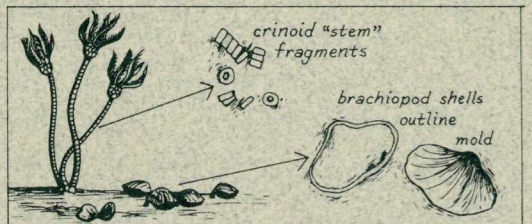




12 Don't build a house where you see trees like this one! The soil on this steep slope tends to slip downward, and the movement would eventually topple a wall, telephone pole, or other nonliving object. But a tree, if the tilting is slow enough, keeps trying to straighten up as it grows, resulting in a curved trunk.

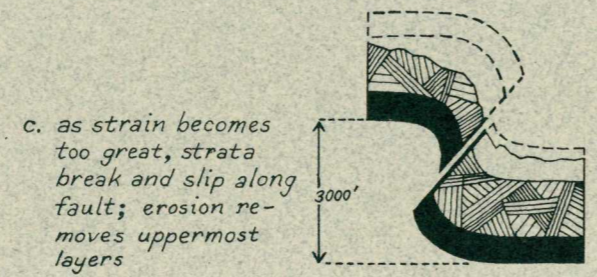
13 Trees respond to many environmental influences so subtle that we hardly notice them. Here the trees are taller than the pinyons and junipers, and have spruce-like needles and dangling, thin scaled cones. These are Douglas firs — important timber trees in the Pacific Northwest, and common in the high Uinta Mountains, but almost out of their range here. They require a bit more moisture and cooler temperatures than the other trees. These north-facing slopes which receive less sunlight apparently make just enough difference for them to live here.



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15 Seashells far above the sea, great blocks of rock bent and broken, deep and tortuous canyons — was this land the site of some great cataclysm? To us, accustomed as we are to thinking in terms of minutes, hours, and days, the scene may look like the result of some chaotic upheaval, but it wasn't. All around us the forces that shaped it are still in action. Rivers deepen their channels grain by grain; minor earth tremors occur daily in one place or another; and lands have risen or fallen, slowly but measurably, within historic times. We measure our history in years, but the Earth measures time in millions of years — time enough for each tiny change to be multiplied over and over into a major change.

The upturned layers of the Mitten Park Fault below you dramatize such a change. This is the same fault noted at stop number 7, but here the Green River has sliced through it to reveal the broken rocks in cross section. Movement along this fault probably began with the uplifting of the region, and may have continued off and on almost to the present. Each shift, perhaps accompanied by what we would call a major earthquake, might have been only a few centimeters, but over the ages many little shifts added up to a total displacement of about 910 meters (3,000 feet) from one side of the fault to the other.



16 Man, too, can alter the land, rarely on such a scale as natural forces, but much more rapidly. Some years ago, controversy arose over a proposal to build a dam for water storage and power generation directly below this point at the head of Whirlpool Canyon. Many people protested that the Green and Yampa Canyons, already included in Dinosaur National Monument, deserved to remain in their natural state; that they could serve the nation better as a contrast to technology than as a contribution to it. The protests were heeded and ultimately the dam was built at Flaming Gorge, 113 kilometers (70 miles) up the Green from here.

Even at that distance the dam affects this area. Streamside plants no longer scoured out by spring floods are spreading. Native fish adapted to muddy water have retreated to the Yampa because most of the Green's mud now settles behind the dam. Such changes may or may not seem important, but they illustrate an important, often forgotten fact: for all our power, we are still subject to interdependent natural processes. Sometimes we can alter their speed or substitute one process for another, but every change we make sets in motion more changes, often far reaching and acting faster than natural systems can tolerate.

