite early skepticism that the power would ever be needed. Bonneville Dam, which was the first federal hydroelectric project on the Columbia, was dubbed by several national magazines as a “white elephant” and “dam of doubt” during its construction by the U.S. Army Corps of Engineers.

Today, these Pacific Northwest dams provide one-half of the total hydroelectric capacity of the United States. The river is one of the most highly developed river systems in the world.

Water development in the Gorge has continued to the present day, and will probably continue in the future. In the 1950s, The Dalles and John Day dams were constructed in the eastern end of the Gorge. These dams brought more power to the region and increased the transportation capability of the river. These dams also flooded Celilo Falls, the most famous Indian fishing site on the Columbia, as well as other traditional Native American fishing sites. Many Native American pictographs and petroglyphs, which depict the early culture of these people, were also flooded and forever lost.

In 1982, a second powerhouse at the Bonneville Dam was completed. This second powerhouse was included in the original congressional authorization for the project in the 1930s. By 1965, the demand for power in the Northwest was increasing steadily and the limitations of the 30-year-old project were becoming apparent. That year, the Bonneville Power Administration, the agency responsible for marketing power from the Northwest federal dams and for projecting regional energy needs, asked the Portland District Corps of Engineers to study the feasibility of increasing hydroelectric generation at Bonneville.

To fully utilize the water stored at newer dams upstream, such as Libby Dam in Montana, Dworshak Dam in Idaho, and three large reservoirs in Canada, it was decided that Bonneville would have to be enlarged. With eight main turbine-generator units producing 66,500 kilowatts each, the second powerhouse will more than double the current generating capacity of the dam. Total capacity will then be about 1.1 million kilowatts, or 1.1 billion watts. Based on its 558,200 kilowatt capacity, the second powerhouse could meet the energy needs of 110,000 typical Northwest homes for one year. Or, it could provide the energy needed to produce 92,000 tons of aluminum.

The cost of this second powerhouse has been estimated at \$600 million. Other costs also occurred. Altering the river’s course and shoreline brought permanent change to the face of the Columbia River Gorge. Digging a new channel for the powerhouse meant loss of habitat for fish and wildlife. And early construction required more than just uprooting trees and relocating roads and railway. The residents of the town of North Bonneville had to be safely moved to a new townsite.

Relocation of North Bonneville was, itself, a major undertaking. This effort to relocate residents and businesses marked the first time federal funds were spent to plan, design, and develop a

new community in connection with a water resource project.

The \$35 million relocation project included raising the new townsite above the 100-year flood plain, construction of streets, utilities, lighting, sewage system, water supply, and sewage-treatment plant, flood protection, parks, a central business district, and all public buildings. Town siting required highway and railway relocation. And residents and businesses were furnished temporary housing until they could build their own permanent homes and facilities. The new town was built for 600 inhabitants. Town residents celebrated its dedication in July 1978.

Presently, another major project has begun. The replacement of the original Bonneville Locks is under way. Constructed in the 1930s, this lock has often constituted a bottleneck on the system. Often barge tows had to be broken up to pass through the lock since it is somewhat smaller than all the other locks on the river. As a result, barge traffic often backed up, causing delays. After years of study and political debate, a new and larger lock is being built. Construction of this new lock will make all locks of the Columbia River uniform in size (86 by 674 feet). Proponents of the new lock claim it is the key to the Northwest in its quest to remain a major exporter of agricultural products. However, others point out that the Gorge will once again be altered due to human efforts to develop and conquer the obstacles of the Gorge.

COMMERCE

Commerce and economic development in the Gorge are closely tied to its rich natural resources. The abundant natural resources enabled a highly developed Indian culture to evolve

and prosper for centuries. Early settlers lived off these resources by trapping, farming, lumbering, fishing, and mining. Modest trade centers developed and served as the focal point for goods and services in the region.

Being tied to its natural resources, the economy of the Gorge was cyclical. A boom-bust economy has persisted ever since the white settlers and explorers entered the Gorge.

In assessing the resources of the region, Lewis and Clark found it a good area for trapping and agriculture. Fur trading became the first dominant industry in the area. Such men as John Jacob Astor and Dr. John McLoughlin developed and exploited the fur trade. Under the direction of Dr. McLoughlin, the Hudson Bay Company established fur posts throughout the region. The HBC not only dominated the fur trade in the early 1800s, but also became engaged in exporting lumber, fish, and agricultural products. These goods were shipped as far away as Alaska, Hawaii, and South America. These early traders exploited the resource. This exploitation, coupled with a declining market and change in taste, spelled the doom of the fur trade industry by the late 1800s.

The timber industry also has experienced a cyclical economy. The early settlers used the surrounding timber to build their homes, and for heating and cooking. Logging became a major industry in the mid-1800s. The introduction of steamboats and gold rushes combined to provide practical markets for the wood. Steamboats burned over four cords of wood an hour. Cutting firewood for the steamboats became a major source of income for the early settlers.

Firewood was also needed in the eastern communities of the Gorge, such as The Dalles, for cooking and heating. The only other alternative was the use of coal from Wyoming. Thus, in the 1860s, wood bought for \$1.25 a cord at the Cascades sold for \$4.50 a cord at The Dalles. Logs were brought down from the mountainside by flumes to the river. Sail-powered scows



Oregon Historical Society, Negative No. 44851

*Left: loading fish for the cannery, Miller Sands.
Next page: fishwheel.*

then hauled the wood upstream. The scows were 80–90 feet long, and could carry up to 100 cords per trip. At The Dalles, these scows were beached, and horse-drawn wagons were used to unload the firewood.

Construction of the railroads around the turn of the century increased the development of the timber industry. With the eastern forest depleted, logging the giant virgin evergreens became the region's major industry. Logs were brought down to the river and railroads by flume (a 9-mile-long lumber flume can still be seen on the Washington side of the river on the cliffs above Drano Lake), or by steep incline railroads powered by "steam donkeys." These "steam donkeys" started many forest fires. Because of the intense logging pressure and fires, such as the infamous Yacolt Burn of 1902, the forests were rapidly decimated. For example, the Yacolt Burn encompassed an area of 800 square miles, or 28 miles square, destroying an estimated 12 billion board feet of timber. The fire also killed over 30 people, left hundreds homeless, and caused over \$14 million dollars

in damage. Later great fires in 1910 and 1929 totaled 2½ million acres burned, about 4,000 square miles or an area 63 miles square.

Fisheries of the Columbia were yet another industry which experienced a cyclical economy. Salmon was once the region's most prized and abundant resource. It has been estimated that the Indians, using their primitive fishing methods, annually caught over 18 million pounds of fish.

In the mid-1800s, new technologies were used to produce much larger catches. The development of the technology for canning salmon in the 1860s by Andrew Hapgood and others proved to be an effective way to preserve and market the product.

Gillnets, fishwheels, and horse-seines were used to catch the bountiful salmon for the canneries which sprang up along the river.

Fishwheels were an ingenious, efficient way to harvest the

salmon. These water-powered contraptions lifted the salmon clear of the water and dumped them into a box. Samuel Wilson built the first fishwheel on the Columbia in 1879. By 1899, there were 76 in operation. A good fishwheel could harvest an average 100,000 pounds of salmon a year. In 1913, one fishwheel caught 70,000 pounds of salmon in one day.

Most fishwheels were erected by canneries. Two families, the Warrens and the Seuferts, owned about one-third of the wheels. The Warrens operated a cannery near the Cascades, and the Seuferts operated a cannery near Celilo Falls. Fishwheels were outlawed by 1934.

Horse-seining was also an efficient way to catch the salmon. Fishermen using seines pulled by horses could regularly catch thousands of pounds of fish. One fisherman in 1921 caught 60,000 pounds of fish in one hour. This method of fishing was finally outlawed in the 1950s.

The salmon fishing industry reached its peak in 1883 with a reported catch of 42 million pounds. Since that time, the catch has dwindled to an average annual catch of 5 million pounds. This tremendous reduction has been the result of over-harvesting, poor mining, agricultural, and logging practices which have silted spawning grounds, and the construction of major dams along the river which altered the life cycle of the salmon and eliminated their spawning grounds.

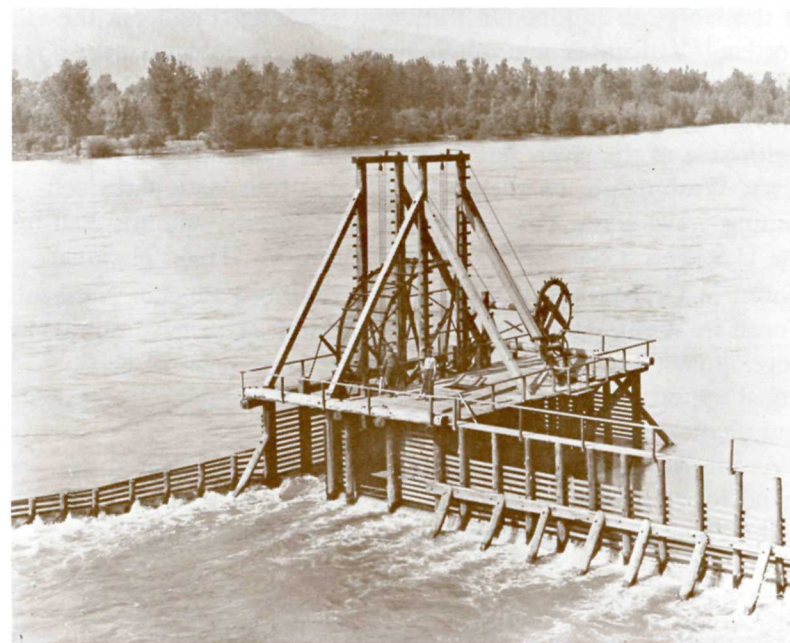
The development of the Gorge for transportation and power also contributed to the cyclical economy of the region. Boom towns developed during the building of the railroads, roadways, and locks and dams. After this construction period, these regions suffered a tremendous economic downswing, taking many years to recover.

