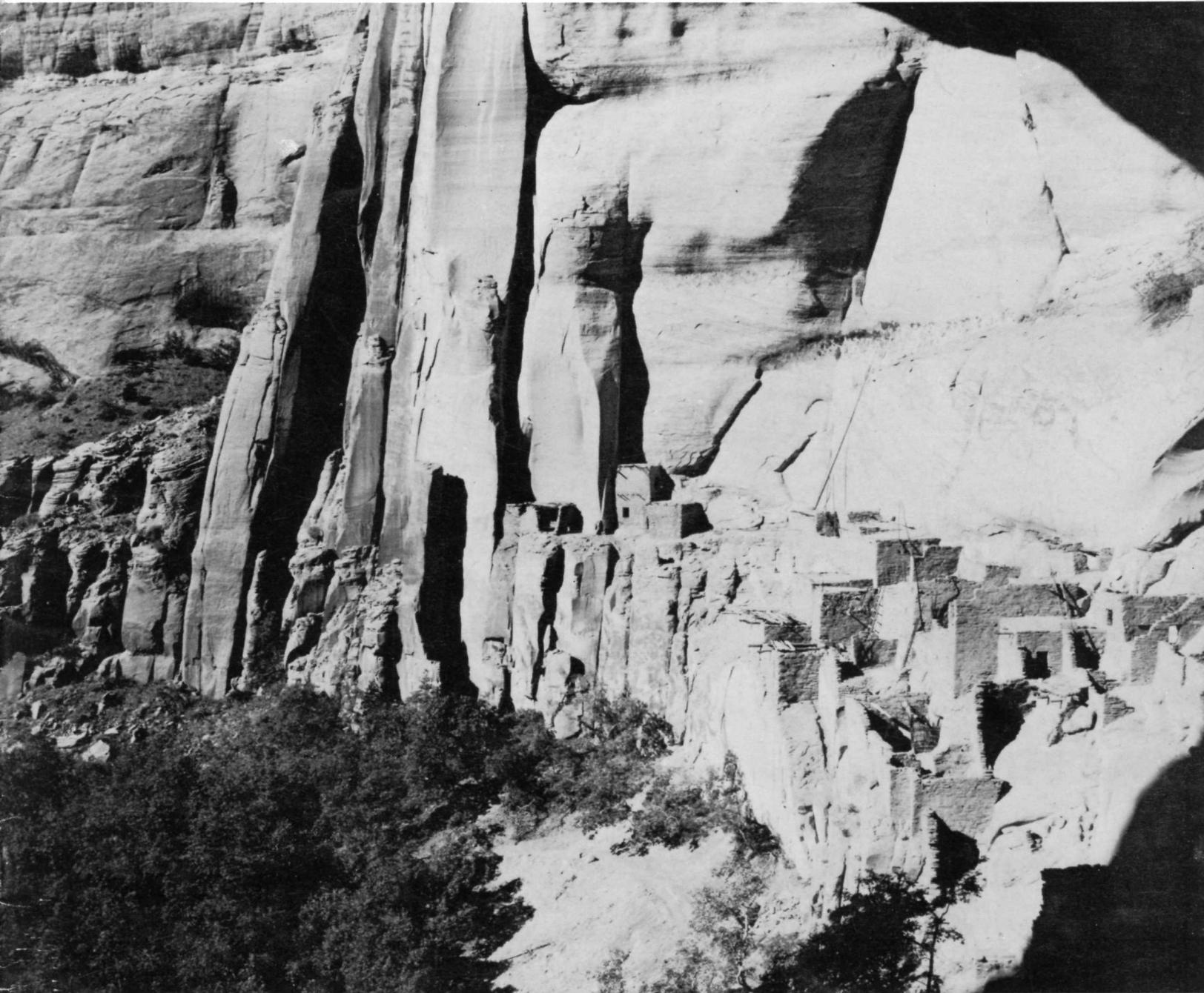


# NATIONAL PARKS *Magazine*



Betatakin Ruin, Navajo National Monument

*May 1968*

## San Carlos de Bariloche

**N**AHUEL HUAPI (TIGER ISLAND) NATIONAL Park, situated in the high Andes of Argentina, is a region of unsurpassed natural splendor.

San Carlos de Bariloche was a happy choice for the site of the recent Latin American Conference of the International Union for the Conservation of Nature.

Located at a meeting point of several of the fiord-like arms of Nahuel Huapi Lake, the Llao-Llao Hotel played host in grand style, under the aegis of the Government of Argentina and the Directory of its National Park System, to an able band of scientists and conservationists from the entire Hemisphere and Europe.

This was an inter-American, not a pan-American, meeting; participants from the United States, Canada, and Europe came as observers, not delegates; sponsorship by the IUCN brought the quasi-official sponsorship of the United Nations, of FAO, and of UNESCO.

The National Parks Association participated, as did all others except the Latin American governmental delegates, as an observer; the NPA has been a charter member of the IUCN since its establishment in 1948.

A major topic under discussion at the Conference was the establishment and protection of national parks throughout Latin America, modeled on the great primeval national parks of the United States.

Another critical topic was the impending extinction of large numbers of plant and animal species throughout Latin America, and measures to be taken to forestall such disasters before too late. The vicuña, miniature camel of the Andes, prized in illegal commerce for its precious wool, victim of mindless and voracious importations of hides into the United States, was given much attention, hopefully with protective results: likewise the river turtles and marine turtles of the Amazon and the Caribbean.

The national parks of Latin America, organized in a number of magnificent

park systems from Mexico to Brazil to Chile, are confronted by much the same dangers as in the United States. There is a need for moderate and well-considered development, if only to win a constituency for protection. Yet a short look ahead reveals the menace of roads, traffic, and facilities, pressing in upon the parks in such manner as to impair them for the enjoyment of their own visitors, and as refuges for people and for the animal and plant communities and scenery which led to their establishment.

It was gratifying to realize, as always at such meetings, the extent to which the national park system of the United States has been a model for national park systems all over the world. We in this country have a high standard to maintain; it is imperative, in terms of world influence, that the protective functions of our great primeval national parks be safeguarded here in the United States. Our own parks must not become mass recreation resorts, or our influence will be a corrupting one around the world. We must not allow the roads and the traffic to overwhelm the quietudes and solitudes of our parks, else a similar deterioration will be encouraged in other lands.

There were initial discussions at the Conference on the need for closer cooperation on a hemisphere basis among private organizations like the Friends of the National Parks of Argentina and the National Parks Association of the United States, looking toward the protection of these invaluable resources for the nations primarily concerned and the entire world.

The importance of intergovernmental cooperation was also recognized, and the existence of cooperative centers in the Organization of American States and elsewhere was noted.

This Association hopes to develop direct lines of communication with the many creative private organizations which exist throughout Latin America and the governmental organizations concerned with parks, forests, and wild life preservation and restora-

tion. We are extending renewed invitations to Latin American scientists and conservationists to make use of the pages of *National Parks Magazine* more frequently with a view to the enlightenment of public opinion in the United States; reciprocally, we hope to contribute our experience, good and bad, gained in our efforts to protect the natural environment in the United States for human benefit. —A. W. S.

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Front cover photograph by O. F. Oldendorph

Tiny Navajo National Monument and the larger Canyon de Chelly Monument are separated by some sixty airline miles in the colorful northeastern corner of Arizona. Both units were designated—the first in 1909 and the second in 1931—primarily for the archeological significance of their canyons, deeply cut into spectacular sandstone formations and occupied at various times in American prehistory by some very early Southwestern citizens. Canyon de Chelly, in particular, is one of the important links in the archeological monument system; some of its sites indicate a continuous prehistoric occupation spanning nearly a thousand years. In this issue there is comment on the management of the two monuments.

## The Association and the Magazine

The National Parks Association is a completely independent, private, non-profit, public-service organization, educational and scientific in character, with over 37,000 members throughout the United States and abroad. It was established in 1919 by Stephen T. Mather, the first Director of the National Park Service. It publishes the monthly *National Parks Magazine*, received by all members.

The responsibilities of the Association relate primarily to the protection of the great national parks and monuments of America, in which it endeavors to cooperate with the Service, while functioning also as a constructive critic; and secondarily to the protection and restoration of the natural environment generally.

Dues are \$6.50 annual, \$10.50 supporting, \$20 sustaining, \$35 contributing, \$200 life with no further dues, and \$1000 patron with no further dues. Contributions and bequests are also needed. Dues in excess of \$6.50 and contributions are deductible for Federal taxable income, and gifts and bequests are deductible for Federal gift and estate tax purposes. As an organization receiving such gifts, the Association is precluded by law and regulations from advocating or opposing legislation to any substantial extent; insofar as our authors may touch on legislation, they write as individuals.

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# SOME OBSERVATIONS ON NAVAJO and CANYON DE CHELLY MONUMENTS

By O. F. Oldendorph

**B**ETATAKIN WAS FIRST SEEN BY THE white man in 1909. It is located in a shallow cave in the wall of a side canyon in Navajo National Monument, Arizona. The cave arches 236 feet above its base and spans a width of almost three hundred feet. The name Betatakin, in Navajo, means "hillside house."

The Anasazi constructed the village about 700 years ago (as shown by tree rings in timbers in the village) and abandoned it after relatively few years of occupation. They chose their building site well. A spring of clear cold water trickled from the rocks below the cave, and still does today. The cave's orientation is such that during the hot days of summer, when the sun is high in the southern sky, the high arch shades the village for most of the day. During the winter months, when the sun's warmth was welcome to the villagers, the low position of the sun sent slanting rays into the cave during most of the daylight hours.

The Anasazi built rectangular or square kivas (ceremonial chambers), similar to those still used by the Hopi people farther south in Arizona. It is probable that ancestors of the Hopi built and occupied Betatakin. The people planted their fields of corn, beans and squash on the canyon floor below the village.

Today the ruin is in a fine state of preservation, considering its age. Visitors are not allowed to visit the ruin,

except in the company of a park ranger, and entry into certain portions of the ruin is not allowed at all, even with the ranger. Vandalism in Navajo Monument has been held to a minimum through the diligence of the Park Service.

\* \* \*

A 1962 issue of *National Parks Magazine* related that during the height of the vacation season one was not likely to find more than half a dozen automobiles in the campground at Navajo National Monument.

Navajo Monument was, indeed, off the beaten path, at the end of a dozen miles of red-rock road. Most of the people who drove the distance were interested in seeing Betatakin. Or they had more ambitious plans, like hiking or riding to Keet Seel, Arizona's largest cliff dwelling that occupies a cave about eleven miles farther into the primitive Navajo country.

The campground at Navajo Monument was a delight. Camp sites were well separated and well screened by natural shrubs. Stone fireplaces had a pile of juniper nearby. One water tap near the superintendent's house served the whole campground. The sanitary facilities were primitive but adequate.

On a chill evening in October, 1967, Navajo Monument was quite different. The dirt road had been converted to wide blacktop. The campground had paved roads and parking areas that

were lined with sturdy posts. The comfortable stone fireplaces had been replaced with sterile steel contraptions perched two and a half feet above the ground on top of iron posts. The soft light of the stars went unnoticed in the glare of the electrically lighted, running-water rest rooms. Transistor radios and gasoline lanterns blared and glared in many of the dozen and a half occupied camp sites.

A ranger made his rounds of the camps and explained to the visitors that Navajo Monument was an archeological area; next morning a conducted tour would visit Betatakin.

Next morning, when the ranger archeologist left the visitor center for the tour, he was accompanied by one couple. Betatakin was delightful (as it had been on at least six previous visits) and the new trail gave a better view of the canyon than the old one. Even the ranger seemed to enjoy the visit; we were about an hour late in returning.

On our return, every site in the campground had been vacated.