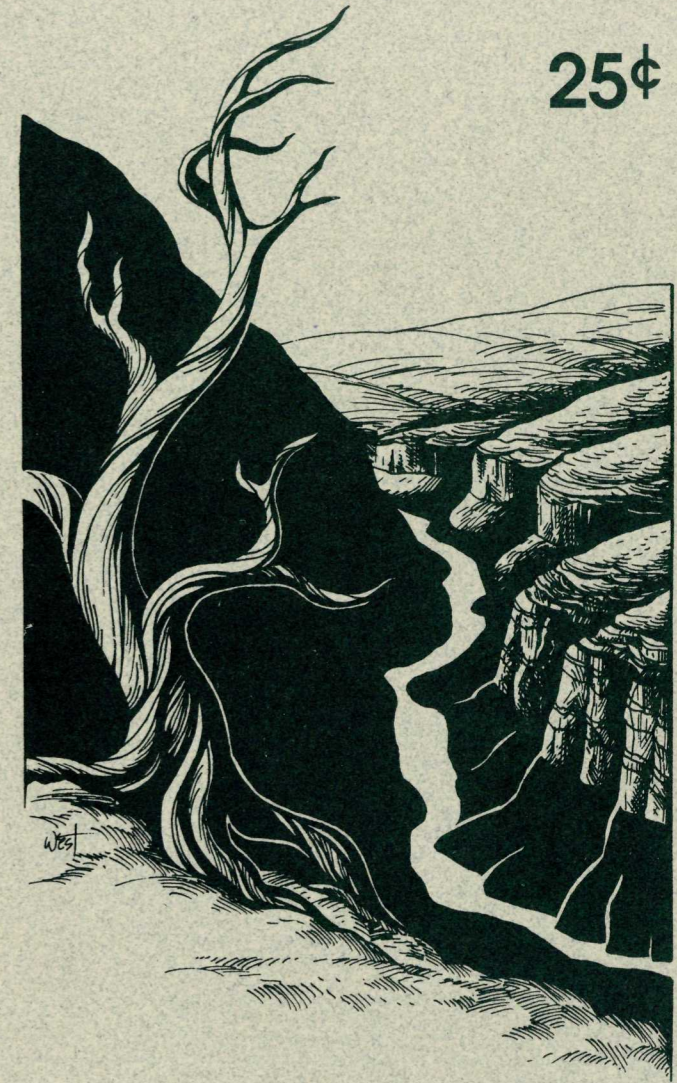
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HARPERS CORNER TRAIL

9 The reddish rocks alongside the trail are made of a hard sandstone called quartzite which also appears at the very bottom of Whirlpool Canyon. Did they roll up here from down there? Not likely — but their rounded shape does suggest that they rolled a long way from somewhere. The same quartzite forms much of the Uinta Mountains west of here, so these rocks may have been washed down from the mountains long before the Green River had carved Whirlpool Canyon. Now, stranded far from their source, they add another element of mystery to a landscape which has puzzled geologists since Powell's time.

10 Take a closer look at those rocks; many of them bear a colorful crust of lichens. Small as they are, lichens are important pioneers of the plant world, for they can grow on bare rock where no other plants can. Their secret is that they are actually two plants in one: a fungus whose sticky filaments anchor it to the rock, and an alga, a "green" plant which uses the energy of sunlight to produce food from raw elements in the rock. The fungus provides a foothold and the alga feeds them both. In this harmonious relationship, they also prepare the way for other plants by breaking down the rock into soil.



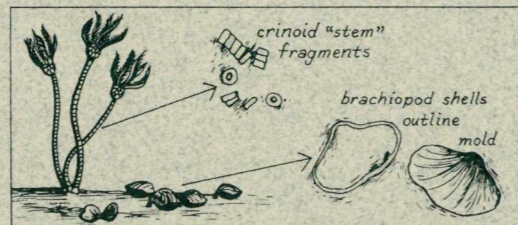
Two kinds of grasses — a native and an intruder — are prominent along this part of the trail. The native, Indian ricegrass, has a name that hints how it was used. Both the Fremont people and recent Indians gathered and ground its tiny seeds for mush, cakes and stews. It is also a valuable food for livestock, deer, and smaller wildlife.

In contrast, cheat grass is almost inedible (except for a brief time in spring) because of its spiny, irritating seeds. Indeed, these traits enabled it to spread rapidly across the western range after its accidental introduction from Europe about 1925. Passed over by animals in favor of more nutritious plants, cheat grass grows undisturbed, and its seeds catch in fur or clothing which carries them over wide areas.