Today, there are four major economic activities in the Columbia River Gorge: agriculture, forestry, manufacturing, and tourism. Wheat, corn, small grains, fruit (apples, pears, cherries, and grapes), and livestock products are the principal agricultural commodities. Although most of these products are exported

from the Gorge (mostly by rail and truck), several canneries process the fruit locally. Orchards are located in the Hood River valley, the White Salmon River valley, between Mosier and Rowena Point, and above The Dalles. Cattle grazing and pasture lands are primarily on the north side of the river, including areas above Wishram and Dallesport, the Klickitat River valley, the White Salmon River valley, and in an area between Cape Horn and Washougal.

More than one-half of the commercial firms in the Gorge are involved in forest management, harvesting, processing, or the manufacturing of wood products. The most extensive commercial forest-harvesting activity is on federal, state, and private lands in the State of Washington. Specific locations are state lands in the Wind River valley, federal lands in Gifford Pinchot

Oregon Historical Society, Negative No. Gi 7492



National Forest, and private lands north of Wind, Dog, and Underwood mountains, and in the Little White Salmon River valley. In Oregon, some forest harvesting is taking place on private lands between Mitchell Point and Hood River, and immediately east of Hood River. Most logging involves predominantly Douglas-fir forests. Forestlands are also heavily utilized for recreational purposes, including hiking and nature appreciation.

In addition to fruit canneries and lumber mills, aluminum reduction plants and port facilities are the other major economic activities. The major cities and towns in the Gorge have active commercial and retail areas which provide goods and services to the region. Most industrial and commercial activities in the Gorge take place within or near these urban and rural centers.

Tourism is an economic activity that is rapidly becoming more important in the Columbia River Gorge. The western end of the Gorge is only about 30 minutes driving time from the Portland-Vancouver metropolitan area, which contains over one million people. The natural and scenic qualities of the Gorge provide many recreational outlets for the tourist. Oregon, on the south side of the river, has 26 state parks containing 6,356 acres. Washington, on the north side, has four state parks containing 5,194 acres. Part of two national forests, administered by the U.S. Forest Service, lie in the Gorge: Mt. Hood National Forest in Oregon has 38,000 acres and Gifford Pinchot National Forest in Washington has 5,069 acres. Both areas have minimal development and essentially provide the same type of recreational opportunities as the state parks, such as hiking, camping, and picnicking.

As tourism grows in the Gorge, there will be increased demand for related wholesale and retail trade and services. This will further expand the economic activity of the region.



Highway dedication at Multnomah Falls, 1916.

MANAGEMENT

For the past 12,000 years, men and women have been attracted to the riches and beauty of the Gorge. The Gorge has been readily recognized as “a special place.” The Indians viewed the Gorge as a sacred place. The early explorers, such as David Douglas and Thomas Nuttall, discovered its unique ecological diversity. The settlers found the Gorge to be a place to settle and establish their new homes.

Despite the recognition of the Gorge as a special place, users have not always treated it kindly. Attempts to utilize, manage, and develop the resources of the Gorge have resulted in overuse, abuse, and exploitation of some of the special features and resources.

Since the turn of the century, there has been much discussion and controversy over the resources of the Gorge and how they should be managed, developed, and preserved.

In 1905, there was debate over the use of Beacon Rock for ballast in Portland and at the mouth of the Columbia River for rock jetties. Henry Biddle finally bought Beacon Rock, saving it from the rock crushers; it was later turned into a State Park. In 1915, the Department of the Interior mentioned the “incomparable panorama of the Columbia Gorge” in its Annual Report. Also, during this time, Samuel Lancaster was developing the Scenic Highway, giving careful consideration to preserving the unique features of the Gorge.

In the 1930s, with the completion of Bonneville Dam, there were claims that cheap electric power would create a “Pittsburgh of the West” within the scenic walls of the Gorge. In 1937, the Pacific Northwest Regional Planning Commission called for special protection of the Gorge.

In the 1950s, plans to clearcut several regions of the Gorge created much controversy. This issue led to the establishment of the Oregon Gorge Commission. A movement also sprang up

from this conflict which placed 4,000 acres in the Gorge under public ownership as parks and preserves.

In the 1970s and 1980s, debate over the management and development of the Gorge continued. Concerns about urbanization, industrialization, and damage to special resources led to studies by federal, state, and local agencies.

All of these studies are concerned with how the scenic qualities and natural resources of the Gorge should be managed and preserved. Proposed management schemes range from strong federal management to exclusively local management. There are wide differences of opinion. Despite these differences, one common thread is apparent—almost everyone feels that the Gorge is significant and unique, and is a special place.

What does the future hold? As so often in the past, the Gorge will continue to be the scene of struggle and conflict over management of its resources. The Gorge has survived past battles and has been somewhat resilient. Hopefully, today’s men and women will recognize the finite, unique natural and scenic qualities of the Gorge and will find a way to manage these treasures for future generations to experience and enjoy.

12. *Broughton Reach*. Farthest point of English Captain Broughton's ship during his expedition up the Columbia River in 1792.

13. *Portland Women's Forum State Park*. Natural rock promontory with exceptional vistas.

14. *Rooster Rock State Park*. Oregon State Park named for prominent rock spire (a landslide block) along the Columbia River.

15. *Crown Point State Park*. Designated National Natural Landmark; exceptional vista and view of Gorge. Crown Point Vista House was built as a memorial to the pioneers and is on the National Register of Historic Places.

16. *Old Columbia River Scenic Highway*. Significant highway, on the National Register of Historic Places. The highway was completed to Hood River in 1915. It

was extended eastward in 1917. *The Columbia, America's Great Highway Through the Cascade Mountains to the Sea 1915-1926*, by Samuel Lancaster, is one reference which tells about the origins of this very significant development, which for the first time opened the Gorge to wagon and automotive transport.

17. *Lawton Creek*. Natural watershed for fish spawning; upper reaches are fragile, untouched, and almost pristine; many wildflowers; possible potable water source for Reed Island.

18. *Mount Pleasant Landing*. One of many historic steamboat landings along the Columbia and Snake rivers. The colorful stern-

wheelers flourished and persisted through two periods of history, but they were unable to compete with the railroad when it was completed through the Gorge on the Oregon side in 1883. Still, some steamboats were making regular runs until about 1915.

19. *Mount Pleasant Upland Farms*. Significant scenic open space and hay meadowland area.

20. *Latourell Falls*. Outstanding waterfall.

21. *Mt. Zion*. Extinct volcano; outstanding vista of Gorge.

22. *Cape Horn*. A significant rock; scenic vista. The early voyagers named this headland after

the tip of South America because it was so difficult to double in a wind. There are some faint pictographs and petroglyphs at the base of the cliff.

23. *Sand Island*. Natural, unaltered Columbia River island.

24. *Shepperd's Dell*. Outstanding botanical area.

25. *Distillery Point*. Here in the 1880s Dr. Ferdinand Candiani made whiskey from potatoes. Dr. Candiani immigrated to the United States from Italy with a number of his

Archer Mt. 34



45 Hamilton Mt.

north shore of the Columbia River in the Gorge.

34. *Archer Mountain and Archer Falls*. Significant geological landform; habitat for the endemic Larch Mountain salamander.

35. *Larch Mountain*. One of the highest accessible viewpoints of the Columbia River Gorge.

36. *Oneonta Gorge and Falls*. Outstanding, unique botanical area; a narrow, stream-cut gorge and waterfalls. Fossil forest between the lava flows.

37. *Horsetail Falls*.

38. *St. Peter's Dome*. Prominent basalt pinnacle.

39. *Dodson, Oregon*. Named after Ira Dodson. P. J. McGowan's Bucheit salmon cannery was constructed here in the 1880s.

40. *Historic Indian Village Site: Wahclellah*. One of the major villages on the Columbia. Captain Clark wrote "14 houses remain entire, nine others appear to have been lately removed, and the traces of ten or twelve others of ancient date were to be seen at the rear of their present village." The occupants were in the process of moving to The Cascades and Oregon City Falls for the fishing season, and they took

their boards with them to erect their summer residences, generally on permanent frames left for the purpose.