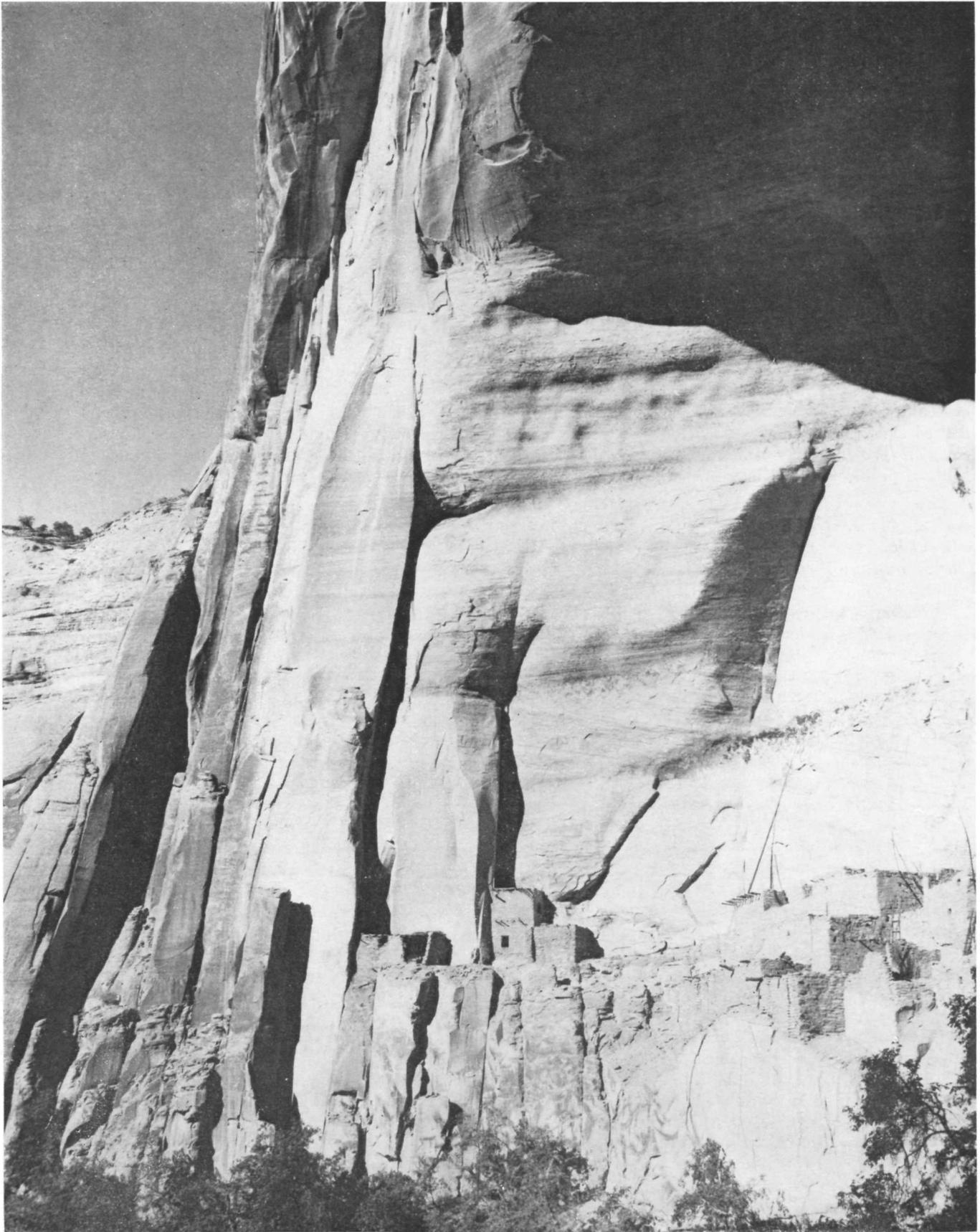
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One of the charms of Canyon de Chelly National Monument has been the narrow, rough and hilly road, scraped out of the red rock, that skirted the canyon rim. By its very nature the road discouraged speeds that would make viewing the beauties of the canyon improbable, and the road was adequate for the Navajo and his horse-drawn wagon on the unhurried way to the trading post at Chinle.

In 1967 a construction project of impressive proportions was under way. The dirt road was being paved and widened—being converted into a main artery for the introduction of beer cans, pop bottles, cigarette packages and fluttering sheets of cleansing tissue into the country of the Navajo.

The new road will allow visitors to rush along the rim to the large campground that is being planned for the Spider Rock Overlook area. The quiet of that beautiful spot will, like that of Navajo Monument, be shattered by radios blaring the raucous noises that at least some of the visitors had hoped to leave behind in the cities. It is unlikely that a Navajo family will ever venture upon the black-topped highway in their wagon.

The National Park Service must tread an understandably narrow and difficult



*Photograph by O. F. Oldendorph*

*On the canyon floor below the "hillside house" the Anasazi tilled their fields of corn, beans and squash.*

path in planning the future development of park areas. The parks and monuments belong to all of the people of the Nation. It is proper that access and facilities allow everyone to visit "his" park. But under the conditions that exist in more and more of our parks, the features for which the park was created are not attracting the visitors. It appears that easy access and spacious modern facilities have made them attractive as low-cost drive-in motels. It is disturbing to see gems like Navajo and Canyon de Chelly Monuments overwhelmed by such visitation.

Nor do the parks fare well at the hands of disinterested visitors. Tin cans in streams, carved initials on rocks and walls, spray-can painted names and obscenities, defaced petroglyphs, vandalized signs and displays are all too common. They certainly cannot be the work of people who are interested in

preserving the beauty of antiquities of their parks. A natural bridge or an arch survives the rigors of thousands of years, but a determined visitor manages to deface it in a matter of seconds. Works of man seem to be special targets for vandalism, whether they be a Mission 66 rest room or the dwelling of an ancient basketmaker.

There is probably little that can be done to reverse the trend where the access and facility pattern has already been established. But it seems advisable to go a bit more slowly in "improving" some of the still-undeveloped primitive areas. The Park Service also has an obligation to the citizen who prefers his park pretty much as nature created it, or as the Anasazi left it.

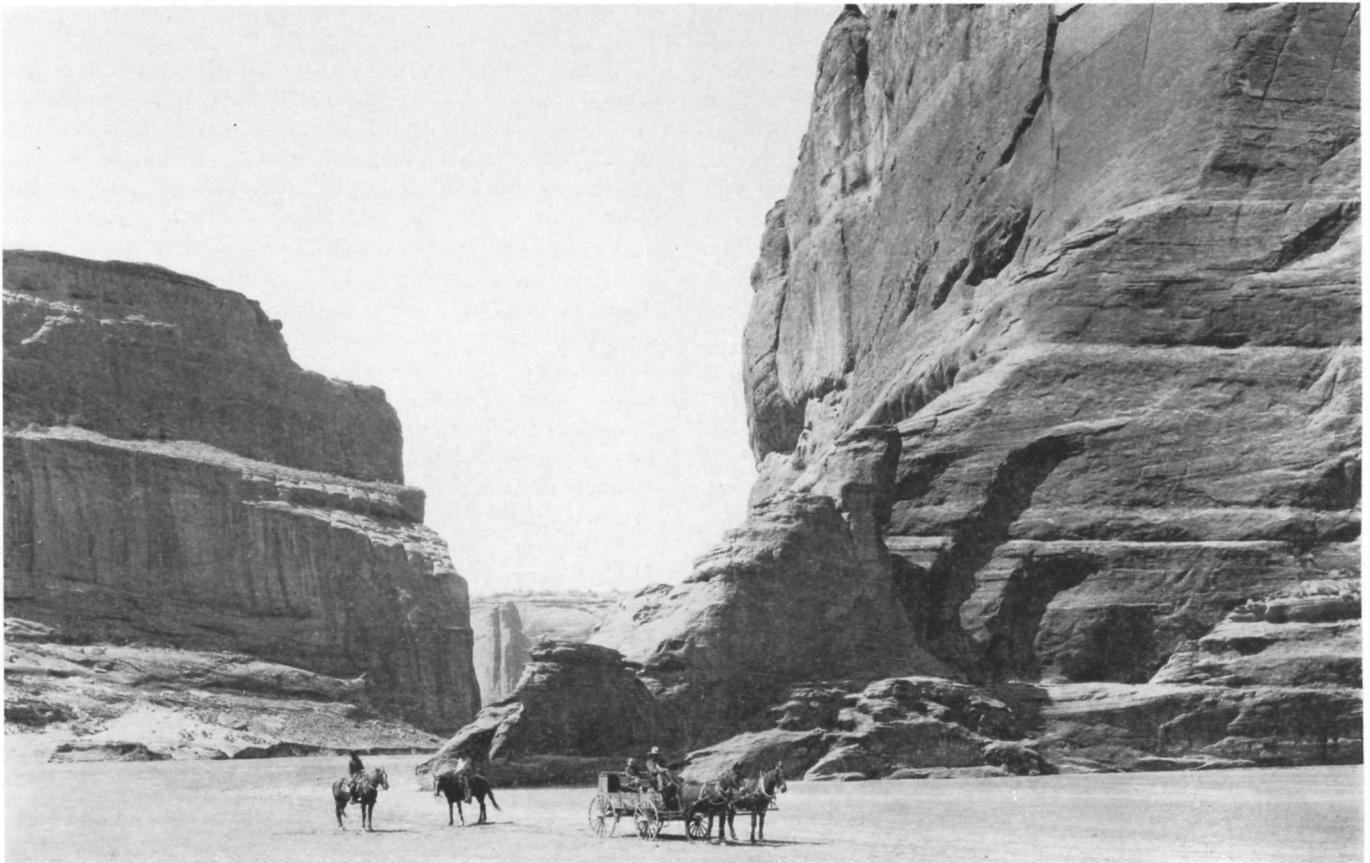
In the future, such areas should not be connected to main highways by paved roads. Nothing discourages the overnight campground-hopper as much

as fifteen miles of dirt road. Nothing else is so welcome to the truly interested visitor, for he knows that at the end of the rough road he will be camping with people who share his interest in the park. A concrete campground on the main highway, with illuminated and easily vandalized restrooms, hot showers, grocery store, bar, and electrical outlets for TV at each camp site would please many who now camp in the national parks.

Such a campground could even be named after the park that enjoys its enhanced security and limited quiet camping at the end of the dirt road. The vacationing family that wishes to "see" a dozen parks in a three-week vacation, to impress the folks at home, could regale their acquaintances with tales of their stay in, for instance, Navajo National Monument Auxiliary Campground, with little loss of effect. ■

*Navajos of the Canyon de Chelly country: will they use the white man's black-topped road?*

*Photograph courtesy Santa Fe Railway*





*View up north slopes of Mount Saint Helens from near the Timberline parking area at 4400 feet elevation. Barren slopes of dormant volcano testify to recent activity and contrast with surrounding mountains forested to some degree up to 6000 feet or higher.*

## Mount Saint Helens: A Possible National Monument

By Philip R. Pryde

**A**N ARTICLE BY DR. WILLIAM HALLIDAY IN THE DECEMBER 1963 issue of *National Parks Magazine* discussed the extensive system of lava tubes and tree casts in the area south of Mount Saint Helens, and recommended that steps be taken to guarantee their protection, preferably as a national monument. This area, however, represents but one key portion of a larger geologic region of outstanding interpretive potential which has been formed by the volcanic action of Mount Saint Helens, and the question should be raised as to how much of this geologically interrelated region should be given a special protected status, and in what form.

The area under consideration, embracing myriad landforms and geomorphologic processes, lies near the western edge of the Gifford Pinchot National Forest in the State of Washington. It is bounded roughly by the Mount Margaret ridge on the north, the Lewis River on the south, Smith Creek on the east, and on the west by an irregular boundary lying in Range 4 East. (Map, on following page). For simplicity, this area can be referred to as "the greater Mount Saint Helens area."

The snow-capped cone of Mount Saint Helens (9,671 feet) dominates the immediate landscape, both scenically and geomorphologically. Mount Saint Helens is the youngest of Washington's five Cascade Range volcanoes, having begun its development only a few thousand years ago. It is also the most recent to have been active, the last major eruption having occurred in November, 1842. Because of its comparative youth, it is the most symmetrical of the Washington State volcanoes, the least eroded, has the least vegetation development on its slopes, and has the most unstable surface material (mostly loose pumice).

Its size may be appreciated by the fact that just the portion of its slopes lying above timberline covers an area of no less than 17 square miles.

Extending off the flanks of Mount Saint Helens are huge flows of two types: lava and mud. The lava flows on both the north and the south slopes are characterized by unique features, with those on the south side being highlighted by an extensive system of lava tubes. These tubes, or lava caves, as they are frequently called, are located for the most part just east of the Cowlitz-Skamania county line, between the southern timberline on Mount Saint Helens and the Lewis River Canyon.<sup>1</sup>

As the earlier article pointed out, there are at least four major lava tubes in the area, and several lesser ones. The height of these tubes frequently exceeds 30 feet, and the longest, Ape Cave, stretches for over two miles, the longest known lava tube in the world. These caves also house interesting, and in some cases unusual, flora and fauna, and afford the possibility of accurate carbon-14 dating of geologic events. There are also numerous tree casts of excellent quality in the area.

To the north lies Spirit Lake, an offspring of Mount Saint Helens' activity. It is a very recent addition to the Washington landscape, having been formed only a few hundred years ago by a tremendous mudslide (or series of slides) which flowed down the north slopes of the mountain. This mudslide dammed the Toutle River, impounding Spirit

<sup>1</sup> There are many other lava tubes in Gifford Pinchot National Forest, particularly in the Peterson Prairie area west of Trout Lake. However, these caves contain little not found in the Mount Saint Helens caves, except that one, Dynamited Cave, has a unique multi-level tube system.

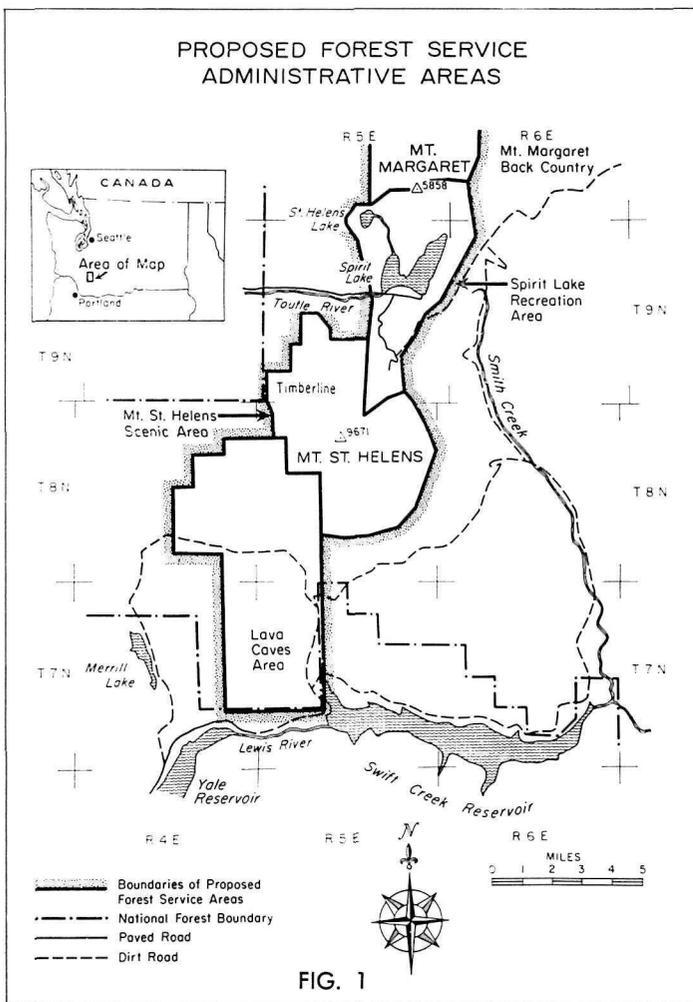


FIG. 1

Lake behind it. Spirit Lake, with a surface elevation of 3198 feet, covers an area of 1262 acres and has a maximum depth of 184 feet. Merrill Lake, lying to the southwest on privately owned land, was similarly formed when another slide dammed the Kalama River valley. Merrill Lake at present has no surface outlet.