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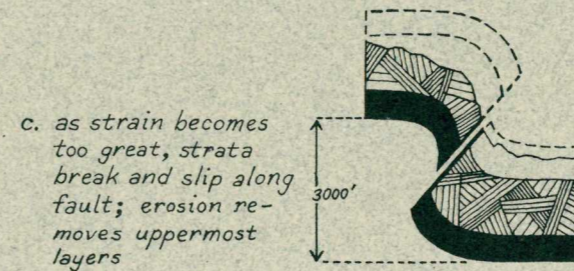
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1 The canyons you soon will see are the work of flowing water. But here, high above the rivers, the land is dry, and only water-conserving plants and animals can survive. What do you notice about the plants? Most have small leaves, often dull-colored and with fuzzy or waxy surfaces — features which reduce exposure to drying winds, reflect sunlight, and hold in moisture. The open, even spacing of the trees lessens competition for groundwater. And though the pinyon pine and juniper may live for hundreds of years, they rarely grow very large — thus the name “pygmy forest” for this community.



If you are here in spring or early summer, you will find the trailside a wildflower museum, as bluebells, gilia, paintbrush, and more prepare the seeds for next year's garden. Remember that many others share the park with you. *Please don't pick the flowers, or disturb any natural or historic features.* Leave them for the next visitors to see and enjoy.



2 Even in death, this old pinyon dominates the scene, and in death it still contributes to the stream of life. Its wood might provide a home for burrowing insects which in turn are hunted by woodpeckers, nuthatches, and other birds. Hawks may survey their territory from the high, bare branches. Bark shed from the limbs slowly decays, returning nutrients to the soil as the rest of the tree will do when it finally falls.

3 What killed the big tree at the last stop? There are several possibilities: insects, disease, old age, or maybe a porcupine, whose gnawings — yellow or gray scars — can be seen on many of the tree trunks along here. In winter, when other food is scarce, “porkies” relish the tender inner bark of the pinyon. Stripping only a little bark, the porcupine usually does not harm the tree, but if the animal chews all the way around the trunk, the tree's food and water transport systems are cut off and it will soon die.

4 If you were going to homestead, would you do it up here? Probaby not — down by the rivers, or any other place with a good water supply, would be a much better choice. You may be able to spot the buildings of the Chew Ranch far below on a small tributary of the Green River called Pool Creek. This pioneer cattle and sheep ranch, settled near the turn of the century, is now maintained as an historical site.

Before the Chew family came, Pool Creek was the home of a colorful character named Pat Lynch, who wandered into the area in the early 1880s and for 30 years lived a hermit's life in caves and cabins along the lower Yampa Canyon and Pool Creek. The latter area is often called Pat's Hole after him.

The canyon walls, in fact, have sheltered mankind since ancient times. Drawings pecked into Pool Creek's cliffs show that the Fremont people, who were hunters and farmers, lived here nearly 1,000 years ago. They came as others have, lured by the magic of water in a thirsty land.

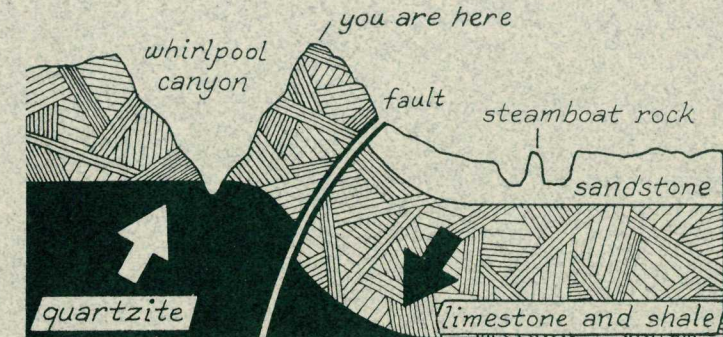


5 Most of the park's recorded history, sketchy as it is, concerns Echo Park, at the junction of the Green and Yampa Rivers. The ruggedness of the land limited exploration by routes other than the Green. The first man known to have descended that river was William H. Ashley, a fur trapper. In the week or so that it took his party to pass through these canyons in 1825, the rapids nearly wiped out his small, hide-covered bullboats, and Ashley no doubt decided against traveling any further by water.

Nearly half a century passed before the Green was seriously challenged again, this time by John Wesley Powell in 1869. Despite the loss of a wooden boat in a rapid not far from here — which they named Disaster Falls — the party followed the Green to its junction with the Colorado and continued down that river through the Grand Canyon. Echo Park, where they listened to their voices bouncing off Steamboat Rock, was a welcome rest after days of battling white water; now it is a peaceful retreat away from the rush of civilization.