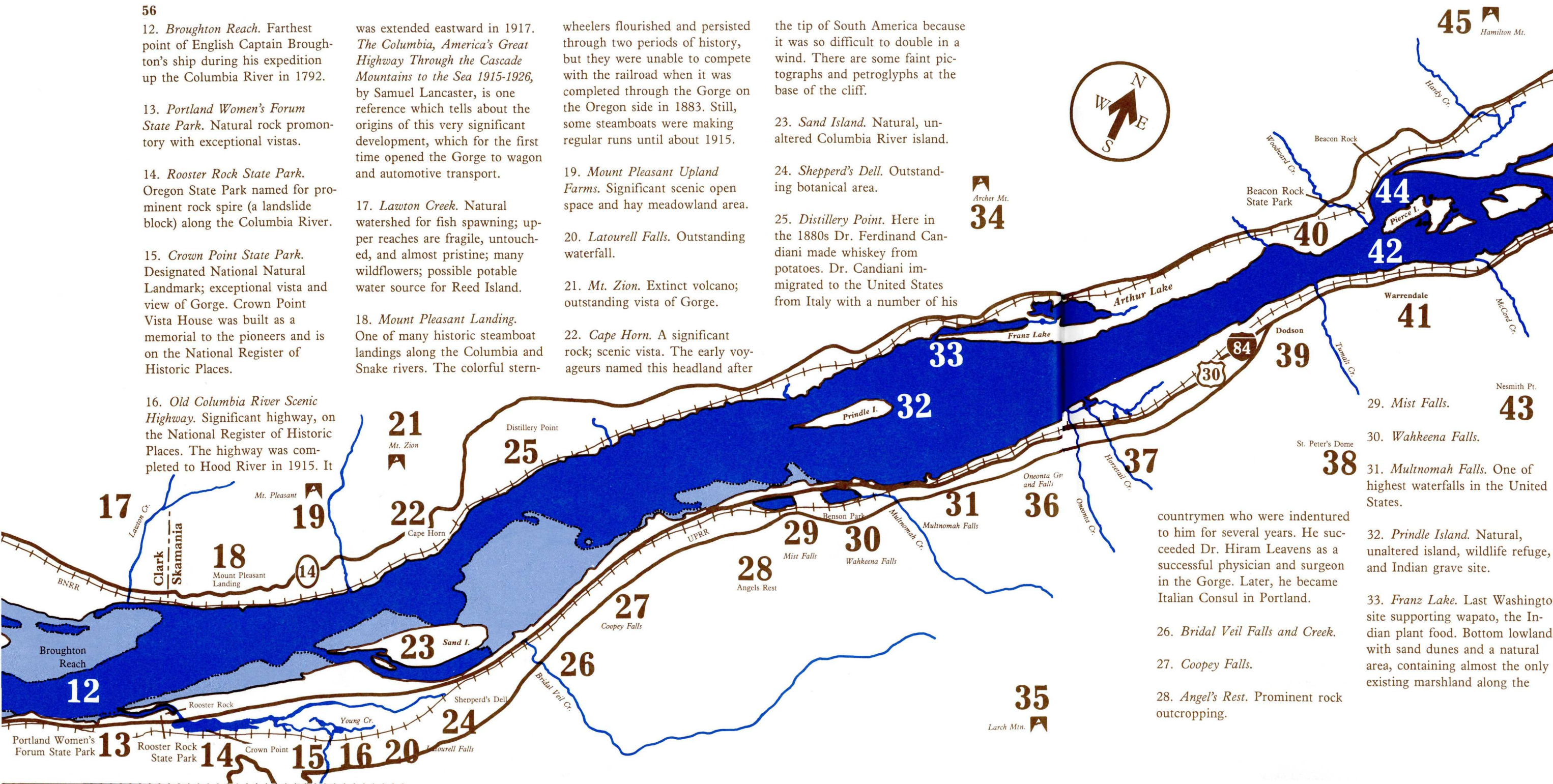
41. *Warrendale, Oregon*. At the site which later came to be known as Warrendale, Frank Warren constructed a salmon cannery in 1876, and in 1882 entered the fishwheel business. The Cascades or swift water which existed from the head of the Cascade Rapids to Dodson created a number of profitable fishwheel sites, many of which gradually came under his ownership, 1879-1935.

42. *Pierce Island*. Natural unaltered island; heron rookery; contains some petrified wood.

43. *Nesmith Point*. Extinct volcano and dramatic vertical topographic relief.

44. *Beacon Rock and Beacon Rock State Park*. Beacon Rock, 800 feet high, is the plug of an ancient volcano. Captain Clark saw and named the rock in 1805. Henry J. Biddle at his own expense built a trail to the top of Beacon Rock in 1915-18; now extensively used by hikers.

45. *Hamilton Mountain*. Significant geological feature. Capped by basalt flows in an ancient side valley.



countrymen who were indentured to him for several years. He succeeded Dr. Hiram Leavens as a successful physician and surgeon in the Gorge. Later, he became Italian Consul in Portland.

26. *Bridal Veil Falls and Creek*.

27. *Coopey Falls*.

28. *Angel's Rest*. Prominent rock outcropping.

29. *Mist Falls*.

30. *Wahkeena Falls*.

31. *Multnomah Falls*. One of highest waterfalls in the United States.

32. *Prindle Island*. Natural, unaltered island, wildlife refuge, and Indian grave site.

33. *Franz Lake*. Last Washington site supporting wapato, the Indian plant food. Bottom lowland with sand dunes and a natural area, containing almost the only existing marshland along the

Larch Mtn. 35

58
46. *Hamilton Island.* Lewis and Clark applied the name "Strawberry Island" to this bit of river deposit which we now know as Hamilton Island after S. M. Hamilton, pioneer of the 1850s. It served as the western terminus of the 1862-1894 Cascades Portage Railway, and during the 1920s also served as an emergency landing strip for the airplanes of that period.

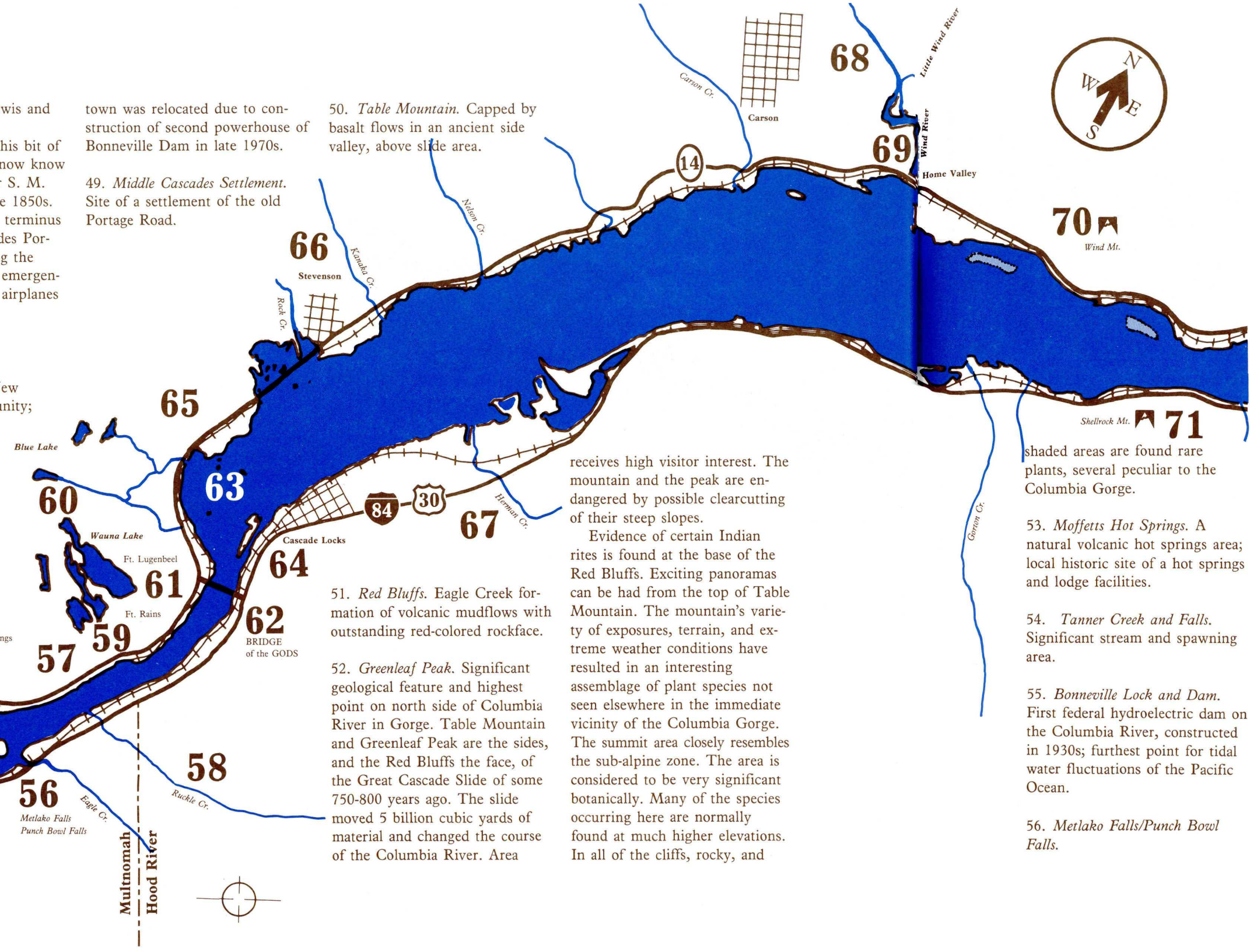
47. *Moffett Creek.*

48. *North Bonneville.* New modern planned community;

town was relocated due to construction of second powerhouse of Bonneville Dam in late 1970s.