In describing the physical geography of the greater Mount Saint Helens area, the most important single fact to be emphasized is that it is essentially a geomorphologic unit. All of the outstanding landscape features in these areas, measured in terms of their scientific, scenic, or recreational value, have been produced by volcanic action of Mount Saint Helens, much of it geologically quite recent.

**Present Uses of the Area**

The greater Mount Saint Helens area has at the present time two dominant uses: logging and recreation. Recreational uses of the area include fishing, swimming, and boating on Spirit Lake, hiking and camping in the areas around Spirit Lake and Mount Saint Helens, mountain climbing and skiing (undeveloped) on the volcano itself, and hiking and spelunking in the lava caves area. The lava caves and flows, the volcano itself, and the Spirit Lake area (which in addition to its interesting genesis contains some fairly well-preserved tree molds) are of educational and scientific value as well. These recreational uses of the area are increasing at a rapid rate, and a very real threat to the region's more fragile environments is arising.

Logging activity is evident either within, or immediately adjacent to, all of these areas, particularly south of Mount Saint Helens. An increased intensity of logging activity is planned soon for the area to the east and southeast of Spirit Lake, in T9N-R6E (Figure 1). There are also numerous mining claims in this latter area, lying just outside of the region under consideration.

The land ownership problem was alluded to in the 1963 article. As a result of the extensive land grant given the Northern Pacific Railroad in 1864 to assist it in building its transcontinental line, today only about half of the sections in the greater Mount Saint Helens area are owned by the Federal Government. Before any agency could successfully organize this area into an effective administrative unit for preservation or recreation, it would be necessary to reconsolidate the land under Federal ownership.

The only possibility for the area which would not require prior land consolidation would be to nominate the area for inclusion in the Registry of Natural Landmarks. This could be done simply, if all the landholders in the area, and the National Park Service, were agreeable to such a step. However, this would amount to little more than a quasi-scenic-easement agreement, and would provide only an uncertain amount of actual, and no statutory, protection for the area.

The Forest Service has been working to regain Federal ownership of the land in the greater Mount Saint Helens area for many years by effecting a series of land transfers with the many present owners of these sections. Some success is currently being realized in this endeavor, particularly in the lava caves area; and more is expected in the next year or two. However, probably at least 5 to 10 years will be required before all of the land in this area can be restored to Federal ownership.

The Forest Service currently has plans under review for dividing the greater Mount Saint Helens area into four special-use regions. These will be: a Mount Saint Helens Caves Area, a Mount Saint Helens Scenic Area, a Spirit Lake Recreation Area, and a Mount Margaret Back Country Area (the latter lying outside of the area under consideration here). The boundaries of these areas are shown in Figure 1. In extent the first three will cover 18,500 acres, 15,370 acres, and 10,100 acres, respectively. The following summarizes Service plans for these areas.

The Spirit Lake Recreation Area will be designated for intensive visitor use (ORRRC Class II); however, under present plans no road will be built to the north side of the lake (the Mount Margaret Back Country will be kept as a *de facto* wilderness). A visitor information center has been operated at the Lake for several years, and future plans include expansion of the existing camping, picnicking, and boating facilities on the south shore of the lake, and the development of additional trails, particularly on the north end of the lake. A feasibility study has been

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Mr. Pryde is in the Department of Geography at the University of Washington. This article is the result of a long personal interest in the area discussed and almost a year of study of the conflicts presently surrounding the Mt. St. Helens region.

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conducted for the development of a winter sports site at Timberline on the north slopes of Mount Saint Helens, and construction will be encouraged following land consolidation in the area.

The proposed Mount Saint Helens Scenic Area would provide for the construction of a round-the-mountain trail, with some interpretive facilities at key locations, but with only one campground.

The Forest Service is currently preparing a detailed management plan for the Lava Caves area. Proposed development includes facilities for public access to, and enjoyment of, certain caves (such as Ape Cave), while others (such as Little Red River Cave) will have restricted access to preserve natural features. Interpretive services and campgrounds will be provided to improve public enjoyment of the area at, for example, the Lava Cast Forest in the vicinity of Lake Cave. The Forest Service sees both the Mount Saint Helens Scenic Area and the Lava Caves region as corresponding most closely to ORRRC Class IV management areas.

With specific regard to the special problem of both developing and protecting the Lava Caves area, the Forest Service has stated that:

It would appear that management as an Unusual Interest Area (geological) would permit full development of the recreation potential of this area and at the same time permit some use of other resources. Use of other resources would be restricted and planned to protect recreation values.<sup>2</sup>

It should be noted that the establishment of an "Unusual Interest Area" is a Forest Service administrative decision, and provides no statutory protection. It is to be hoped that the Forest Service will concur with the ORRRC Report that the protection of the scientific and educational values of a Class IV area is at least as important as the protection of its recreation values, and that preserving and interpreting the geologic history of the area should be the prime management goal.

#### *Suggestion for National Monument*

The Forest Service does not support the establishment of a national monument in this area, feeling that adequate protection and development can be realized by continued Forest Service management. However, the case for the creation of a national monument here seems to be strong.

National monuments are created by either Congressional action or Presidential proclamation to give statutory protection, under the administration of the National Park Service, to areas of unusual significance with regard to either American history or natural history. What qualifies as "unusual significance" is determined by a reviewing committee within the National Park Service. However, there seems little doubt that the Lava Caves area, at least, would qualify, and reasons supporting its establishment as a national monument have been presented by Dr. Halliday in his article. The monument recommended in his article encloses only the immediate lava caves area, and would total about 5000 acres. This would be the smallest practical monument that could be established in this area.

<sup>2</sup> From a written communication from the Gifford Pinchot National Forest Headquarters in Vancouver, Washington, dated May 11, 1967.

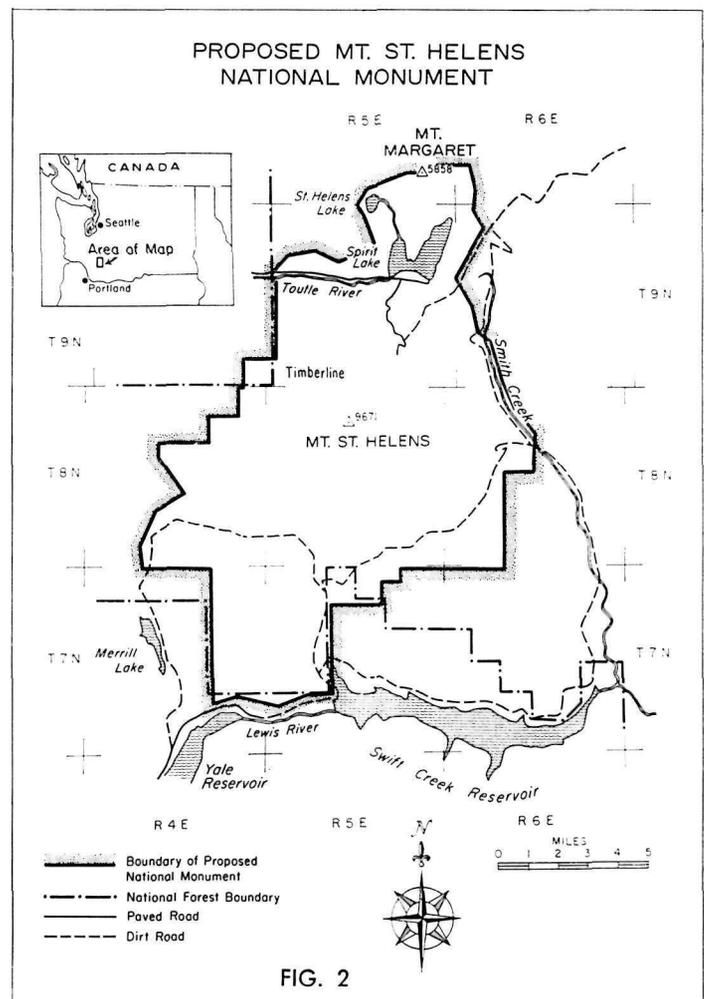


FIG. 2

As suggested above, land consolidation in the region would be necessary before it would be a workable concept.

A question might be raised, however, as to the long-term desirability of establishing protection for only a part of the geologically significant features of the area. As emphasized above, the region from Spirit Lake to the Lava Caves is an interrelated geomorphologic unit, and as such it is appropriate, and necessary, that all of it be included in any new national monument. To establish only the Lava Caves area as a monument would be as inconsistent, and as risky, as to include only one-third of the Grand Canyon in a park.

To this end, a Mount Saint Helens National Monument seems desirable which would protect and interpret the majority of the outstanding surface features resulting from the relatively recent volcanic activity of Mount Saint Helens. This more meaningful national monument would include all of the Forest Service proposed areas except the Mount Margaret Back Country, plus certain additional areas surrounding the slopes of Mount Saint Helens itself. In addition, it would be highly desirable to extend the monument to the edge of the Lewis River Canyon on the south, so as to include an area where many additional tree casts of an exceptional nature have recently been discovered. Such a Mount Saint Helens National Monument would embrace around 80,000 acres, and its boundaries would be approximately as shown in Figure 2.

This proposal would not require large additional land exchanges. The only sections of non-Forest-Service land in



*At left, top: a view toward Spirit Lake from north side of Mt. St. Helens. The large flow which impounded Spirit Lake stretches across the center of the picture, with later slides advancing onto it. Clear-cut private land within the national forest may be seen at left margin of photo. Mt. Margaret Ridge is in right background. At bottom: entrance into main lava tube of Lake Cave, one of larger caves south of Mt. St. Helens.*



this enlarged national monument which are not in the current Forest Service proposals, and which would require trading, are about a half-dozen sections owned by Northern Pacific to the southeast of Mount Saint Helens. In addition, a few sections of private land lying between the national forest and the Lewis River canyon in the south would also have to be purchased, and private sections already clear-cut in the Lava Caves area would have to be rehabilitated. If further funds were available the area around flow-impounded Lake Merrill, which is privately owned, would be a logical and significant addition to the monument.

There is no reason why, under this proposal, Spirit Lake could not remain moderately developed with such recreational facilities as would be consistent with the preservation of its scientific interest. However, it is questionable whether the present policy of allowing motorboats on such a small lake as this is desirable. Also, the development of a ski resort or permanent ski facilities on a loose-surfaced volcano such as Mount Saint Helens would be most inappropriate. The new logging roads east and southeast of Spirit Lake, which connect the existing Smith Creek and Spirit Lake roads (Figure 2), could eventually provide through access across the monument.

The establishment of a national monument as envisioned above would preserve in one fairly small area an inter-related geomorphologic complex combining many of the most interesting features of both Lassen National Park and Lava Beds National Monument, yet having phenomena not found in either. In addition, it is also quite likely that a Mount Saint Helens National Monument as described above, representing an entire complex geologic unit, would be a more convincing proposal to submit to Congress than would a smaller area containing only a part of the unusual natural history of the area.

The Forest Service, as the present steward of the greater Mount Saint Helens area, is to be commended for its efforts toward land consolidation in this region, and for planning a management system for the area which affords increased recognition to its unique geologic features. However, it would appear that the most viable method for preserving this striking geomorphologic complex, while simultaneously allowing it to be developed for interpretive services and a reasonable and appropriate amount of recreational facilities, would lie in the creation of a Mount Saint Helens National Monument, extending from Mount Margaret southward to the Lewis River. This would create in Washington State a federally preserved geologic area of a complexity exceeding any to be found at present in the Pacific Northwest, and possibly in the entire country. In consideration of the outstanding geologic importance of this relatively small area, it would seem highly desirable to effect its transfer to the agency directly responsible for such geologically significant areas, and to establish it as a Mount Saint Helens National Monument. ■

# CALIFORNIA'S PYGMY FOREST

BY MARY BOWEN

**I**N THE HEART OF CALIFORNIA'S COAST redwood country, unique among forest regions of the world, there lies a completely different type of forest—one made up mainly of stunted Mendocino cypress and including some of the smallest trees in the world. This is the little-known pygmy forest at Van Damme Beach State Park, 13 miles south of Fort Bragg on Highway 1.

The pygmy forest does not seem outstanding when hikers first approach it.

At a casual glance it appears to be nothing more than a clearing filled with brush-like undergrowth. The wonderment of its small scale becomes apparent only when Gulliver-sized people take the time to look at it on Lilliputian terms.

A narrow trail barely two footprints wide leads through the glade of stunted trees. If visitors take the trouble to bend down close to the ground and see these trees as full-grown, then the narrow path

seems suddenly expanded to a broad passageway through the grove.

Dark glasses or a shoe placed in the path seemingly assume monstrous proportions. Other visitors, even little children, are transformed into Gullivers in this perspective.