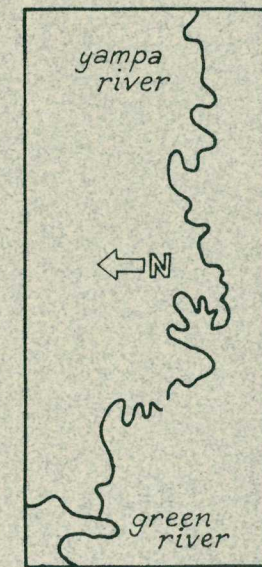
6 “All this volume of water, confined, as it is, in a narrow channel and rushing with great velocity, is set eddying and spinning in whirlpools by projecting rocks and short curves, and the waters waltz their way through the canyon, making their own rippling, rushing, roaring music.” Thus wrote Powell of Whirlpool Canyon below you.

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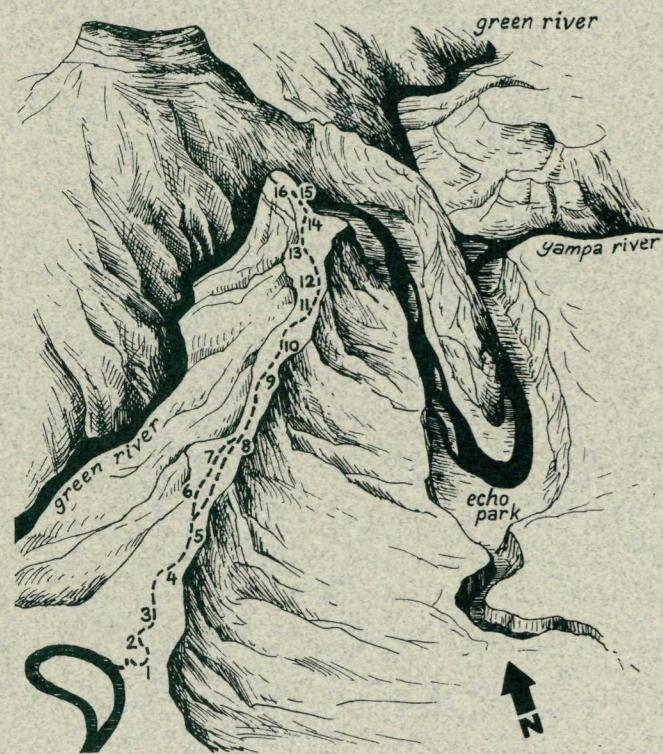
7 Did you notice the contrast between Whirlpool Canyon and the Yampa Canyon? Whirlpool's walls are dark and somber, made up mostly of limestones and shales left by ancient seas. As these waters retreated, windswept dunes piled up to become the light-colored sandstone of the Yampa's cliffs and domes — a layer which should lie on top of the Whirlpool Canyon rocks. But when this area was being uplifted to its present elevation, faulting occurred; the rock layers were bent and broken as some blocks of land were pushed higher than others. You are standing on the edge of one of the high blocks from which the sandstone has been eroded away. In the low block to the east erosion has not progressed so far; the darker rocks are still buried beneath the sandstone, and the landscape looks much different.

8 Can you pick out the course of the Yampa? Its junction with the Green is hidden by Steamboat Rock, and above that, the river is lost in a maze of sandstone. Such a winding course is more typical of a slow, sluggish stream flowing across flat land than of a swift, canyon-cutting river. Some geologists, therefore, have suggested that the Green and Yampa had already established courses on fairly level land before the region was uplifted; and that the rivers held course and sliced down through the rocks even as the land rose, thus forming the deep, winding canyons.



Welcome to the canyon country of Dinosaur National Monument, Colorado. This guide is keyed to numbered points of interest along the Harpers Corner Trail, a 3.2-kilometer (2-mile) round trip which leads to impressive views of the Green and Yampa River Canyons. On this walk you can discover some of the secrets of your park: the carving of canyons, places written of by early explorers, and the delicate harmonies of life and land.

Your walk will be more pleasant if you also try to harmonize with the land. The trail's ups and downs are moderate, but at this elevation (about 2,300 meters, or 7,500 feet) you may tire quickly, and summer days are often hot. So take your time — allow 1½ to 2 hours for the walk, and pause often to listen and touch, to absorb the mood of the wilderness. Wear comfortable but sturdy shoes, and carry a little water if possible. Don't forget binoculars and camera if you have them.



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