49. *Middle Cascades Settlement.* Site of a settlement of the old Portage Road.

50. *Table Mountain.* Capped by basalt flows in an ancient side valley, above slide area.



50 51
Red Bluffs
Greenleaf Peak
Table Mt.
52
53
Moffetts Hot Springs

60
Wauna Lake
Ft. Lugenbeel
61
Ft. Rains
62
BRIDGE of the GODS
63
64
Cascade Locks

51. *Red Bluffs.* Eagle Creek formation of volcanic mudflows with outstanding red-colored rockface.

52. *Greenleaf Peak.* Significant geological feature and highest point on north side of Columbia River in Gorge. Table Mountain and Greenleaf Peak are the sides, and the Red Bluffs the face, of the Great Cascade Slide of some 750-800 years ago. The slide moved 5 billion cubic yards of material and changed the course of the Columbia River. Area

receives high visitor interest. The mountain and the peak are endangered by possible clearcutting of their steep slopes.

Evidence of certain Indian rites is found at the base of the Red Bluffs. Exciting panoramas can be had from the top of Table Mountain. The mountain's variety of exposures, terrain, and extreme weather conditions have resulted in an interesting assemblage of plant species not seen elsewhere in the immediate vicinity of the Columbia Gorge. The summit area closely resembles the sub-alpine zone. The area is considered to be very significant botanically. Many of the species occurring here are normally found at much higher elevations. In all of the cliffs, rocky, and

68

69

70
Wind Mt.

71
Shellrock Mt.

shaded areas are found rare plants, several peculiar to the Columbia Gorge.

53. *Moffetts Hot Springs.* A natural volcanic hot springs area; local historic site of a hot springs and lodge facilities.

54. *Tanner Creek and Falls.* Significant stream and spawning area.

55. *Bonneville Lock and Dam.* First federal hydroelectric dam on the Columbia River, constructed in 1930s; furthest point for tidal water fluctuations of the Pacific Ocean.

56. *Metlako Falls/Punch Bowl Falls.*

57. *Indian Burial Site.* Lewis and Clark wrote: "In a verry thick part of the woods is 8 vaults which appeared closely covered and highly deckerated with ornaments. In several of those vaults the dead bodies were raped up verry securely in Skins tied with cords, laid on a mat, and some of those vaults had as many as 4 bodies laying on top of each other. I also observed the remains of Vaults rotted entirely into the ground and covered with moss. This must bee the burying place of maney ages for the inhabitants of those rapids." The vaults, which were sheds built from split cedar plank, were described by several other early travelers. One half mile above the vaults was a village with "verry large houses bilt in a different form from any I had seen, and laterly abandoned." For more on vault burials, see (102).

58. *Ruckel Creek and Ruckel Ridge.* Significant unaltered stream and dominant ridge formation.

59. *Ft. Rains.* Site of historic military structure.

60. *Wauna Lakes Area.* Significant natural lake and large slide area.

61. *Ft. Lugenbeel.* Site of historic

military structure; nearby are remnants of an old portage railroad, old military road, and pioneer cemetery.

62. *Bridge of the Gods.* Significant bridge, on National Register of Historic Places; raised over 40 feet in 1930s to accommodate rise in water level due to construction of Bonneville Dam.

63. *Site of Columbia Cascades.* Prior to being flooded by the back-up waters of the Bonneville Dam, these vigorous rapids posed an obnoxious obstruction to early pioneers. Here pioneers had to portage around the rapids. To the Indians, these rapids were beneficial; the churning water made excellent fishing grounds. At least eight separate Indian villages were located in the vicinity of the Great Cascades.

64. *Cascade Locks, Oregon.* Site of the Cascade Locks, which were completed in 1896 to bypass the Great Cascades; on National Register of Historic Places.

65. *Upper Cascades Townsite.* Site of the historic town of Upper Cascades.

66. *Stevenson, Washington.* On nearby Rock Creek, Sam Sampson, a lucky Alaskan gold miner

built one of the first local electricity-generating plants.

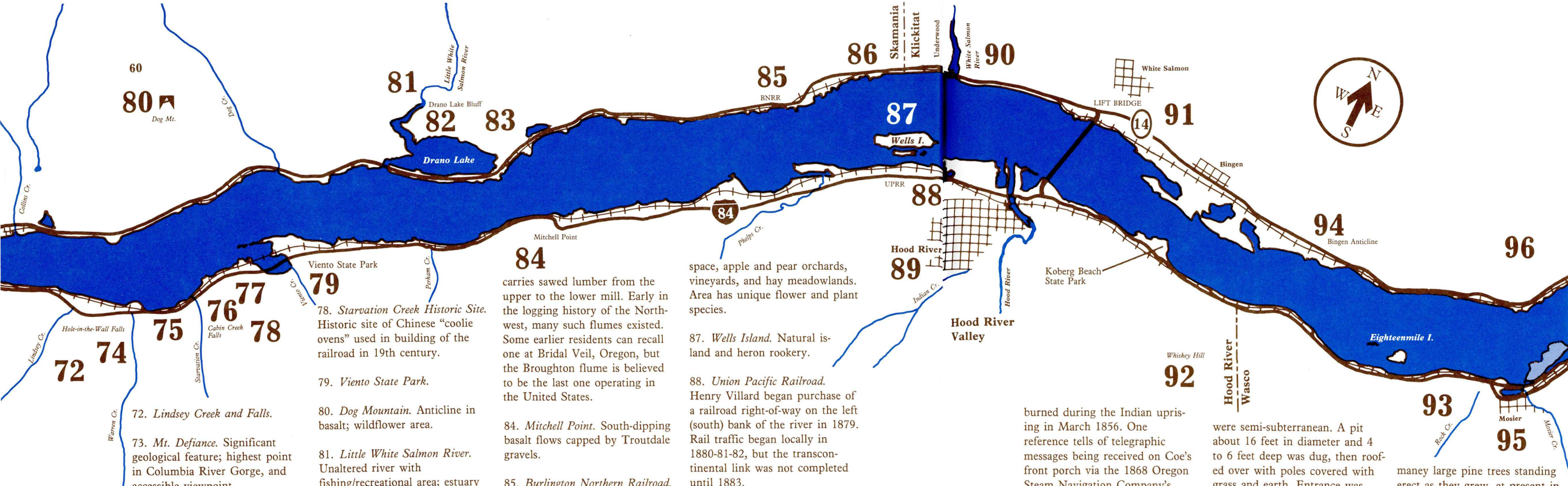
67. *Herman Creek.* Natural, unaltered creek. Pacific Crest National Scenic Trail follows portion of creek.

68. *St. Martins Hot Springs.* Local historic site of hot springs and lodge facilities.

69. *Wind River.* Wind River was named New Timbered by Lewis and Clark because here they first saw the Oregon bigleaf maple, a new species. Later they changed the name to Cruzzate's River after their French boatman. There were large village sites on each side of the outlet.

70. *Wind Mountain.* Significant geological feature: An extinct volcanic dome, a sister volcano to Shellrock Mountain, which is located across Columbia River. A portion of the pioneers' wagon route can be seen a short distance above the present highway (Washington 14).

71. *Shellrock.* Sister volcanic dome to Wind Mountain. The old 1872-76 wagon road between The Dalles and Sandy can still be seen angling upward to the east across the talus toward the Summit Creek crossing above Benson Point. Proof of completion of this road has not been located.



73
Mt. Defiance

- 72. Lindsey Creek and Falls.
- 73. Mt. Defiance. Significant geological feature; highest point in Columbia River Gorge, and accessible viewpoint.
- 74. Hole-in-the-Wall Falls and Warren Creek.
- 75. Lindsey Creek Old Military Road. Historic military road noted for its engineering and design.
- 76. Cabin Creek Falls.
- 77. Starvation Creek Falls.