Experts are not sure what stunts the growth of the cypress, *Cupressus pygmaea*, and Bolander pine, *Pinus contorta* v. *Bolanderi*, in the pygmy forest. Nearby there are extensive groves of

*Van Damme Beach State Park, site of a small dwarfed forest, is located on the beautiful Mendocino County coast (seen below) about 13 miles south of Fort Bragg on California Highway 1.*

*Redwood Empire Association photograph*





California Division of Beaches and Parks



*A ranger's hat seems incongruous with the dimensions of the pygmy forest at Van Damme Beach State Park. The trees in the photograph above are mature cypress and pine. Below, the tiny trees are shown against a background of normal specimens. There is no general agreement as to the cause of this dwarf forest, and several others found on California's Mendocino County coast; one of the factors that may be involved is a localized excessive acidity of the soil.*



California Division of Beaches and Parks



the same species which have grown to regulation size. Excessive acidity of the soil and other environmental factors seem involved. Whatever causes the highly localized stunting, the effects are remarkable. Adult trees, bearing full-sized seed cones, range in size from one to three feet tall. Some of these are 300 years old, as shown by a count of growth rings. Other similar areas of stunted cypress occur on the Mendocino Coast, but this is the most outstanding.

Van Damme Beach State Park, in which the pygmy forest is located, was donated to the state park system by way of a tradition started in the last century by Silas Coombs, a pioneer lumberman in the area. Although a lumbering tycoon could scarcely be expected to value such a tiny forest, Coombs instituted the practice of maintaining nearby a free public camping area for summer visitors from the hot inland valleys. Charles Van Damme took over the property from Silas Coombs, and in order to insure that future generations might continue to enjoy it, donated the land to the State in 1934.

Today the park comprises 1800 acres of beach, forest, river-canyon and meadowland, with facilities that include camping and picnic units, hiking and riding trails, boat launching, and a naturalist program. But its outstanding feature is the pygmy forest of stunted Mendocino cypress, a phenomenon not duplicated anywhere else in the world.■

*Report of the President and General Counsel, Anthony Wayne Smith,  
to the General Membership of the*

**NATIONAL PARKS ASSOCIATION**

*on the Occasion of the Annual Meeting of the Corporation and Trustees, May 21, 1968*

THE PROSPECTS FOR PROTECTING the trail and campfire country in the national parks for enjoyment by people as roadless wilderness may have improved somewhat since my report to you a year ago, as the result of the efforts of the National Parks Association.

The Director of the National Park Service appointed two special master plan teams last summer, one for Yellowstone and Grand Teton Parks, and the other for Yosemite Park. Open meetings were held thereafter to ascertain public sentiment, which was for the most part strongly in favor of protection.

At the Yellowstone meeting the Association submitted its proposals advanced three years previously calling for the protection of existing roadless areas as permanent wilderness and for the dispersion of visitation into the enormous areas of public lands surrounding the parks and out into privately owned vacation resorts on private land.

At Yosemite the Association supported action previously announced by the Director of the Service to eliminate the fire-fall and the golf course, provide shuttle transportation within the park, and impose fees for camping. But it went farther, and advocated mass parking facilities at communities outside the park, with minibus or coach transportation into the park, thus reducing traffic in favor of people. It urged further that the expansion of well-planned privately owned and operated resorts in these surrounding communities should be encouraged, with a view to providing for those travelers whose main interest is entertainment.

These appearances were made against the background of the submission of a long series of technical studies on park wilderness protection and regional dispersion, at hearings held by the Park Service pursuant to the Wilderness Act.

It was assumed last year that official recommendations would be made to the President and by him to Congress by early September as scheduled by law; but the Service obtained a moratorium of a year or more, and there is hope that the additional time obtained may permit the preparation of recommendations of a more highly protective nature than appeared likely at first.

There can be little doubt about the popular demand for the protection of wild country into which people can adventure on their own two feet without benefit of automotive equipment

of any kind. It is precisely the heavy traffic of the cities from which they are seeking to escape; the pressures on the trail country, whether for foot or horse travel, are increasing heavily, and it becomes a question of protecting people against the traffic.

OUR ASSOCIATION IS EQUALLY CONCERNED, however, with providing adequate outdoor recreational facilities of all kinds for everyone. Limited camping and lodge accommodations within the national parks have their place; greatly expanded camping facilities could be developed in the surrounding national forests, public lands, reservoir areas, and the Indian reservations. Resort facilities with all the entertainments any traveler could desire might well be developed if the government were to encourage and assist them, and if they were properly planned, in the smaller communities which surround most of the national parks.

The machinery for the park wilderness protection and recreational expansion outside the parks which this Association has recommended already exists in the government. The President's Council on Recreation and Natural Beauty and the Bureau of Outdoor Recreation together have the legal authority to recommend and enforce comprehensive interdepartmental regional planning by the various land management agencies of the Federal Government.

By the date of this report the Service should have completed hearings on about 20 out of 60 units of the system containing lands designated by the Wilderness Act for consideration as permanent wilderness. Another six years will remain within which two groups of 20 units each will be considered. The Association must plan, budget, and finance its work during this period with a view to discharging its heavy responsibilities in this field. All these things cost money and members of the Association who desire to assist by making special contributions over and above their regular membership dues can help greatly by doing so.

CONSERVATIONISTS have become increasingly concerned in recent decades over the destruction to plant, animal, and human communities and environmental resources occasioned by the large dams and reservoirs being built by the Army Engineers and the Bureau of Reclamation. I have reported to

you on several occasions on our work in protecting Grand Canyon National Park and the Grand Canyon against the proposed Bridge Canyon and Marble Canyon Dams. As you know, the Johnson administration, a year or more ago, endorsed the position taken by this Association that these dams should not be built but that thermally powered pumping plants be constructed instead, to pump water from existing reservoirs on the Colorado River into central Arizona to maintain its economy at present levels. As we go to press, there is a reasonably good chance that the Administration program will pass Congress, and, if so, the danger of the flooding of the Grand Canyon by destructive reservoirs may well have been set at rest permanently. Members of the Association who have contributed to this outcome by their membership dues, and in many cases by additional contributions, can congratulate themselves on this result.

On the Potomac River Basin our Association, supported by a broad spectrum of farm, labor, conservation, and citizens groups, has endeavored to show over nearly a decade that the 16 major deep draw-down reservoirs the Army Engineers have proposed are completely unnecessary; Washington's supplementary supply needs can be provided by tapping the fresh water estuary of the Potomac at the city by a special intake and pumping plant at very low cost; the original purpose of these reservoirs, which was storage for pollution abatement, has been outdated by new legislation for the prevention of pollution at source.

One of the great contributions made by the Association to the protection of the Potomac was a detailed technical study by Mr. Ellery R. Fosdick, Consulting Engineer to the Association, of the technical and financial feasibility of the proposed estuarial intake. These recommendations drew widespread support and endorsement from the press and many government officials. If the intake is built there can be no further pretense of justification for the construction of these outmoded dams which would result in the destruction of innumerable farms, homes, businesses, and communities throughout the basin.

Here, again, detailed and accurate technical studies of this kind which constitute a large part of the work of the National Parks Association are extremely expensive. Contributions over and above dues by our members are welcome to help defray these expenses.

**R**IVER BASIN MANAGEMENT, of course, is not entirely a matter of big dams on the main streams and tributaries. One of the most creative natural resources programs ever developed has been the small watershed management program of the Soil Conservation Service. This program consists of bringing agricultural and forest lands on the headwaters under modern management methods to prevent soil losses, erosion, and flash-flood runoffs, and the construction of networks of small headwaters detention basins and reservoirs to hold storm waters and provide water supplies and pleasant outdoor recreation. Experts concerned with these issues gather annually from all over the country in the National Watershed Congress to exchange views and information. Your Association participates in these sessions and has advocated policies looking toward the protection of existing ecologies, environments, and human communities in the small watersheds as contrasted with big reservoir construction after the pattern of the Army Engineers.

We have reported to you previously on the successful efforts of conservationists, in which your Association participated, to protect Storm King Mountain on the Hudson River against defacement by proposed pumped storage electric generating facilities. The Association has favored the substitution of mine-mouth coal-burning plants in the coal fields with transmission

to New York. Since the time of the new hearings held last year by the Federal Power Commission at the behest of the Circuit Court of Appeals, the Commission and the Consolidated Edison Company have apparently been taking their time to reconsider carefully. It is generally understood that proposals for the revival of anything like the original Storm King plans will meet with an outburst of powerfully adverse public opinion.

It is our hope that the prospective National Water Commission will develop recommendations for national water management programs in the future based on the protection of natural ecologies and human communities and not merely the endless construction of poorly conceived reservoirs. The Commission is to be composed of members appointed by the President without connection with operating agencies, and, therefore, in a position to make unbiased recommendations; the creation of such a Commission has been advocated by this Association for years and was endorsed two years ago by the Bureau of the Budget.

**R**AINS CAME after protracted droughts, and Everglades Park was saved again for a time. Our Association has made numerous studies and plans for bringing adequate water supplies through the Old Everglades into Everglades National Park. The problem is to maintain this natural flow of water through the so-called River of Grass into the park as through time immemorial.

The Army Engineers have been engaged in a review of this situation for several years at the behest of Congress, and announced a preliminary plan late last year to deepen Lake Okeechobee in south-central Florida and bring its surplus water down to the park through a system of canals and gates. This Association participated in the public hearings and was happy to give general support to the program, but with the reservation that it contains no guarantees as yet that adequate supplies of water will actually be reserved for and delivered to the park. Without such guarantees, of course, no program has any meaning.

At Mammoth Cave National Park a completely new kind of ecological protection problem was tackled as we got into our planning for wilderness protection and recreational dispersion.

In the cave country of Kentucky are some of the largest, most magnificent, and scientifically most important cave systems in the world. The thoughtless development of surface lands in and around the park, including the diversion of springs and the pollution of streams, was threatening both the developed and the undeveloped cave areas. With the assistance of other scientific and conservation organizations, your Association pressed for the establishment of underground wilderness areas which might be more extensive than surface wilderness areas; it urged at the same time that a halt be called to the careless management of surface land. The National Park Service responded magnificently to these recommendations, and we hope that final official plans for Mammoth can be looked on as a model for underground wilderness protection.

At the same time, we urged official support and assistance for privately operated resorts on private land in communities outside the parks. The internal recreational facilities at the park have been overdeveloped. We have contended that the Service should not compete in this manner with private resorts outside the parks, if such resorts undertake to develop and manage their properties in harmony with decent environmental planning standards.

At Great Smoky Mountains National Park, conservationists, with this Association well in the lead, have been struggling against official programs for the overdevelopment of the park road system. We have been urging the creation of far larger permanent wilderness areas in this park than have thus far

been recommended by the Service. The hearing held by the Service, on which I have previously reported to you, showed the powerful public sentiment favoring protection of the trail country against roads. The old proposal, which has been coming alive periodically for 20 years or more, to build a highway through the park along the north shore of Fontana Reservoir, was generally opposed by all of us. As a result, an alternative plan was developed by the Service to substitute a highway across the mountains; this we also opposed, maintaining that the proper road was through the national forest south of the reservoir, already opened by roads. The outcome has now been settled for the present by a decision to build one more section of the north-shore road and to cancel the plans for the transmountain road. The united efforts of many conservationists, with this Association much to the forefront, can be thanked for the elimination of the transmountain road; whether the further lengthening of the north-shore road can be stopped is a question; but we shall try.

The place for the big recreational developments is not in the park but on the privately owned lands around Bryson City, from which, absurdly, most of the pressure for development within the park has arisen. The big crowds and the tourist business should be captured in well-planned vacation resorts around Bryson City; the trail country in the mountains and the park should be protected as a great scenic backdrop to draw visitors to Bryson City. The traffic and the entertainment should focus around Bryson City; visitors should be transported into the park by minibus or coach to trail bases from which they can take off on foot into the park.

THE PROJECT FOR A REDWOODS NATIONAL PARK has engaged the hopeful attention of conservationists all over America for several years. This Association has recommended a larger park than any of the other conservation organizations, advocating the maximum acreage thus far proposed in the Redwoods Creek watershed and also the largest acreage thus far proposed in the Mill Creek watershed. We have also recommended the establishment of a Redwoods National Forest to put the remainder of the Coast Redwoods Forest under socio-ecological management; covenants running with the land, rather than fee simple acquisition, would be the legal basis of such a national forest. Meanwhile, many conservationists feel that the present Forest Service purchase unit should serve as an experimental management area and should not be traded for proposed park lands; and that such a trade would be a dangerous precedent in the direction of the dissolution of the National Forest System. The establishment of a Redwoods National Park of respectable size appears to be probable in the near future; thereafter, if need be, it can be enlarged. The Association has testified to this effect on invitation.

We hope to develop during the years ahead a socio-ecological forestry program beginning with the redwoods, and extending into Douglas fir in the Pacific Northwest, and the areas in the Great Lakes and Appalachians which have been managed unsoundly for a generation by monoculture and clear-cutting. The objective should be timber management preserving the canopy, the soil, the water courses, the wildlife, the recreational opportunities, the scenery, and the environment for the rounded needs of people. The test of what is economic will depend on how the private and the public sectors of the economy can be integrated into such a program. The technical studies necessary for this work will demand highly professional skills and will require appropriate financing; we are calling again on our members for financial assistance.

Closely related to such a forestry program there should be a wildlife management program designed to assist other organizations already working for the preservation of the many

species threatened with extinction as urban-industrial civilization spreads. The national parks are in many respects our finest wildlife refuges; they afford an opportunity for people to enjoy and become acquainted with animals in their natural habitat under conditions where the wildlife becomes relatively tame. A closer interpenetration of wildlife and human communities appears to be necessary if many species are to be preserved on a crowded planet. This is a program to which our Association should give more attention; whether we can do so depends mainly on whether we can find the financial resources.

