



UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
Yellowstone National Park
Yellowstone Park, Wyoming

YELLOWSTONE NATURE NOTES

Vol. XIV March-April, 1937 Nos. 3-4

This is one of a series of bulletins issued regularly for the information of those interested in the Natural History and History of Yellowstone National Park and the unmatched educational opportunities offered by this region. PUBLICATIONS USING THESE NOTES WILL PLEASE GIVE CREDIT TO "YELLOWSTONE NATURE NOTES" AND TO THE AUTHOR.

Edmund B. Rogers	William E. Kearns	C. Max Bauer
Superintendent	Illustrator	Editor

THE GRAND CANYON OF THE YELLOWSTONE
by Park Naturalist C. Max Bauer

The unusual coloration and beauty of the Grand Canyon of the Yellowstone is of first consideration in a discussion or description of it. Many visitors acclaim the Canyon as the most beautiful scenery of Yellowstone. First views of it are almost universally appealing and impressive. However, an appreciation of its beauty may be acquired only with time and many recurrent visits to the observation points along the rim trails and on the trails that lead into it.

The brightly colored part of the Canyon is about three miles long with an average depth of 750 feet and a width of 1500 feet from rim to rim. At the upper end are the two waterfalls known as the Upper and Lower Falls. The latter is sometimes called the Great Falls of the Yellowstone. It has a fall of 308 feet while the Upper Falls has a drop of 109 feet, and is about 1600 feet farther

upstream.

The colors seem mainly between the Lower Falls and Inspiration Point of white, yellow, orange, red, lavender, pink, and many others in varying tints with yellow predominating, are blended in the fluted and pinnacled walls in a natural and unpatterned manner that makes them extremely attractive. The whole view is framed in the green of a lodgepole forest. The colors in the rocks are largely due to traces of iron or other metallic oxides in various amounts and stages of oxidation and hydration. The color and disintegration of the rock has been brought about largely through the agency of hot gases and hot water, for this is the site of a former hot spring and geyser basin and in fact, hot springs, fumaroles, and miniature geysers are still present in the Canyon.

The excavation of the gorge has been brought about almost entirely by the erosive action of running water. We may summarize its development in several stages, as follows: first, the principal rock of the area is rhyolite, therefore, the first stage revealed in the geologic story is the invasion of the area by enormous flows of molten lava. The thickness of these flows is in excess of 2000 feet. As soon as the lava flows became cool enough for rain water to percolate into them, the water encountered a deeper source of heat in the rising hot steam from below. When the lava had cooled to rhyolite the second stage consisted in the development of fumaroles, hot springs, and geysers. As this stage proceeded, the rock was locally disintegrated into sand and clay. The color stains are probably also a residual of iron oxides from the original rock which has a normal color of light gray or lavender. Normal weathering changes this rock to shades of brown, but hydrothermal action changes the coloring to yellows and reds which are prevalent in the Canyon. During the third stage the erosion of the canyon by running water was accomplished. Many of the hot springs and geysers were destroyed, although some are still found at the present time. Just how long it took the river to cut the canyon through the old geyser basin can only be guessed. However, a stream working headward from Inspiration Point to the Upper Falls would accomplish the task much quicker and easier than an equal stretch farther downstream where the rock is still hard and little affected by gases and hot water from below. Up to this time the water of Yellowstone Lake drained to the Pacific Ocean, but as the canyon was deepened, the Lake drained through it into rivers that carried it to the Gulf of Mexico. Then came the Ice Age and the canyon was dammed by ice of a glacial lobe that spilled

over the west end of Specimen Ridge and advanced to the east flanks of Mt. Washburn. At this time another high level lake was formed in the Grand Canyon, south of this dam, uniting with the greater Yellowstone Lake of that time. As the water level rose, streams carried sediment of gravel, sand, and silt into the canyon filling and burying it practically to the depth of its present rims. The water level of the great lake once reached an altitude corresponding to the present 8100 feet contour in this area. The fifth stage came with the melting of the ice dam and the disappearance of the glaciers. The waters of that greater Lake Yellowstone began washing away the sediments which had just been laid down and the canyon was re-excavated, exposing the former canyon walls and leaving only a few patches of the old sands and gravels to tell the story. And so, at the present time we have a resurrected canyon with an interesting history and remarkable beauty.

That the inspirational quality of such scenery is unlimited was expressed by a number of early travelers. N. P. Langford, a member of an early exploring party, wrote: "As I took in this scene, I realized my own littleness, my helplessness, my dread exposure to destruction, my inability to cope with or even comprehend the mighty architecture of nature." then, -- "The two grand falls of the Yellowstone form a fitting completion to this stupendous climax of wonders. They impart life, power, light, and majesty to an assemblage of elements, which without them would be the most gloomy and horrible solitude in nature. Their eternal anthem, echoing from canon, with rapture at the iris-crowned curtains of fleecy foam as they plunge into gulfs enveloped in mist and spray. The stillness which held your senses spellbound, as you peered into the dismal depths of the canon below, is now broken by the uproar of waters; the terror it inspired is superceded by admiration and astonishment, and the scene, late so painful from its silence, is now animate with joy and revelry."

According to H. M. Chittenden, the river took its name from the canyon walls and later the Yellowstone region included the headwaters of the river. He says in effect that the early Indian tribes referred to the river that had "the yellow, nearly vertical walls." The French trappers before they had seen the canyon translated the Indian name to Roche Jaune and Pierre Jaune, meaning Yellow Rock and Yellow Stone; and now usage establishes the name, Yellowstone. Further than this, little is known about the name, though it seems likely that the Indians referred to

were Sioux tribes, as Chittenden suggests, for the Crow Indians called it the Elk River.

How many early trappers and travelers saw the canyon can only be guessed, but Folsom, Cooke and Petersen, who viewed it in 1869, were greatly impressed by it, and were the first to record their astonishment at the marvelous beauty of the scene. In 1870 came the Washburn party reveling in its majestic and mysterious presence and going home determined to tell the world about it. The next year came Thomas Moran, America's greatest western landscape artist, to record its wondrous beauty of form and color.

Then followed the establishment of Yellowstone National Park and the preservation of this scenic area for the benefit and enjoyment of all future generations. After the protection was provided it became more and more apparent that the area contained a varied and abundant wildlife that matched the wonder of the canyon. And today deer, elk, moose, and bear roam this region and may be seen daily by visitors interested in them. In order to make sure that none may go away disappointed, the bears are fed each night at feeding grounds on Otter Creek, about a mile southwest of Chittenden Bridge. Here the people are protected within an enclosure and the bears, roaming at will, come to the pit for extra food which the forest does not supply so abundantly. The majority of the bears coming in are grizzlies, or silvertips, which match the majesty of the surrounding scenery.

These monarchs of the forest lend an air to the canyon and in turn the canyon seems a natural setting for these magnificent beasts.

As we return to the canyon to experience the inspiration of its color, form, and size, and hear the roar of the Falls we are attracted by the scream of the fish hawk or osprey. These birds of large size and similar to eagles may be seen soaring in the canyon and swooping from pinnacle to pinnacle. Here amid these glorious surroundings, they rear their families and live by fishing in the jade waters of the Grand Canyon of the Yellowstone.

[<<< Previous](#)

[Cover <](#)

[Next >>>](#)

<http://www.nps.gov/mora/notes/vol14-3-4a.htm>

27-Dec-2004