- 78. Starvation Creek Historic Site. Historic site of Chinese "coolie ovens" used in building of the railroad in 19th century.
- 79. Viento State Park.
- 80. Dog Mountain. Anticline in basalt; wildflower area.
- 81. Little White Salmon River. Unaltered river with fishing/recreational area; estuary known as "Drano Lake."
- 82. Drano Lake Bluff. Flat, narrow ridge overlooking river from 1,000-foot elevation. Contains most impressive stand of old-growth Douglas-fir remaining on north side of the Columbia Gorge.
- 83. Broughton Flume. Lumber flume constructed 1921-22; still

- 84. Mitchell Point. South-dipping basalt flows capped by Troutdale gravels.
- 85. Burlington Northern Railroad. Jim Hill, the railroad mogul, pushed his Spokane, Portland, and Seattle Railway (now the Burlington Northern) through the Columbia River Gorge in 1907-08. In *Age of the Moguls*, Stewart Holbrook uses exceedingly salty language in describing Jim Hill.
- 86. Underwood Heights. Uplands area with scenic open

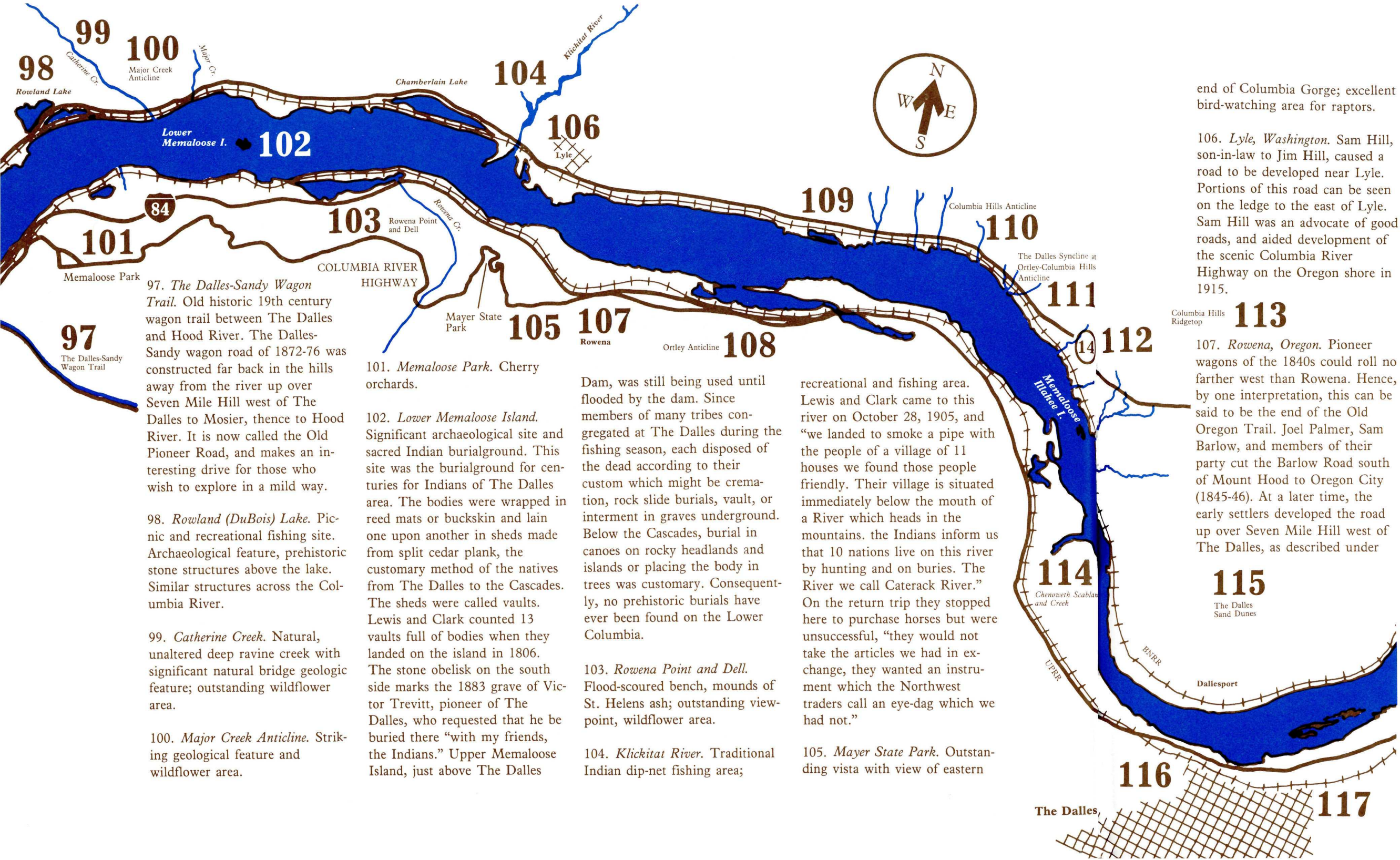
- space, apple and pear orchards, vineyards, and hay meadows. Area has unique flower and plant species.
- 87. Wells Island. Natural island and heron rookery.
- 88. Union Pacific Railroad. Henry Villard began purchase of a railroad right-of-way on the left (south) bank of the river in 1879. Rail traffic began locally in 1880-81-82, but the transcontinental link was not completed until 1883.
- 89. Hood River, Oregon. Important agricultural area with many commercial fruit orchards. Nathaniel Coe was the first white settler in Hood River during the early 1850s. At this time the Joslyns constructed their home across the river from the Coes near the present town of Bingen. The two families became fast friends. The Joslyn home was

- burned during the Indian uprising in March 1856. One reference tells of telegraphic messages being received on Coe's front porch via the 1868 Oregon Steam Navigation Company's telegraph line from Portland to The Dalles.
- 90. White Salmon River. Historic Indian fishing site.
- 91. Bingen-White Salmon, Washington. Urban areas with ethnic German-style commercial business district. There were 18 houses in an Indian village in this vicinity in 1806. Some of them

- were semi-subterranean. A pit about 16 feet in diameter and 4 to 6 feet deep was dug, then roofed over with poles covered with grass and earth. Entrance was through a hole in the center of the roof, which also served as a smoke hole. Once there were many "sinks," remains of these lodges, to be seen along the Columbia; now few have escaped the bulldozer. Here, too, in times of extreme low water before Bonneville Dam, ruins of villages drowned by the Cascade Slide could be seen. Lewis and Clark saw near Bingen "the trunks of

- many large pine trees standing erect as they grew, at present in 30 feet of water; they are much doated and none of them vegetating. At the lowest water of the river many of those trees are in 10 feet of water. The cause I have attempted to account for as I descended." These stumps were the remains of a forest killed by the pool behind the Cascade Slide. This famous Drowned Forest caused much speculation by the early travelers, and was

- soundly cursed by steamboat captains who sometimes tangled with the snags.
- 92. Whiskey Hill. Significant geological feature with accessible viewpoint of Gorge, Mt. Adams, and Mt. Hood.
- 93. Old U.S. 30. Columbia River Scenic Highway; one of few remaining segments of historic highway noted for its design and engineering.
- 94. Bingen Anticline. Significant geological feature.
- 95. Mosier, Oregon. Scenic cherry orchards. Mosier Syncline.
- 96. Coyote Wall to Major Creek. This area, approximately 2,000 acres, contains 12 species on the Washington list of endangered, threatened, or sensitive plants, and one species listed as possibly extinct in Washington. Six of the listed species are local or regional only. Also contains excellent examples of a variety of plant habitats. The area is very significant botanically.



end of Columbia Gorge; excellent bird-watching area for raptors.

106. *Lyle, Washington.* Sam Hill, son-in-law to Jim Hill, caused a road to be developed near Lyle. Portions of this road can be seen on the ledge to the east of Lyle. Sam Hill was an advocate of good roads, and aided development of the scenic Columbia River Highway on the Oregon shore in 1915.

107. *Rowena, Oregon.* Pioneer wagons of the 1840s could roll no farther west than Rowena. Hence, by one interpretation, this can be said to be the end of the Old Oregon Trail. Joel Palmer, Sam Barlow, and members of their party cut the Barlow Road south of Mount Hood to Oregon City (1845-46). At a later time, the early settlers developed the road up over Seven Mile Hill west of The Dalles, as described under

110. *Columbia Hills.* Significant natural bridge and anticline.

111. *The Dalles Syncline and Ortley-Columbia Hills Anticline.* Significant geologic feature that denotes physiographic beginning of Columbia River Gorge.

(97). Many of the pioneers of the middle 1800s built rafts at The Dalles or Rowena, on which they loaded their wagons and other possessions and floated downstream to the Stevenson area.

108. *Ortley Anticline.* Significant geological feature that marks physiographic beginning of Columbia River Gorge.

109. *Historic Indian Village Site.* Lewis and Clark stopped here and said the Indians "gave us to eat Pounded (dried and shredded) fish, bread made of roots, filbert nuts, & berries. We gave to each woman of the lodge a brace of Ribon of which they were much pleased. We call this the friendly village. I observed in the lodge of the chief sundry articles which they must have procured from the white people, Such as Scarlet & Blue cloth Sword Jacket & hat. I also observed two wide Split boards with images on them cut and painted in imitation of man."

110. *Columbia Hills.* Significant natural bridge and anticline.

111. *The Dalles Syncline and Ortley-Columbia Hills Anticline.* Significant geologic feature that denotes physiographic beginning of Columbia River Gorge.

112. *Historic Indian Village Site.* A village of eight wood houses. The trail from this place to the Long Narrows is still visible in some places. Lewis and Clark stopped here in 1805 to purchase provisions, and on the return trip in 1806 to purchase horses. The Indians called themselves Chil-luckit-te-qua. The island opposite was used for burials, one of several Memaloose Illahee (Land of the Dead) islands in the Columbia.

113. *Columbia Hills Ridgetop.* This open grassland ridgetop, with an elevation of 2,900-3,000 feet, contains several important special plants, and a few introduced species.

114. *Chenoweth Scablands and Creek.* Only volcanic scablands found in Gorge area; creek historic site as end of the Oregon trail.

115. *The Dalles Sand Dunes.* Extensive sand dunes area.

116. *The Dalles, Oregon.* This pleasant city is named for the famous rapids called "La Grande Dalle de la Columbia" by the French canoemen employed by the early fur traders. Dalle means flagstone, often used to flag gutters, and the rocky chute, with the great river swirling through it, reminded them of a gutter.