THE ASSOCIATION LED THE ATTACK several years ago on the abuse of pesticides; it presented Rachel Carson on its Conservation Education Program in Washington; it brought the conservation organizations together to intervene with the Secretary of Agriculture with respect to pesticide promotion programs by that Department.

There is great need for monitoring the activities of government agencies and private corporations in the pesticide field; this Association could undertake this work if the personnel and money could be obtained; contributions from our members are again in order here.

The Association is affiliated with the International Union for the Conservation of Nature. The IUCN, a quasi-official agency of the United Nations, is the international agency mainly concerned with rescuing great numbers of species of plants and animals threatened with extermination throughout the world. I participated in the Latin American Congress of the IUCN at San Carlos de Bariloche in Argentina as an *observer in March and addressed a meeting in early April of The Friends of the National Parks of Argentina on the subject of national parks*. There is much more in this field which the Association could do if it had the resources to expand its staff.

THE ADMINISTRATION PROPOSALS for a North Cascades National Park have been moving forward. Our members will remember that this Association brought the Secretaries of Interior and Agriculture together several years ago and urged that they compose their differences in order to protect the wilderness in the North Cascades Mountains in the State of Washington. Public opinion in the area has shown itself to be strongly favorable to the protection of these mountains as trail country and permanent wilderness, as contrasted with high-density mechanized recreational facilities. Ample mass recreation can be provided in designated areas within and outside of the proposed park; we shall pursue our protective approach.

At Olympic National Park the customary pressures for roads, logging, and general destruction continue. We have been bucking up the National Park Service to help it preserve the invaluable treasures in the park's moss-hung rain forests, its magnificent wildlife, and its spacious quietudes and solitudes.

We have testified on invitation that the proposed scenic rivers bills should be revised to give stronger protection against big dams and reservoirs on the designated rivers and that the acquisition of protective covenants running with the land in perpetuity should be the main legal device employed, as contrasted with fee simple acquisition. We have said that this approach will dissipate opposition and make it possible to move ahead rapidly in many parts of the country with acceptable wild rivers legislation.

We have taken essentially the same position on invitation with respect to the national trails legislation, advising that measures of this kind, which could be highly beneficial and very important, will make the most rapid progress if the acquisition of suitable covenants, not the condemnation of fee

simple, is taken as the main approach. Great numbers of Americans want the wild river and national trails legislation, but others will strongly resist eviction from their lands (with or without the so-called sell-back or lease-back clauses, or life or comparable estates), and so these measures will get ahead faster if the approach is changed.

We have also testified on invitation in support of the protection of estuaries along all our coasts against unacceptable dredging and filling, and providing for good land-use practices around the margins.

Our members are acquainted through *National Parks Magazine* with our efforts to help cope with the pollution of our rivers, lakes, estuaries and atmosphere. Americans are also increasingly concerned with noise pollution of their environment. We support efforts to manage these problems in a civilized fashion.

ONE OF THE SERIOUS ELEMENTS in any planning for the protection of Yellowstone National Park is the need to eliminate the U.S. designations on the big highways running through the park and redirect the regional commercial traffic and most of the transcontinental travel around the park, not through it.

Everywhere we turn we also encounter the damage done to the environment by poorly chosen locations for the big interstate highways. There is constant danger that the designing of roads in the parks will be taken away from the National Park Service and vested in the Bureau of Public Roads, which has thus far shown no interest or competence in park road planning.

We hope to develop lines of consultative assistance to the new Department of Transportation and participate in the development of better standards of road location and construction. The recent programs for expanded networks of rural and scenic highways probably hold much greater menace than promise to the nation, and may deprive the countryside of the last vestiges of quietude and solitude. We have been reluctant to challenge the road programs, knowing the great strength of the vested economic and bureaucratic interests which further them. But we are drawn ineluctably by circumstances into this fray; we shall need the loyal and financial assistance of our entire membership in our efforts.

ANOTHER AREA into which we have been forced to venture is that of urban open space and green space protection and development. These aspects of conservation are closely intermeshed with urban redevelopment and housing programs and with the need for public transportation facilities in cities to mitigate the destructive impact of the private automobile and extravagant freeways.

We broached some suggestions for the rehabilitation of urban slums and the reduction of urban congestion against a background of traffic reduction by public transportation and peripheral parking for suburbanites last October by editorial in the *National Parks Magazine*. These suggestions had considerable popular support and official endorsement. We hope to publish material frequently in the Magazine on both urban park and green space protection, and the reduction of urban traffic. But to embark into a new territory like this is to incur costs in time, personnel, and money which cannot be met without the strong support of our membership.

THE ANNUAL MEETING of the Corporation and Trustees this year marks the end of a ten-year period of the expanded program undertaken by the present administration in the National Parks Association in 1958.

One of the steps decided upon at that time was to enlarge

the systematic solicitation of new memberships; the result of these efforts, founded on the solid work done by the Association, and the outstanding success of *National Parks Magazine*, has lifted membership from about 10,000 in 1958 to a probable 40,000 at the end of 1968.

The annual income of the Association from dues, contributions, and investments has grown greatly in that period, but it is a constant battle to keep up with the expenses of a greatly expanded park protection and conservation program, rising publishing costs, and membership expansion itself.

The Magazine was expanded beginning in January, 1959, from a small quarterly to its present large-page format issued monthly throughout the year, and carrying color covers four times a year. The total page space in the magazine has been growing year by year since that time and we hope that it will continue to increase, because the material we should be reporting each month grows more abundant and interesting all the time.

While the membership and income of the Association have been expanding, the responsibilities have been rapidly outstripping them; we are under constant pressure to enlarge and intensify our efforts for the protection of the parks and the natural environment generally. The Association and the cause for which it stands need all the moral and financial assistance the membership can give.

During the past two or three years we have been outgrowing our office space at headquarters. After an intensive study of alternative possibilities, the Association decided upon the acquisition of its own headquarters building, advantageously located on valuable property at the intersection of Eighteenth Street and R Street near Dupont Circle in Washington. The purchase was decided on after determining that rental space in available buildings would be more expensive; nonetheless, the new building has its new financial burdens. To cope with them we have launched a campaign for a Building Fund in the amount of \$250,000. Substantial contributions to this fund are needed from all our members during the balance of the current calendar year.

The *National Parks Magazine*, widely acclaimed throughout the world as a leading conservation periodical, is the main educational vehicle of the Association. We also publish a significant number of special technical studies, such as the engineering study of the Potomac estuary referred to above, and the many park wilderness and regional dispersion planning documents we have compiled. A less conspicuous aspect of the work of the Association is its consultative services to the land-management agencies of the Government. To report this activity adequately to our membership and the public would require many more pages in the Magazine. We have been analyzing the possibilities of such an enlargement; realization will probably depend on whether we can accumulate a Magazine Fund from which the initial costs of such a program can be obtained.

THE WORK OF THE ASSOCIATION is made possible only by the dues and contributions of its members. We solicit and receive no Government funds in our work and are thus completely independent. We have never placed great reliance on grants from foundations. We turn to our members everywhere for contributions which range from perhaps \$5 to \$20,000 apiece. The membership responds magnificently with a very high percentage making gifts in one fiscal category or another.

We will need very generous assistance from our members this year to continue in the expansion of our program and retirement of the investment in the new building as soon as possible, thus freeing capital funds for the expansion of operations.

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# THE OLYMPIC FOREST

By Stephen F. Arno

Photographs by the Author

WASHINGTON'S OLYMPIC NATIONAL Park puzzles most visitors at first because it has no single outstanding feature, as do Mount Rainier, Grand Canyon, or many other of the national parks. But Olympic has wilderness coastline, primeval forests, mountain meadows, ice-capped summits, glistening lakes, and a rich flora and fauna. Nature has especially emphasized diversity in the variety of wondrous trees and forests of this realm. As a resident and forestry student on the Olympic Peninsula, and as a seasonal ranger-naturalist at Olympic National Park, I have had good opportunity to explore the Olympic forests from ocean shore to mountain tops.

A dominant reason for the peninsula's variety is its unique weather pattern. In fact, the most tantalizing journey a forest explorer could make would be to simply follow the weather across the Olympics. But before he embarked on such a rugged trek, the explorer should have an understanding of the peculiar climate.

Maritime storms drench the wind-blown forest on the Olympic seashore with about 80 inches of rain each year. Then these rain systems typically funnel up broad, deep river valleys heading east into the jumbled mass of mountains, to dump successively greater amounts of rain as they go. The average annual precipitation half-way up the soggy rain-forest valleys is about 150 inches. The old weather station at Wynoochee Oxbow recorded 184 inches of rainfall—highest in the 48 States—and in January 1935, 35 inches of rain splashed down in a four-day stretch at Quinalt ranger station. Mount Olympus (7965 feet), at the hub of the range,

gets 200 inches of precipitation annually, mostly as snow. This is the highest annual rainfall in the conterminous United States. Winter snowfall on the mountain exceeds 50 feet, and accumulates to a depth of 20 to 30 feet! This superabundance of snow has resulted in the formation of more than 60 active glaciers. Glaciologists have found through dynamite-echo studies that the 2.6-mile-long Blue Glacier on Mount Olympus has ice over 900 feet thick.

The Olympic Mountains milk so much of the precipitation from storms passing over them that the northeastern part of the peninsula lies within a spectacu-

lar rain-shadow. The town of Sequim, only 40 miles from Mount Olympus, averages under 17 inches of rainfall per year. Here, high humidity and mild temperatures modify the effect of light rainfall; but still, conditions in the northeastern peaks can be almost desert-like.

The starting point for a trip to explore the peninsula's incredible tree growth is the rain forest. Everything seems to grow big in the broad valleys that lead from the Pacific to the mountains; but trees are most obvious in this respect. The world's largest Douglas fir—14½ feet dbh (diameter at breast

*Virgin forest clothes the Lillian River Valley in Olympic National Park, seen below from the high-country meadows at Hurricane Ridge.*





Above, the "Skyscrapers," a Sitka spruce about 298 feet tall (at left) and two Douglas firs approximately 288 and 281 feet tall, growing side by side along the Spruce Nature Trail in the Hoh Valley. Below, typical clusters of alpine fir at timberline on Hurricane Hill.



height, 4½ feet above the ground), 221 feet tall, 14,000 cubic feet of wood and still growing—lives here. A new world-record Sitka spruce almost 18 feet thick and 248 feet tall has been found along the Hoh River not far outside the park. A Sitka spruce right on the Hoh River Road, measuring 12 feet, 4 inches dbh and 271 feet tall, is one of the largest known in the park.

In 1964 I took measuring instruments to the rain forests and spent several days-off determining, with assistance from friends, sizes and ages of trees. Perhaps most intriguing was the chance that I might find both Sitka spruce and Douglas fir growing as neighbors 300 feet tall!

I knew this forest holds a host of other giants—western red cedars 20 feet thick, western hemlocks more than 230 feet high, cottonwoods with broad, spreading crowns and still 175 feet tall, to name a few. In fact, six species of western trees reach their maximum size in the forest of Olympic National Park.

As summer progressed I hunted many miles up three valleys; but, ironically, the biggest finds were trees adjacent to the two nature trails near the Hoh River Campground. Two naturalist companions and I measured a spruce 298 feet tall (9.3 feet dbh) along the new Spruce Nature Trail. Astonishingly, this towering giant grows just 25 feet from a lofty Douglas fir merely 6.3 feet in diameter, but 288 feet high! And, in a straight line from these, only 15 feet from the Douglas fir, grows another spire of the same species. This third tree measured a willowy 5.6 feet dbh and 281 feet high. We called the trio the "Skyscrapers." After taking a 16-inch increment boring and comparing growth rates of big spruce windfalls, I estimated the tall spruce's age at 450 years, not too long a time to reach such gigantic proportions.

#### Scars of Battle

Previously we noted that big Douglas-fir veterans nearly always had broken tops, probably clubbed off by howling winter gales. Only in the Skyscrapers had I seen the species grow beyond 270 feet. A previous investigator had taped a fallen Sitka spruce, finding it 300 feet long. I had measured the height of a known spruce monarch on the Hall of Mosses trail, discovering it to be 295 feet high.

It seemed as if 300 feet were a magic height, and that on rare occasion the spruce and some Douglas fir must attain this mark of arborescent gigantism (a 305-foot tall Douglas fir is known in southern British Columbia, and one 324 feet high grows in southwestern Washington). My enthusiasm for the hunt mounted as we continued the quest to tag a Douglas fir 100 yards high.

Hardly half a mile from the Skyscrapers—this time on the Hall of Mosses Nature Trail—we made an exciting find. Here was a Douglas fir whose crown rose far above those of its neighbors. From a vantage point I discovered that this tree, too, had had its top smashed off about 250 or 260 feet above ground. Despite this loss the giant continued climbing into the damp air, as one of the highest branches had bent and grown straight upward.

Through dense vine maple we taped out almost 300 feet from the base of this tree so that we could measure its height trigonometrically. The labor was worthwhile; I calculated the tree's stature at 297 feet. The trunk was 6.8 feet thick, 7 feet above ground. We found it impossible to learn the recent growth rate and to estimate age of such old-growth Douglas fir without chopping away bark, as the protective cork layer, 6 to 10 inches thick, clogged the increment borer. With such a splendid layer of fire-resistant insulation, no wonder these trees are known to survive up to a millenium!