Lewis and Clark called this chasm the Long Narrows. The first white settlement was a Methodist mission, begun in 1838 by Rev. Daniel Lee and H.K.W. Perkins. The area was named Ft. Lee in 1850 because of a military establishment there during the Cayuse War. The town of The Dalles was started about the same time. In 1854, the village was called Fort Dalles, then changed to Dalles City, which is still the official name. The city is called The Dalles by the Post Office, first established in 1851, to avoid confusion with Dallas, Oregon. All the early pioneers stopped at The Dalles, and during the Idaho Gold Rush the city was host to hordes of miners with their vast quantities of freight. Steamboats discharged here for the long portage around the Long Narrows and Celilo Falls. A United States mint was built here but not finished until the mines were diminishing and hence machinery was never installed. The building still stands.

117. *Historic Shaker Indian Church and Gulick Homestead.* Historic remains of Indian site; on National Register of Historic Places.

97. *The Dalles-Sandy Wagon Trail.* Old historic 19th century wagon trail between The Dalles and Hood River. The Dalles-Sandy wagon road of 1872-76 was constructed far back in the hills away from the river up over Seven Mile Hill west of The Dalles to Mosier, thence to Hood River. It is now called the Old Pioneer Road, and makes an interesting drive for those who wish to explore in a mild way.

98. *Rowland (DuBois) Lake.* Picnic and recreational fishing site. Archaeological feature, prehistoric stone structures above the lake. Similar structures across the Columbia River.

99. *Catherine Creek.* Natural, unaltered deep ravine creek with significant natural bridge geologic feature; outstanding wildflower area.

100. *Major Creek Anticline.* Striking geological feature and wildflower area.

101. *Memaloose Park.* Cherry orchards.

102. *Lower Memaloose Island.* Significant archaeological site and sacred Indian burialground. This site was the burialground for centuries for Indians of The Dalles area. The bodies were wrapped in reed mats or buckskin and lain one upon another in sheds made from split cedar plank, the customary method of the natives from The Dalles to the Cascades. The sheds were called vaults. Lewis and Clark counted 13 vaults full of bodies when they landed on the island in 1806. The stone obelisk on the south side marks the 1883 grave of Victor Trevitt, pioneer of The Dalles, who requested that he be buried there "with my friends, the Indians." Upper Memaloose Island, just above The Dalles

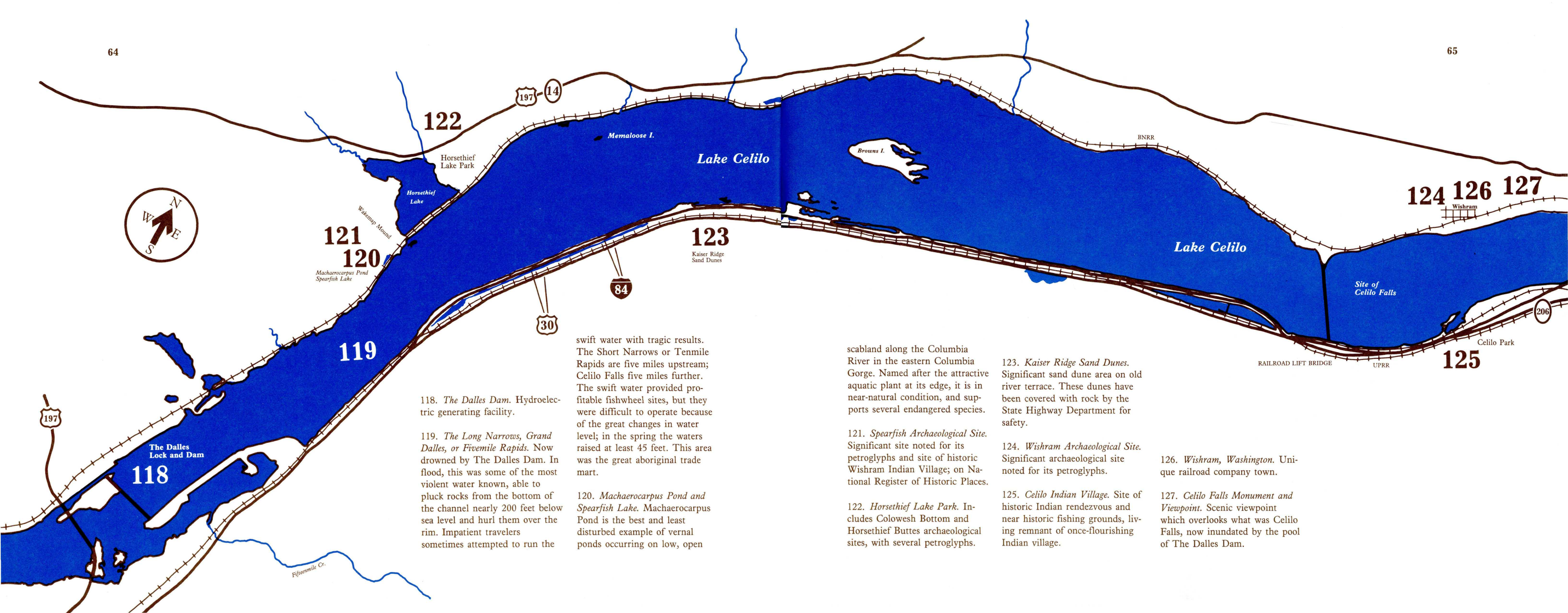
Dam, was still being used until flooded by the dam. Since members of many tribes congregated at The Dalles during the fishing season, each disposed of the dead according to their custom which might be cremation, rock slide burials, vault, or interment in graves underground. Below the Cascades, burial in canoes on rocky headlands and islands or placing the body in trees was customary. Consequently, no prehistoric burials have ever been found on the Lower Columbia.

103. *Rowena Point and Dell.* Flood-scoured bench, mounds of St. Helens ash; outstanding viewpoint, wildflower area.

104. *Klickitat River.* Traditional Indian dip-net fishing area;

recreational and fishing area. Lewis and Clark came to this river on October 28, 1905, and "we landed to smoke a pipe with the people of a village of 11 houses we found those people friendly. Their village is situated immediately below the mouth of a River which heads in the mountains. the Indians inform us that 10 nations live on this river by hunting and on buries. The River we call Caterack River." On the return trip they stopped here to purchase horses but were unsuccessful, "they would not take the articles we had in exchange, they wanted an instrument which the Northwest traders call an eye-dag which we had not."

105. *Mayer State Park.* Outstanding vista with view of eastern



121
120
Machaerocarpus Pond
Spearfish Lake

122
Horsethief Lake Park
Horsethief Lake

123
Kaiser Ridge Sand Dunes

124 **126** **127**
Wishram

125
Celilo Park

118. *The Dalles Dam.* Hydroelectric generating facility.

119. *The Long Narrows, Grand Dalles, or Five-mile Rapids.* Now drowned by The Dalles Dam. In flood, this was some of the most violent water known, able to pluck rocks from the bottom of the channel nearly 200 feet below sea level and hurl them over the rim. Impatient travelers sometimes attempted to run the

swift water with tragic results. The Short Narrows or Ten-mile Rapids are five miles upstream; Celilo Falls five miles further. The swift water provided profitable fishwheel sites, but they were difficult to operate because of the great changes in water level; in the spring the waters raised at least 45 feet. This area was the great aboriginal trade mart.

120. *Machaerocarpus Pond and Spearfish Lake.* Machaerocarpus Pond is the best and least disturbed example of vernal ponds occurring on low, open

scabland along the Columbia River in the eastern Columbia Gorge. Named after the attractive aquatic plant at its edge, it is in near-natural condition, and supports several endangered species.

121. *Spearfish Archaeological Site.* Significant site noted for its petroglyphs and site of historic Wishram Indian Village; on National Register of Historic Places.

122. *Horsethief Lake Park.* Includes Colowesh Bottom and Horsethief Buttes archaeological sites, with several petroglyphs.

123. *Kaiser Ridge Sand Dunes.* Significant sand dune area on old river terrace. These dunes have been covered with rock by the State Highway Department for safety.

124. *Wishram Archaeological Site.* Significant archaeological site noted for its petroglyphs.

125. *Celilo Indian Village.* Site of historic Indian rendezvous and near historic fishing grounds, living remnant of once-flourishing Indian village.

126. *Wishram, Washington.* Unique railroad company town.

127. *Celilo Falls Monument and Viewpoint.* Scenic viewpoint which overlooks what was Celilo Falls, now inundated by the pool of The Dalles Dam.



Fifteenmile Cr.

BNRR

RAILROAD LIFT BRIDGE

UPRR

The Dalles Lock and Dam

Memaloose I.

Browns I.