I did know that in initial growth Douglas fir can outstrip its associates on a favorable site. On a college field trip we measured second-growth Douglas fir on the southern part of the peninsula. One young titan, just 72 years old, measured 3 feet in diameter and stood 170 feet tall.

Unlike the two *Sequoia* species of California, the gigantic Sitka spruce are relatively young trees. A study of growth-rates of spruce revealed that the oldest of several trees in the 11- to 13½-foot dbh range was about 600 years. The world's record spruce (17.9 feet dbh) is also estimated to be 600 years old. One spruce I measured near the Queets River Campground was 13 feet 5 inches thick, though it had almost no basal swelling. Its outer 15 inches of growth had been made at the remarkably constant rate of about 5½ annual

rings per inch. Age of this young mammoth is probably a bit over 400 years, and currently it seems to be adding a foot to its diameter every 30 to 35 years!

An outstanding feature of the big spruce and western hemlock in the rain forest is that they often grow in straight rows or colonnades. Sometimes a dozen or more of the stout trunks are in line. Their perched root systems span their common seedbed, a rotting log or stump. Soon after a winter storm topples an old monarch, the fallen trunk will have a key role in perpetuating tree-life by decomposing and becoming a rotten log that may support tens of thousands of seedling spruce and hemlock.

The thick mossy carpet spreading over the forest floor generally restricts tree reproduction to decaying logs and stumps. In the rain forest growth is so luxuriant that 2- or 3-foot drapes of clubmoss hang from maple limbs, and licorice ferns grow even 100 feet up in trees, on a seedbed of clubmoss litter.

Lofty conifers, I discovered, do not have the only claim to the rain-forest sky. Black cottonwood reaching up from the river flats claims its share. This cottonwood is one of North America's tallest broad-leaved trees. Specimens I measured attained heights up to 177 feet, and many reached the 170-foot class. Along rain-forest rivers we saw places where scores of cottonwoods attained 160 feet height, seeming to form a giant hedge enclosing the evergreens that towered behind.

The stoutest fellows of the rain forest are two western red cedars each measuring 20 feet in diameter, and 130 and 100 feet tall. They rank second in the United States only to the sequoias in trunk diameter.

#### Into the Higher Country

The forest changes as one hikes from the broad western valleys into the mountains. But record-sized trees can still be found at mid-elevations. Largest of all North America's hemlock and silver fir trees grow on these slopes. The western hemlock king is more than 8½ feet thick; the biggest Pacific silver fir is 6 feet, 10 inches in diameter and 186 feet tall. Even the high-country forest of the central Olympic has massive trees. The largest Alaska yellow cedar in this Olympic environment is 6 feet, 8 inches dbh and 175 feet high. The largest recorded alpine fir (6.7 feet dbh and 129

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**Mr. Arno is a graduate student in forestry (University of Montana) specializing in recreation. His special interest is in the field of natural history interpretation.**

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feet high) grows in Cream Lake basin.

Tree limit, the upper boundary of arborescent growth, is near 5500 feet in the central Olympics. Mountain hemlock and alpine fir are the chief dwellers of these heights; but they are adapted to the rigorous environment in different ways.

The spire-like fir is susceptible to rot and is brittle and short-lived, seldom reaching an age of more than 200 years. The fir trunks grow in clusters, largely as a result of lower branches extending along the ground to take root and gradually grow upward to form new trunks. Eventually the mother tree in the center of such a fir grove will die and rot away, leaving a hollow center in the stand, now known as a "timber atoll." The fir is also a prolific seeder, though germination and survival is quite a feat here.

Mountain hemlock may not be so efficient at reproduction, but it lives much longer than the fir. At tree limit, the hemlock spreads out, one multi-stemmed individual often forming what appears to be a grove. At 6000 feet in the northeastern Olympics I found a whole stand of 8-foot-tall stems arising from one mountain hemlock. Counting growth rings on an increment core taken from this tree was a problem, even under a 40-power dissecting scope. And no wonder—radial growth on the 11-inch stem I bored was only 1.2 inches in the last 260 years. Total age was estimated to be 650 to 700 years. This was 150 years older than most of the huge rain forest spruce! But, contrasting the harsh, cool climate and rocky "soil" of the timberline to the optimum growing conditions in the rain forest, it is easy to see why tree growth develops so differently in these two sites.

After living 20 years on the Olympic Peninsula and traveling through the wet forests, I could hardly believe that dry chaparral vegetation could be found 20 miles north of the snow-queen, Mount Olympus. But in September, 1964, I climbed up Griff Creek Trail through parched tan grass, hairy manzanita shrubs, Rocky Mountain juniper, and Douglas fir that resembles the

Rocky Mountain variety. The site was dusty and bone-dry, though the peninsula had been sloshing in its wettest summer in recent history!

At 4000 feet I bored a large juniper, 10 inches thick and 18 feet tall, and found it 275 years old; but the outer half-inch had taken 85 years to accumulate. The heartwood smelled like a cedar chest, and was deep wine in color.

During the 1964 "summer," such as it was, Bob Taylor—another park naturalist—and I rambled cross-country over high ridges in the northeast, "rain shadow," part of the range. We found timberline here a striking contrast from that of the wetter Olympics. Lodgepole pine, the "shore pine" variety, is common near sea level on many parts of the peninsula; but here on Gray Wolf Ridge, lodgepole grows only above elevations of 4500 feet, and seems comparable to the forms of the species native to the High Sierra or the Rockies.

At timberline in this rain-shadow zone lodgepole is a major forest component. Its stands occur scattered between barren rock wasteland, mountain meadow, and tundra. The area is reminiscent of parts of the northern Rockies; but in this Olympic rain shadow lodgepole seems to have a permanent niche, rather than being a transient species dependent on wildfires for its perpetuation, as it often is in the Rockies. This opinion is based upon my observations of a stand of sprawling lodgepole near the top of the Gray Wolf at 6500 feet. Trees in this grove have stout, single trunks that grow prostrate across the ridge crest. I extracted an increment core from one such wind-trained tree that revealed 220 growth rings in 4½ inches; total age, over 300 years.

#### The Protective Lodgepole

Alpine fir can grow here only in the shelter of a lodgepole shrub, and where the shielded area stops the fir is scoured off smoothly by the gales, forming thousands of tiny branchlets that grow to meet in a perfect hedge surface. A few yards below the ridge-top we found a lodgepole with its trunk arched horizontally 5 feet above ground. In the shelter of this wind-warped tree a tiny spot of moist ground produces luxuriant herbs and a delicate snowberry bush, a species that normally can exist only far below timberline.

If the high, northeastern Olympics



*Above tree-limit in the Olympics the Alaska yellow cedar may form a huge sprawling shrub, as specimen above on the southeast slope of Mount Angeles at 6300 feet.*

really resembled the northern Rockies, one would surely expect to find multi-stemmed whitebark pines with supple branchlets that sway in a stiff mountain breeze. Until the 1950's there were only sketchy reports that whitebark pine grew at 6000-foot Marmot Pass, overlooking Hood Canal and the Puget Sound Valley. In 1961 Jack Nattinger, the park forester, visited a stand of whitebark in mountain-goat country beneath the shadow of Mount Constance. However, those pines are now mostly dead or dying from blister rust infection.

But in the summer of 1964 I sighted the unmistakable whitebark form—a tall, multi-stemmed silhouette on the skyline—atop several little-known ridges in the rain-shadow country. Close inspection revealed cone-bearing whitebark. These attain heights of up to 40 feet, and estimated ages of 500 years; however, they appear free from rust infection. This astounding whitebark of the Olympics is truly an alpine species; for, unlike every other tree-line dweller on the peninsula, it grows exclusively above 5600 feet elevation, always at or above the timberline zone.

Birds and chipmunks must distribute the whitebark's plump nuts in this range, too, for I found 7 isolated speci-

mens of whitebark scattered about high crests, each more than 7 miles from the nearest whitebark stand. We discovered a 1½-foot whitebark sapling eking out its existence at the summit of 7218-foot Mount Gray Wolf, almost 1000 feet above tree limit.

If an old-time log Sawyer in the Pacific Northwest were asked about Alaska cedar, he would probably recall that pungent odor of the fresh-cut wood and its effects—frequent, rushed trips to the nearest privy. That smell is reputed to be a potent laxative! A boat-builder would likely describe the fine-grained yellow wood as having good working qualities. In the Olympics, Alaska yellow cedar is a most adaptable species. Its drooping form graces many a stream-side at 2500 or 3000 feet, where it may reach large proportions. But often it forms a huge sprawling shrub clinging to rocky crags far above tree limit in the rain-shadow country.

We found one such yellow cedar, a mammoth circular mat with a 50-foot spread, but scarcely 3 feet high, inhabiting the bare southeast slope of Mount Angeles at 6300 feet. A smaller cedar on a nearby mountainside revealed one of the secrets of the specie's tenacity. The matted bush with lace-like foliage extended a root, now exposed by erosion,

fully 75 feet across the slope. This anchor and life-line is about 4 inches thick for most of its length, and its tip is likely 100 feet from the small shrub. The exposed wood is so rot-resistant that part of a fire-killed stand of yellow cedar along the road to Paradise in Mount Rainier National Park was cut and used to furnish the park headquarters after the snags had weathered for almost 50 years.

A colony of yellow cedar shrubs is the sole conifer occupant of the uppermost 300 feet on Mount Gray Wolf (with the exception of the sapling whitebark), but in this extremely high habitat the cedars are found clinging to an almost vertical rock wall rather than inhabiting a more gentle, rocky grade nearby.

Willow trees grow on damp sites throughout the Olympics; but I was surprised to find a pure stand of alpine willow only 6 inches high, covering an area the size of three football fields placed side by side! Furthermore, this stunning willow carpet had a profusion of "pusy willows," or catkins.

The pygmy "forest" of willow, located at 5300 feet elevation in the rain-shadow zone, occupies a flat, soggy site that appears to have been a glacial cirque lake, now filled in with eroded material. Bright-yellow dwarf monkey-flowers bloomed at the edge of the creek that meanders lazily through the basin.

Dendrologists have no doubt spent long hours trying to decide how to classify the common or dwarf juniper. This sub-shrub grows throughout mountains in many parts of the world, and it is genetically a first cousin to our juniper trees; but on this continent only at Dunes State Park in Indiana and a few other locations in the eastern United States does it approach tree size (up to about 20 feet tall). Even in favorable environments in the Olympics the dwarf juniper retains its creeping ground-cover form. However, it is adapted to life here on the cloud-capped peaks where tundra plants are its only companions.

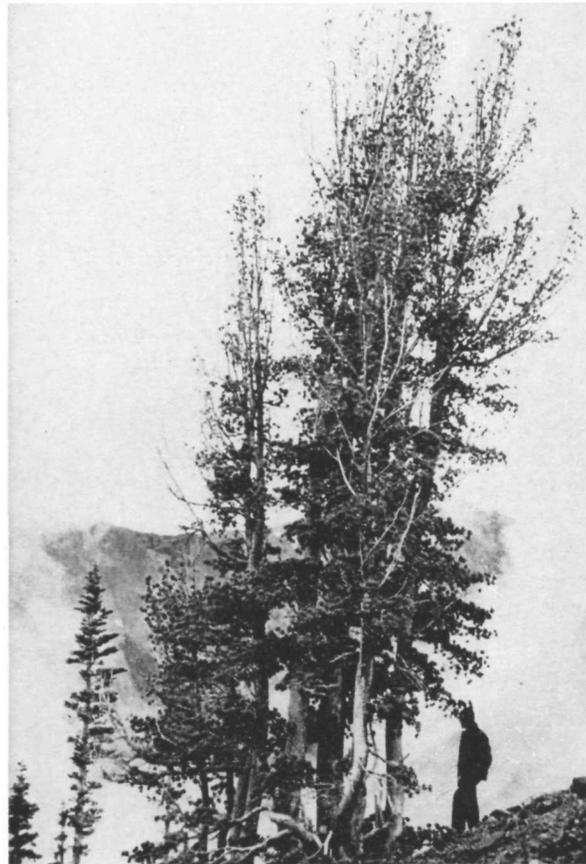
#### **Dogwood and Cinquefoil**

Two beauties of different extremes would surely be admired by any cross-Olympic Rambler. Pacific dogwood is a small but gorgeous flowering hardwood tree. The creamy 4-inch blossoms delight those who see them in the lowland

forest. Shrubby cinquefoil is a gleaming "yellow rosebush" that would greet our outdoorsman following the weather, as he neared trip's end in Arctic-like climes on the high peaks of the rain-shadow zone.

In traversing the Olympics such a hardy traveler would be in the midst of wilderness sublime, for the park contains nearly 900,000 acres. Parts of this realm have never been seen by any naturalist. Perhaps there are sheltered groves of spruce and Douglas fir where trees poke growing tips over 300 feet into the air. Perhaps there is a cottonwood 200 feet high, or a spruce 18 feet thick. But those high-country dwellers are just as intriguing, not to mention the deer and elk that browse on them and the mountain goats that scratch off their fleece on the bristly needles.

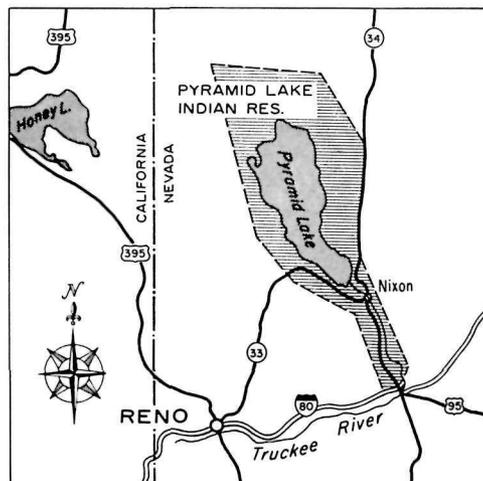
And after a hiker had made the rugged journey, following the clouds across that precious peninsula, studying the trees as he went, he would probably feel as I do, hoping to convey so much . . . all the wonder of God's giant garden, with a man's limited power of description. Still, he would feel, the challenge to translate feelings into words should be met so that more Americans will be made aware of the great natural heritage that is ours in Olympic National Park. ■



*A little-known native of the Olympics is the multi-stemmed whitebark pine, restricted to timberline in rain-shadow zone.*

*Mountain goats summer amidst snowfields, meadows and timberline trees near Mount Angeles in the Olympics.*





## CURIOUS CUI-UI OF NEVADA'S PYRAMID LAKE

By Myrtle T. Myles

When Western explorer Captain John C. Frémont discovered and named Pyramid Lake, Nevada, in 1844, he wrote an enthusiastic account in his journal of the wonderful salmon trout the Indians speared and presented to him, and of the feast he and his party enjoyed. Since it was mid-winter, the famous "Pathfinder" failed to note another large fish, a curious member of the sucker family; for in cold weather cui-ui lie in the deep water's muddy bottom beyond observation.

The cui-ui (pronounced *quee-wee*, but known to the early Indians as "cooie-ooie") were greatly prized as food by the Paiutes living in what is now western Nevada. In prehistoric times, when Pyramid Lake was a part of the great Lake Lahontan that covered an area which included Walker Lake to the south, the cui-ui were numerous in this inland sea, and there is evidence that they occupied the Klam-

ath lakes of southern Oregon and northern California. Today the deep blue waters of Nevada's beautiful desert lake is the home of the last survivors of this strange species.

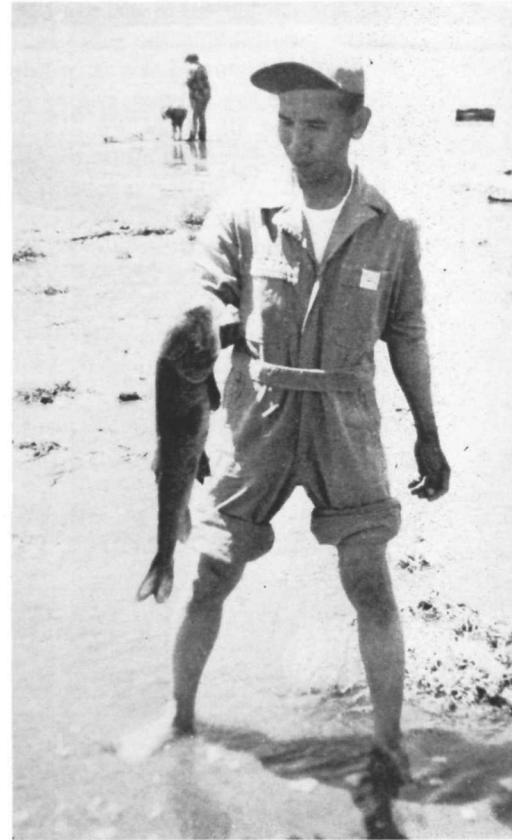
Each year when spring breaks, the cui-ui, long used to spawning in the Truckee River near where it empties into Pyramid, again make the attempt; but irrigation projects have reduced the stream to such an extent that the fish cannot go beyond the lake shoreline, and many die there. Long before the coming of white men, Indian tribes gathered at the mouth of the river in spawning season to net or spear the large fat suckers, dry them for winter use, and to hold a great feast on the fresh fish. Old men and women of the Paiute tribe at Nixon, reservation village on the shore of the lake, tell stories of these great gatherings where games and dances were held for weeks celebrating the cui-ui run. The fish were

snagged by hooks made of greasewood, polished and dressed with pitch, by bone hooks, or were speared; but at the high point of the run nets were used. The nets were operated by two men, one at each end, who waded out from the shore and filled them to overflowing with the fish eagerly heading for the Truckee. On the banks squaws waited to split and clean the catch, then put them on willow racks to dry and smoke. Both nets and fishlines were made of the wild hemp which grew on the west side of the lake. According to Harry Sampson of the Reno Indian colony, nets were most frequently used for cui-ui, snag hooks usually being employed to catch the large cut-throat or salmon trout of which Frémont spoke.

In appearance the cui-ui is not a "pretty" fish. The large head is blunt with a snout-like mouth. The male and female differ somewhat noticeably in



*During spawning season the cui-ui must run the gauntlet of the Pyramid Lake pelican flock, shown in part at the left. The pelicans make a stand on a sandbar where the Truckee River enters the lake and take great numbers of the fish as they appear in the shallow waters.*



*Human predators also take their toll of cui-ui. Above, a Paiute boy with a large fish poses for the author's camera, while the photo at left shows a portion of Pyramid Lake with several fishermen.*

*Three photographs by the author*

spawning season, males having a dense black stripe five or six scales wide extending below the dorsal fin, interrupted by brassy or silvery scales, above which they are a reddish-bronze with dark spots; turning in the sunshine, the reddish tint flashes. The fins are blue, and underneath the body turns from silvery to dead white. The female's whole upper surface is dark brownish-black, sides brassy but dull. Weight of

the male is from 2 to 3½ pounds, length 17 to 21 inches; females 3 to 6 pounds, length 20 to 24 inches.

The first cui-ui appear near the river mouth between the middle of April to the middle, or even the end, of May, and the run is usually death to an enormous number, as the Pyramid Lake pelicans attack and kill them in hordes.

Only a few years ago one might still observe Paiute squaws splitting the

fish for the drying-smoking process on the primitive racks, but today the practice seems to have been abandoned. The run is unpredictable, but when it occurs there is one group of observers who never miss the event, since they wait patiently for days or even weeks if necessary. These are the pelicans. On a sandbar at the mouth of the Truckee River hundreds of them are perched, eyes on the water, making

occasional dives as an unfortunate cui-ui appears near the shallow shore edge. Periodically a flock of the big birds rises high and circles the area, flies a half-mile upstream to scout from the air, then returns to the sandbar. These lookouts scout the lower Truckee for long periods, refusing to consider the present low water there but waiting eagerly for their big feast, which is "not what it used to be," for they can only strike the cui-ui where these now must spawn, along the shore line.

Since Pyramid Lake is within the reservation the Paiutes need no license to fish, but all others are required to buy an additional license of \$1.00 a day, or \$3.00 for the season, from the Indians. Many think it worth the trouble, and find not only the fishing good sport, but the flesh of the cui-ui palatable. Care must be taken to avoid the quicksand at some spots along the edge of the lake, particularly near the river; only a few years ago, a lone fisherman met his death in the treacherous sands.

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**The author, who makes her home in Reno, has been a researcher for the Nevada Historical Society Library in that city for the past nine years.**

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At a recent cui-ui run an Indian observer was asked if his people still smoked and dried the fish. He replied, "I heard about that" (from the older people), "but now we have deep freeze." And so, it seems what was once a necessary part of survival for the Indian is now largely enjoyed as a sport by his white brothers—who also have "deep freeze."

#### Trip to the Lake

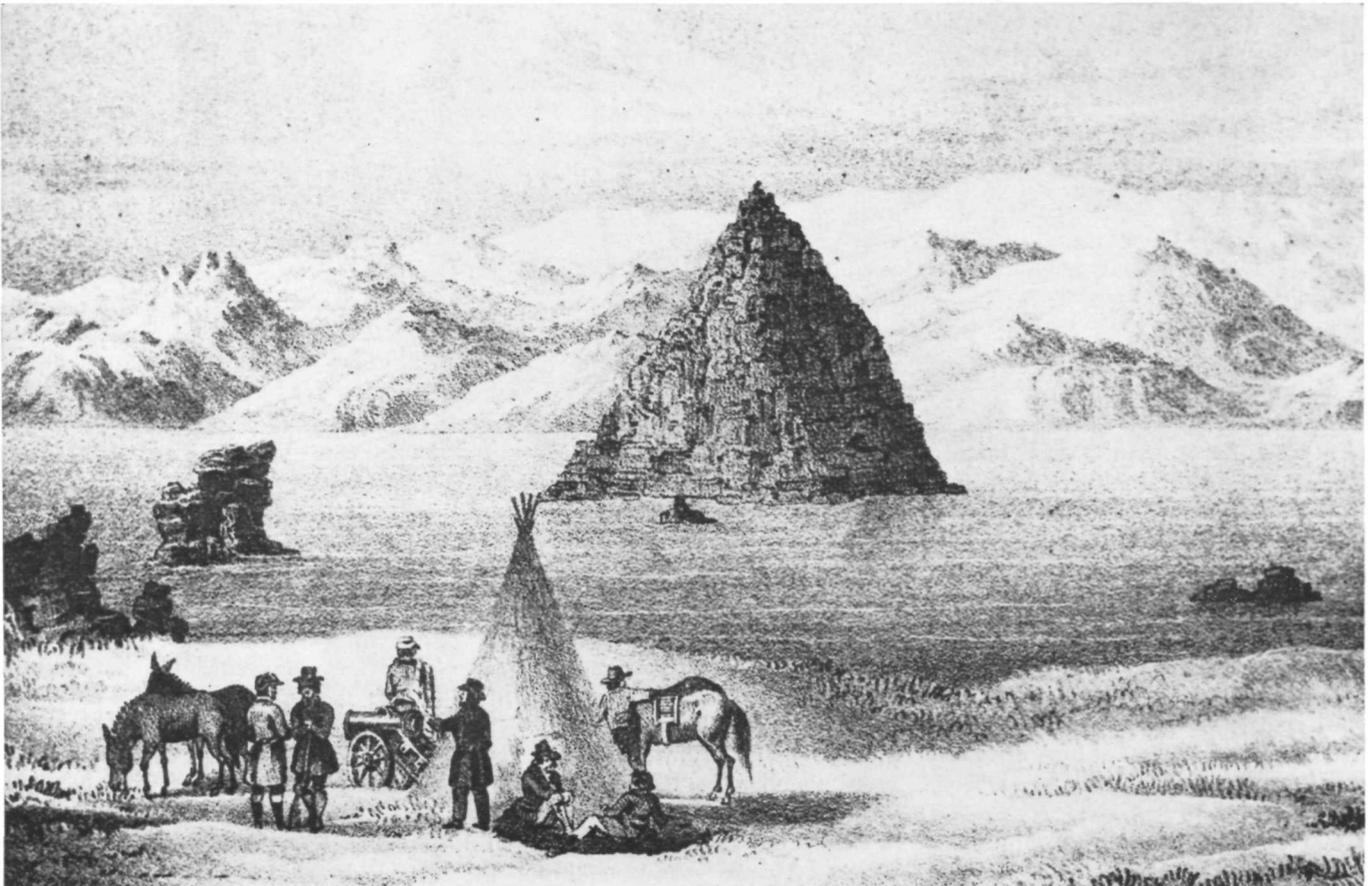
The trip to Pyramid Lake takes one into the unspoiled desert to a body of water larger than Lake Tahoe, of a deep and almost startling blue against a treeless background. The distance is 30 miles northeast from Reno over a paved road. The area is being developed for greater recreational use, espe-

cially for sailboat enthusiasts. One may return by way of Nixon, where there is an interesting Indian trading post, along the Truckee River to the main east-west highway and through the Truckee River canyon to Sparks and Reno—all scenic. The old shoreline of the lake can clearly be seen where the level has dropped sharply since the diverting of water for the Newlands Irrigation Project, undertaken in the early 1900's.

The present lake shoreline and the mouth of the Truckee are both far from the old one where the Paiutes of early times gathered to celebrated the run of the "cooie-ooie." The pyramid for which Frémont named the lake, then far out in its waters, can now at certain low-water seasons be reached almost entirely by dry land. However, the cui-ui still manage to spawn in large numbers along the shore, and the trout of which Frémont spoke, known as "cut-throat trout"—a large and especially fine variety—are kept plentiful by well organized planting. ■

*Explorer John C. Frémont, who discovered and named Pyramid Lake in 1844, is shown at the lake in the old drawing below.*

*Courtesy Nevada Historical Society*



# News and Commentary

## Leopold Refuge Study Presented at Conference

The North American Wildlife and Natural Resources Conference, one of the important annual conservation gatherings, sponsored by the Wildlife Management Institute, was held this past March in Houston. Representing the National Parks Association was its president, A.W. Smith.

Highlight of the meeting was the study report of Secretary Udall's Advisory Board on Wildlife Management concerning the national wildlife refuge system.

Many of our readers will recall that, in the spring of 1966, the Interior Secretary requested the Advisory Board—commonly known in the conservation world as the Leopold Committee, after its chairman, Dr. A. Starker Leopold of the University of California at Berkeley—to study the wildlife refuge system and report to him on a number of questions concerning it; in the Secretary's words, to determine whether "it could be rounded out, filled in or otherwise altered and completed to include all that our national wildlife lands and waters should include or, conversely, need not or should not include."

Now the Committee has presented the Secretary with its views in this important field, and conservationists will, without doubt, be giving the report their deep attention in the coming months; and this Magazine will be reporting on wildlife refuge developments as they unfold in response to the recommendations of the study. The Magazine also hopes to be able to present its readers with the full printed text of the Leopold Report on the wildlife refuges in a future issue.

Membership of Dr. Leopold's group includes, in addition to the chairman, Dr. Clarence Cottam, Dr. Ian McTaggart Cowan, Dr. Ira N. Gabrielson, and Mr. Thomas L. Kimball.