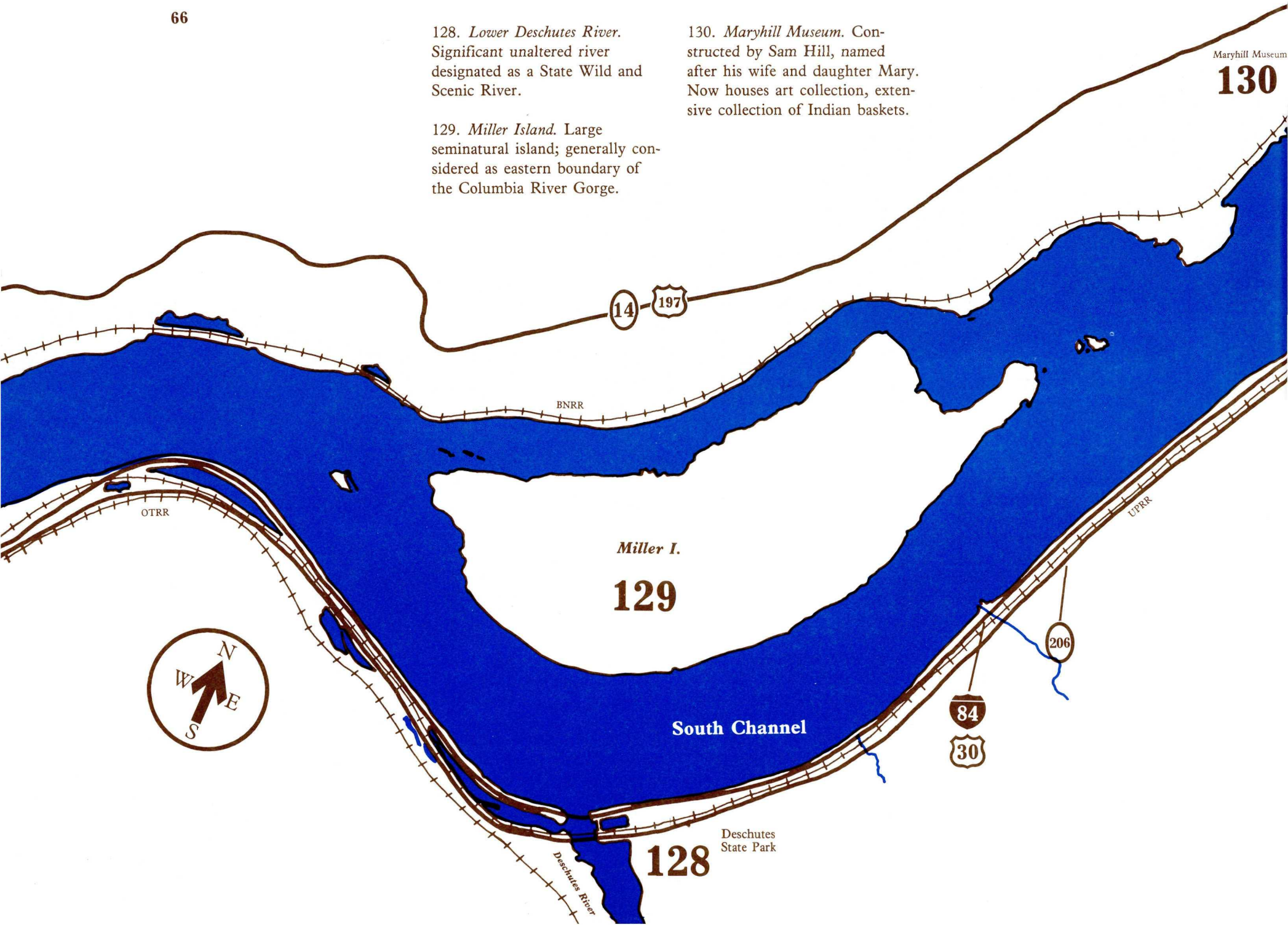
Site of Celilo Falls

Celilo Park

128. *Lower Deschutes River.* Significant unaltered river designated as a State Wild and Scenic River.

129. *Miller Island.* Large seminatural island; generally considered as eastern boundary of the Columbia River Gorge.

130. *Maryhill Museum.* Constructed by Sam Hill, named after his wife and daughter Mary. Now houses art collection, extensive collection of Indian baskets.





Columbia Gorge with Crown Point.

Chronology of Events

31,000 B.C. Early Spokane catastrophic floods. First Indians arrived in North America.

18,000 B.C. Indians widespread in both Americas.

19,000–12,000 B.C. Bretz catastrophic floods, water 700–1,000 feet deep in the Gorge; 190 times larger than greatest historic flood.

8,000 B.C. Early (Marmes and Wakemap) Indians occupied the area, with salmon probably their chief subsistence for the succeeding 10,000 years. Extinction of many large North American mammals began about this time, and was almost complete by 3,000 B.C.

5,000 B.C. Parkdale lava flow in upper Hood River valley.

1260 A.D. Cascade landslide near present-day Bonneville Dam, raising river 200 feet; 1 cubic mile of earth fanned over area of 1.4 square miles at an average thickness of 500 feet. The slide backed water up to today's community of Umatilla. This temporary dam probably resulted in the Indian legend of the "Bridge of the Gods."

1792. Capt. Robert Gray first crossed the bar of the Columbia, and named it after his ship.

1792. October 29th (near Sauvie Island). Lt. William R. Broughton, one of Capt. George Vancouver's officers, sighted a peak and named it Mt. Hood.

1800. Smallpox epidemic decimated Indians.

1800. Most recent eruption of Mt. Hood.

1805–06. Meriwether Lewis and William Clark were the first white men to traverse the Gorge. Made the first maps; named Beacon Rock and many other geographic features.

1812. Wilson Price Hunt (Astor party), David Thompson, Alexander Ross, and Gabriel Franchere traversed the Gorge.

1823–24. The botanist David Douglas climbed mountains and cliffs along the river collecting plant specimens.

1825. Ft. Vancouver established.

1830–35. Pestilence killed more than half the 80,000 Indians living along the Columbia.

1832. Nathaniel Wyeth brought an early group of settlers down the river.

1833, 1840. River frozen over.

1841. Seventy pioneer emigrants came down the river; in 1842, over 100 more.

1842. River frozen over.

1842–49. Mount St. Helens erupted, belching great clouds of fiery lava material that lighted the sky at night; ash reportedly fell ½ inch deep at The Dalles, Oregon; eruptions continued intermittently for 15 years.

1843. Year of the "Great Migration," over 800 emigrants came down the river. Champoege government established. Rev. Gustavus Hines attributed the Cascades to a landslide. During a great flood, water rose 11 feet higher at The Dalles than in the 1894 flood.

1844. First portage wagon road around the Cascades; replaced the portage trail on the north side.

1845. Barlow Road built south of Mt. Hood.

1846. Palmer Pack Trail around the Cascades for cattle and horses built on south side. Canadian boundary established by Treaty of Ghent.

1847-48. Whitman massacre and reprisals.

1848. Oregon Territory established.

1848. Pack trail on the south side of the Cascades improved for wagons for use during the summer. The greatest obstacle was Tooth Rock (now tunneled near Bonneville).

1850. Probably the first steamboat to travel on the Columbia River, "Columbia." It was a sidewheeler, 90 feet long, 16 feet in beam, and 4 feet deep in hold, captained by Frost.

1851. First railroad at Cascades, Washington; Chenoweth's mule powered tramway, which was superseded by Bradfords' Portage Railroad; first mail deliveries from Salt Lake City; post offices established at Cascades, The Dalles, and Camas.

1853. Washington Territory established.

1854. A small sidewheeler steamboat "Mary" made her appearance; she was the first steamer constructed in the middle river and was captained by Dan Baughman.

1855. Steamship "Wasco," 70 feet long, was built by Capt. I. McFarland, or Putnam Bradford (history disagrees).

1855. Ft. Rains built.

1855. Treaty signed by U.S. Government and the Yakima, Warm Springs, and Umatilla Indians. The Indians had aboriginal fishing rights for thousands of years before the white man's invasion. In the

treaty, they *reserved* their rights while losing their lands by conquest and trickery.

1855-56. Yakima Indian War and "Cascades Massacre."

1856. Cascades Indian battle of March 26, 27, 28. Col. Wright and Phil Sheridan were Army commanders. The sidewheeler "Mary" figured prominently in the Indian war, which raged around Cascades and Bradfords' Store.

1856. Fts. Lugenbeel and Cascades built after battle.

1856. Lt. G. H. Derby built Cascades wagon portage road; workmen frightened by the recent Indian hostilities.

1857. The steamship "Hassaloe" was built by Oregon Steam Navigation Company, believed to be captained by Baughman.

1858. Wooden portage railroad replaced wagon road on south side of Cascades.

1860. Steamship "Idaho" built by Colonel Ruckel and sold to Oregon Steam Navigation Company.

1861-70. Idaho gold rush. Led to rapid expansion of navigation on the river for supplies to miners and transportation of gold back to Portland.

1862. First steam locomotive, the "Oregon Pony," replaced mules on the south side portage at Cascades. First steel-railed railroad on north side portage.

1862-73. Thomas Condon, pioneer Oregon geologist, lived in The Dalles, did the first geological investigations in the Gorge.

1863. Small log cabin school built by Felix G. Iman and John (Nels) Nelson. It was located about 300 feet west of present-day Rock Creek. A school was also built in Hood River.

1863. Steamship "Oneonta" built at Celilo and captained by McNulty.

1872. Oregon legislature appropriated \$50,000 for a road from Troutdale to The Dalles. It was not completed for 43 years!

1874. Agitation started to build Cascade Locks and Canal; construction begun in 1878, completed in 1896.

1878. Sternwheeler "Harvest Queen" built by Oregon Steam Navigation Company at Celilo. At 846 tons, it was the largest steamer in the upper river.

1879. Fishwheel era started; wheels were used to harvest the enormous runs of salmon, era was to last for 55 years.

1879-83. Post offices established at Carson, Washougal, Skamania, and Cape Horn.

1880. November 20, first train to Bonneville from Portland. Frank Estabrook said, "There was a Chinaman every foot building the railroad grade."

1881. Rebuilding of the portage railroad on the south side at the Cascades, after floods took out the bridge around the base of Tooth Rock.

1883. Completion of the Oregon Railway and Navigation Company railroad on the south side.

1884. Starvation Creek named; a train with 148 passengers was stalled by snow slides for four days and took three weeks to reach Portland. River frozen over from mouth to the Cascades.

1888. River frozen over.

1890. Sunday, May 8, sternwheeler "Harvest Queen" shot the Cascade

Rapids to the delight of spectators who jammed the wharf and boarded boats to watch. Frederick Balch's novel *Bridge of the Gods* published.

1890-91. Big freeze stopped all navigation on the river.

1894. Largest flood on record; 1.25 million cubic feet per second or five times normal flow. Stevenson post office established.

1896. Completion of Cascade Locks and Canal, permitting through steamboat traffic, which previously could only rarely run the Cascades during high water.

1896. Terrible winter, river frozen over. Will Huckaby carried mail between The Dalles and Lyle, making 47 trips across the ice on the Columbia on 8-foot skis to get the mail through.

1897. First grist mill built by Charles W. Cartell on Washougal River, near the Columbia; was destroyed by fire in 1918.

1900-10. Period of large-scale logging. Virgin Douglas-fir in the Gorge largely logged off.

1902. Yacolt ("Haunted Valley") Burn; known as the September "dark day." Started in the vicinity of Bonneville; burned half a million acres north of river, stopping at Mount St. Helens. This is equivalent to 800 square miles, or an area 28 miles square. Over 12 billion board feet of timber was destroyed, 30 lives were lost, hundreds were left homeless. Estimated damages totaled \$14 million. Later great fires in 1910 and 1929 totaled 2½ million acres burned, about 4,000 square miles, or an area 63 miles square.

1903. Charles T. Belcher tapped the mineral water at Collins Hot Springs. Guest complex consisted of 16 porcelain tubs, 96 rooms, three-story hotel, reading room, barn, etc., to accommodate 300 people arriving primarily by steamboats.

1905-20. Period of large-scale fishing by means of fishwheels and

horse-seines, with consequent elimination of the great salmon runs.

1907–08. Spokane, Portland, and Seattle Railway completed on north side. It later became the Burlington Northern.

1908. First train and automobile arrived at Stevenson, Washington.

1913. Windstorm blew houses from foundations in Stevenson, Washington.

1915. Completion of the Columbia River Scenic Highway, with Samuel C. Lancaster as engineer.

1916. First detailed report on the geology of the Columbia River Gorge by Ira Williams. Sternwheeler "Tahoma," Captain C. N. Nelson's boat, frozen in ice near Cape Horn for five weeks.

1916. Almost end of the sternwheeler era, overtaken by the railroad.

1917. January 16–19, four couples (Frank and Mae Knapp; Clark and Edith Weimer; Bill and Jennie Totten; and Walter and Zonobia Young) locking arms together, walked from Stevenson over frozen Columbia River to Cascade Locks, danced all night, and returned. Their usual mode of weekend travel was by boat with Indian friend, Frank Estabrook.

1917–23. Ruckel slide drained by tunnels made by railroad; new tunnels excavated by Corps of Engineers in 1935 at the time of Bonneville Dam construction; thus stabilizing the Oregon portion of the Great Cascade slide.

1917. December 1, temperature extreme of -27°F ., recorded by Paul E. Newell at his home near Underwood, Washington.

1919. February, hardest winter weather on tree fruits in the Underwood–White Salmon area; day temperature averaged 65°F . above and dropped to -2°F . at night during entire month; from Paul E. Newell,

Underwood. River frozen over.

1920. Construction of flume started by W. D. Arnold, George Broughton, and F. E. Arnold. Flume completed 1922 and still in operation today by Broughton Lumber Company (sawed cants travel the 9 miles in 55 minutes in 30 cubic feet per second of water).

1920. Completion of Evergreen Highway, Washington 14, on north side.

1924. May 31, temperature extreme of 117°F ., Paul E. Newell, Underwood.

1924. December 26, temperature dropped 58°F . in a one-hour period (3:00–4:00 p.m.), Paul E. Newell, Underwood. River frozen over.

1926. Bridge of the Gods completed; it was raised 40 feet in 1940, during construction of Bonneville Dam.

1926. Queen Marie of Romania dedicated Maryhill Museum.

1926. Warren's cannery ceased operation; McGowan's cannery stopped operation between 1926 and 1935.

1926. May 4, Portland–Vancouver twister.

1930. River frozen over.

1933. September, Bonneville Dam started $\frac{1}{2}$ mile upstream from present location. Cofferdam washed out between Christmas 1933 and New Year's Day, 1934.

1935. June 6, Corps of Engineer's boat "Bonneville" (with two 175-horsepower gasoline engines) went *up over* the Cascade Rapids on her own power. The "Harvest Queen" sternwheeler had almost made it at an earlier time but drove a hole in her hull and backed away.

1937. Lowest river flow on record; 35,000 cubic feet per second.

1938. November through January and February of 1938, Bonneville Pool was "born" by rising water above Bonneville Dam, thus flooding out Cascade Rapids.

1942. Driest year on Underwood Heights, 19.45 inches of precipitation, Paul E. Newell, Underwood.

1946. March, major landslide ½ mile east of Multnomah Falls, pushing out an estimated 300,000 cubic yards of rubble and raising shoreline about 15 feet.

1948. Columbia River flood, Vanport disaster, last major flood in lower Columbia River.

1950. Winter of prolonged snowstorm with temperature in Stevenson dropping to -9°F. Schools closed over a long period of time.

1955. November 14, temperature dropped extremely rapidly, 30°F. drop from 4:00-5:00 p.m. at Underwood, with a total drop of nearly 50°F. in 24-hour period (+42°F. to -6°F.).

1957. Completion of The Dalles Dam; drowning the Chutes, Narrows, Celilo Falls, and the Celilo canal.

1960. Wettest year on Underwood Heights, 64.15 inches.

1962. October 12, Columbus Day windstorm.

1962. "Fountain" landslide near Wyeth, Oregon.

1964. Severe winter flood all over Oregon and Columbia River.

1968. Forebay raised upstream from John Day Dam.

1969. January, disastrous windstorm at Cape Horn; estimated velocity reached 100 miles per hour.

1970. January 17, 18, 19, silver thaw, damaging thousands of board feet of timber by ice breakage.

1970-71. November through January, icestorm throughout the mid-Columbia Gorge. Ice from Multnomah Falls built up and pushed railroad bridge off its footings and about 10 feet toward Columbia River.

1975. Contract awarded to construct second powerhouse on Bonneville Dam; thus completing the engineer's dream of saddling all of the Columbia River's slack water.

1975. Completion of the last stretch of the I-84 Freeway.

1976. Town of North Bonneville, Washington, relocated.

1976. June 23, historical rocks 1 mile northwest of Moffet Hot Springs, Washington, officially named "Sacagawea" and "Papoose" by Washington State Board on Geographic Names. This landmark was first described by Lewis and Clark. It is an apparent volcanic plug or basaltic remnant of a fractured ridge.

1976. First sale to the public of varietal grape table wines by the Bingen Wine Cellars of Washington. Of the 20 promising varieties tested by growers Charles Henderson of White Salmon and Don Graves, Dallesport, the following five varieties are now grown for wine: Gewurztraminer, Pinot Noir, White Riesling, Chenin Blanc, Grenache.

1977. Washington legislature recognized the scenic quality of the Columbia River Gorge to be a natural resource.

1977. Driest year in recorded history. Precipitation during crop year (September-June) in Stevenson was 41.52 inches compared to the 20-year average of 70.30 inches or 59% of normal. Precipitation of crop year in eastern Skamania County was 19.60 inches compared to 38-year average of 43.40 inches, or 45% of normal. No ice and snow

pack in national forests, except in the alpine areas of Mt. Hood, Mt. Adams and Mount St. Helens. Without the dams, the flow of the Columbia would have been much lower than the 1937 record low.

1977-81. Numerous federal, state, and local studies conducted which investigated how the natural and scenic qualities of the Gorge should be managed and preserved.

1980. Mount St. Helens erupted, destroying its once-perfect conical peak and claiming nearly 60 lives.

1982. Completion of second powerhouse, Bonneville Dam.

1982. Completion of I-205 Bridge across Columbia River.

1982. National legislation proposed which would designate the Gorge as a National Scenic Area.

1982. Dedication of Gov. Tom McCall Preserve at Rowena; significant 154-acre botanical area formerly known as Rowena Plateau Preserve.

1983. M.V. "Columbia Gorge," a 150-foot, 300-passenger stern-wheeler, reminiscent of the Columbia River steamboats of the late 19th century, began operation as a tour boat.

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