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## Some Well-Deserved Awards

Awards which conservationists throughout the nation will feel well merited have been made to Rep. John P. Saylor of Pennsylvania and Rep. John A. Blatnik of Minnesota. The two Congressmen have received the first Bernard M. Baruch Prizes for outstanding contributions to the field of conservation. The \$2000 awards were established by the Belle W. Baruch Foundation in honor of Miss Baruch's father, the late Bernard M. Baruch. Rep. Saylor was honored for "contributing most to the field of conservation," and his citation referred to him as "the father of the Wilderness Act, a milestone in the field of conservation." Rep. Blatnik received a special 1967 anti-pollution prize as author of the Federal Water Pollution Control Act.

The Department of the Interior's Conservation Service Award, highest distinction the Department can bestow upon a civilian, has gone to former Governor Edward T. Breathitt of Kentucky for his "enlightened leadership in natural resources legislation and administration at the State government level."

The Cornelius Amory Pugsley Medals, awarded this past January, went to Park Service Director George B. Hartzog, Jr., in gold, for park work of outstanding significance to the nation; to Mr. Earl P. Hanson of California, in silver, for park work at the State level; and to Mr. John P. Hewitt of the Maryland-National Capital Park and Planning Commission, in bronze, for work at the local park level.

## Redwoods Park Hearings

During mid-April the National Parks and Recreation Subcommittee of the House Interior and Insular Affairs Committee held field hearings in California on the matter of the proposed redwoods national park. At Crescent City on April 16, and again at Eureka on April 18, the views of this Association were presented to the subcommittee, on invitation, by Edward N. Munns, Consulting Forester to the National Parks Association.

In a brief presentation Mr. Munns told the Subcommittee that a redwoods park should embrace the largest of the areas proposed by the Government at any time, and by various conservation organizations, for both the Mill Creek watershed and the Redwoods Creek watershed, with a substantial corridor linking the two. The proposed exchange of Forest Service lands in the northern redwoods purchase unit for land now privately owned for inclusion in the proposed park would not, in

the Association's opinion, be in the public interest. The Association feels, Mr. Munns said, that it would be in the public interest to establish a redwoods national forest comprising the entire coast redwood belt, perhaps by acquisition of managerial easements instead of fee simple; the objective should be establishment of socio-ecological forestry practices throughout the timber-producing areas of this belt outside present State redwoods parks and the proposed redwoods national park.

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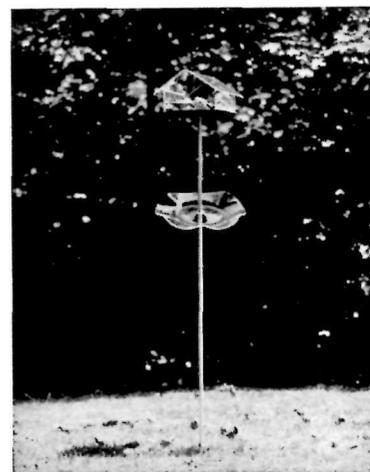
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**Dr. Commoner CEC Speaker**

Questions from a lively audience kept Dr. Barry Commoner, eminent scientist and director of the Center for the Biology of Natural Systems at Washington University in St. Louis, until closing time for the Smithsonian Institution's National Museum auditorium in Washington at the March 8th program of NPA's Conservation Education Center. The size and inter-

est of the turnout for Dr. Commoner's talk was not only a compliment to the speaker but evidence of the increasingly serious concern that many people feel over the unknown effects of some of our chemical technology on nature's processes.

In his lecture, "The Crisis in the Environment," Dr. Commoner reported that, since his remarks before two meetings (Department of Agriculture and American Association for the Advancement of Science) in December of 1967, the Montreal Department of Health had made a survey of the nitrate content of commercial baby foods which bore out his earlier predictions of certain potential dangers from the use of nitrogen fertilizer. He said that we must recognize the existence of the problem and its implications for our agricultural system. Dr. Commoner called for additional scientific studies of the matter, and said that we must begin to cope with the enormous social questions that will be involved.

**Virgin Islands Land Use Study Is Released**

The Park Service has recently released a comprehensive resource study of the American Virgin Islands, conducted by the Department of Landscape Architecture of the University of Massachusetts, which seems to contain some particularly timely recommendations for a group of tropical islands (St. Thomas, St. Croix and St. John) which is certain to become an even greater target for tourism than it presently is in an increasingly affluent

society. The study essentially looks toward orderly development, with emphasis on protection of natural features and resources. For example, the study recommends acquisition for public use the remaining undeveloped sand beaches on the three islands. Another recommendation is for retention in public ownership of the offshore islands and keys as nature preserves; a third suggests a complete inventory of the coral reef complex, with the best reefs identified for protection, perhaps in a public park system. The report also recommends that, for historical purposes, the towns of Charlotte Amalie and Frederiksted be incorporated into historic districts—like the existing Christiansted Historic District—for protection of architectural and historical qualities.

**John Brown's Wandering Fort**

John Brown's Fort, used as a stronghold by John Brown and his raiders in their 1859 attempt to liberate the slaves and set up a free-Negro redoubt in the nearby mountains—now located at Harpers Ferry National Historical Park at the confluence of the Potomac and Shenandoah Rivers in West Virginia and Maryland—is, to say the least, a well-traveled fort. The fort was moved from its original site at Harpers Ferry to the Columbian Exposition in Chicago in 1893, to be moved later back to a farm near Harpers Ferry. In 1909 it was moved to the campus of Storer College at the Ferry (now the Stephen T. Mather Interpretive Training and Research Center of the National Park Service). With plans for a new Training Center interpretive facilities building well forward, the Fort has now been moved a mile or so to the Old Arsenal Square in Harpers Ferry.

**A New Wildlife Refuge**

The Migratory Bird Conservation Commission has recently authorized establish-

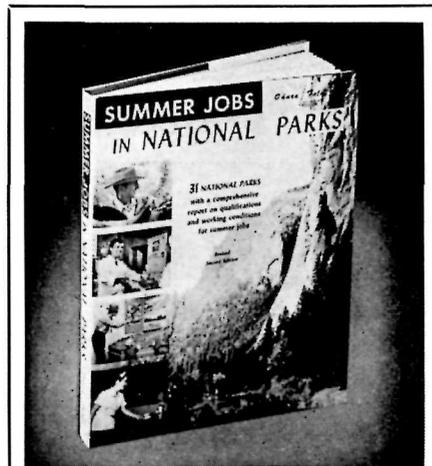
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ment of a new national wildlife refuge, the San Bernard Refuge on the Gulf of Mexico, 60 miles from Houston in Texas. The new acquisition will encompass 14,676 acres of Gulf marshland, winter habitat for many species of migratory water birds. In an earlier action, the Commission approved several additions to existing refuges, as follows: 1213 acres to the Coastal Maine Refuge in southern Maine; 475 acres to the Browns Park Refuge in northwestern Colorado; and 110 acres to the Columbia Refuge in central Washington State.

### Natural History Study in the High Rockies

This is the time of year to think about the popular Summer Seminars in Rocky Mountain National Park, which will be held in 1968 from June 17th through July 20th. Top natural science professionals will lead week-long courses in mountain geology, field identification of plants, advanced field identification of plants, mountain ecology, alpine tundra ecology, and animal ecology. Further information, including a detailed description of the seminars, fees, and accommodations may be obtained from the Executive Secretary, Rocky Mountain Nature Association, P. O. Box 147, Estes Park, Colorado.

### Book Reviews

SKY ISLAND. By Weldon F. Heald. D. Van Nostrand Co., Inc., Princeton, N.J. 08540. 1967. ix + 166 pages profusely illustrated with photographs by the author and drawings by C. M. Palmer, Jr. \$5.95.

The "Sky Island" of this book is southeastern Arizona's Chiricahua Range, including an 18,000-acre Forest Service wilderness area and the 11,000-acre Chiricahua National Monument in a vast

mountain complex rising from Lower Sonoran Desert to Hudsonian forests with peaks near ten thousand feet.

The volume is rich in facts about scenic wonders, vegetation, wild creatures, climate and history. Yet it is not an "information" book, but one in which you "live with" Weldon and his wife Phyllis at Painted Canyon Ranch on the wilderness edge. You enjoy with them varied non-working ranch experiences—a friendly skunk who came to dinner and stayed, a ringtail cat who dwelt for a time in the living room, bats who kept the house insect-free, lightning storms, floods, and water-supply troubles when an animal fell into the deep spring. You join in entertaining naturalists from far places. You walk with Weldon, camp in deep woods, come maybe too close to bears, watch coatis, raccoons, foxes, porcupines, deer and hummingbirds.

You find out why a representative of the American Museum of Natural History said at the ranch: "There is probably more natural history within eighteen miles of where we're sitting than anywhere else in the world." You even experience "trips" which lead Weldon to a half tongue-in-cheek suggestion that we might "include wilderness in the category of psychedelic or mind-expanding drugs . . . But perhaps the greatest value in following these lofty skyland trails was the peace and satisfaction best found in Nature's unspoiled places. . . . No better tranquilizer was ever invented."

Weldon was a trustee of the National Parks Association. He wrote many articles for this magazine (and 138 other publications). He aided in preserving much Western wilderness and was an original advocate of saving another "sky island" as Great Basin National Park. Death took him suddenly last July, after he had completed his work on the Chiricahuas but before it was published; so "living" this splendid book is a final opportunity for intimate acquaintance with one of the significant conservationists of our time. —Darwin Lambert

100 ROADSIDE WILDFLOWERS OF SOUTHWEST UPLANDS IN NATURAL COLOR. By Natt N. Dodge. Southwest Monuments Association, Globe, Arizona. 1967. 106 pages in paper cover, illustrated in color. Price, \$1.50.

From a background of familiarity gained through many years as the regional naturalist of the National Park Service's Southwestern Region, Natt N. Dodge, prolific writer on nature, natural history and conservation topics, has drawn the material for *100 Roadside Wildflowers of the Southwest Uplands*, beautifully il-

lustrated with his own camera in full color. In his short introduction, Mr. Dodge defines the Southwestern uplands as "higher than the hot, dry stretches of desert, but lower than the heavily forested and sometimes snow-covered mountain steeps"—in short, the pinyon-juniper domain of the Southwest.

This conveniently-sized paperback volume will serve as a general and highly readable guide to many of the wildflowers of the pinyon-juniper country likely to be seen by casual visitors. It has, also, a valuable page devoted to the problems of enthusiasts who like to photograph their wildflowers—or those who would like to try their hand at the art. Care, patience and ingenuity, says Natt Dodge, are the ingredients of good wildflower photography. The reviewer would agree, but would shuffle the order of the prescription to place patience first. Is there a more effective way to raise a breeze on a hot summer's day than to secure a perfect focus on a flower-head? Or a better guarantee of immediate cloud cover? Experience makes me doubt it. —P.M.T.

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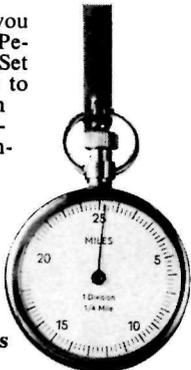
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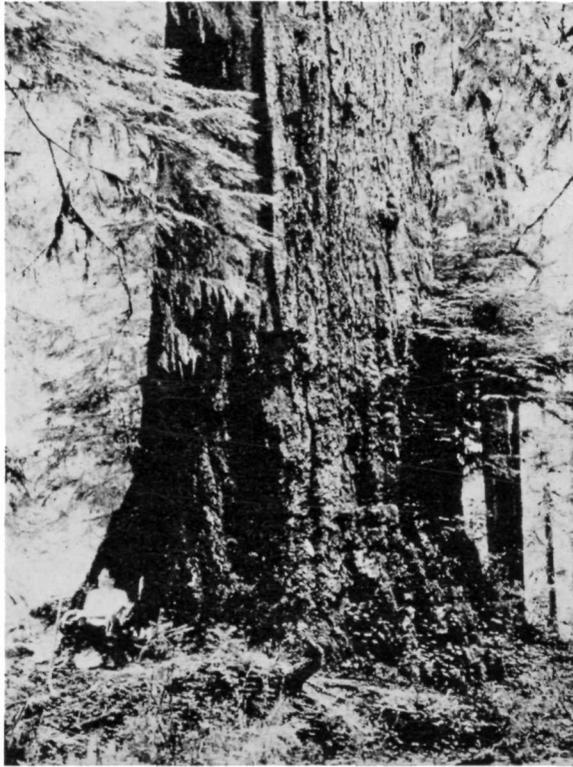
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*In the Queets River Valley of the Olympic Peninsula grows the largest known Douglas fir, 221 feet tall and fourteen and a half feet in diameter. The photograph is by Stephen F. Arno.*

**I**N THIS ISSUE a forestry specialist reports on his investigations of the magnificent trees of Washington's Olympic forest, part of which is protected in Olympic National Park. Olympic Park has been called by one conservationist "the perennial problem child of the national park system," largely because of the economic lure of its famous rain forests, toward which adjustments of park boundaries are suggested from time to time. As the nation's leading conservation organization concerned with park protection, the National Parks Association has played a leading role not only in helping to protect Olympic's forests from contemplated raids but also in resisting suggestions for public hunting of its wildlife. You can assist your Association in this protective work by raising your membership dues, by contribution to the general funds of the Association over and above basic annual dues, or perhaps by remembering the Association in your will. All dues over and above basic annual dues, and all gifts and bequests, are deductible for Federal income, gift and estate tax purposes.

**National Parks Association**

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