NATIONAL PARKS *Magazine*

Domes of Navajo Sandstone tower over the Fremont River in Capitol Reef National Monument

July 1968

Watershed Vistas

THE RECENT NATIONAL WATERSHED CONGRESS at New Orleans was a creative and hopeful meeting. This was the 15th Congress; as one of the sponsoring organizations over many years, this Association hopes that there will be many more such meetings.

Heavy emphasis was placed, in the papers and discussions, on the complete prevention of stream pollution, as well as the major watershed issues of good agricultural practices, flood prevention, and water supply.

Spokesmen from the Federal Water Pollution Control Administration participated as speakers; they were questioned closely from the floor as to whether the new agency would merely follow the old practices of storing water for the dilution of pollution, or whether strong measures would be taken to prevent municipal, industrial, and agricultural contaminants from entering the streams.

Many participants were satisfied that FWPCA would take a modern approach as far as possible, at least if pressed and supported by persons and organizations like those attending the conference.

Closely related was the question of the renovation and recycling of water supplies. Here again spokesmen of the FWPCA prophesied a massive shift from water treatment at the intakes to complete renovation at the outfalls, and these presentations were received with enthusiasm by the participants.

Outstanding among the technical papers was a report by Lewis T. Kardos, an environmental scientist from Pennsylvania State University, on several years of experimentation with spreading effluents from a municipal treatment plant on agricultural and forest lands. This research has shown conclusively that municipal waste water can be purified completely by these methods and that farm and forest production can be increased by the irrigation and fertilization thus provided.

Daniel A. Poole, of the Wildlife Management Institute, raised serious questions, which ought to have prompt attention, as to channel straightening and wetlands drainage as benefits claimed in small watersheds programs; these activities are usually harmful to ecologies and wildlife; it was properly urged that they be restricted or abandoned in watershed management work.

Herbert B. Eagan, for the Army Engineers, presented a valuable paper on floodplain management, stressing zoning, flood-proofing, and limited forms of flood insurance. The Army Engineers are to be commended on this presentation; the approach adumbrates a profound shift from storage for flood control to a well-planned adaptation to floods on the tributaries and the main rivers, a change which will almost certainly mark the future of our national policy in these matters.

Clarence W. Richen, Vice President, Crown Zellerbach Corporation, reviewed the sustained yield operations of his company, its permanent access road program, and its wildlife restoration activities. He was closely questioned on policies of spraying insecticides, and on this point the delegates may not have been entirely satisfied.

Some excellent benchmarks for public policy in resources management were established at New Orleans. Essentially, the meeting was broadly committed to the protection of ecologies and communities, not to a vast construction program helping to tear up the world. We hope that these targets can be clarified even more completely in subsequent meetings; that is, the protection and enhancement of life as contrasted with machines and structures for their own sake; the purification of our streams and rivers as contrasted with storage to correct evil contamination; adaptation to floods, coupled with headwaters retardation, in contrast with large and destructive storage reservoirs; quiet outdoor recreation of the kind offered by small headwaters impoundments as contrasted with motorboat racetracks, polluted by noise and surrounded by drawdown margins marked by death.

Perhaps the problem of goals, of evaluations, can be stated in this way: the natural stream valleys have an environmental, a human, value of their own. Within them, as examples, are the call of the chorus frog in the spring and the cicada in the summer. These sounds, these creatures, are part of the total environment, beloved by most human beings. To serve the purposes of an advanced human society, the stream valleys need protection; in these times of technological power on the loose, they need protection against construction and development.

In one way, the New Orleans Congress was a return to origins in the sense advocated by this Association; that is, a reaffirmation of upstream land treatment measures and headwaters flood detention structures as fundamental in river basin management, largely displacing the large downstream and tributary storage reservoir. It was a reaffirmation of the basic principles of the watershed management approach: local autonomy in decision and land acquisition, and a priority for local needs in water supply and recreation.

In another sense, however, the Congress opened new vistas. The main focus, indeed, was on the prevention of pollution and on renovation and recycling for water supply purposes. The result was to endow future Congresses with a dual purpose: the furtherance of traditional watershed management programs, including soil conservation and flood detention, and the promotion of a national campaign to end water pollution in America. This dual purpose insures the National Watershed Congress of an enduring place in resources management policy in this country throughout an indefinite future. —*A.W.S.*

NATIONAL PARKS *Magazine*

OFFICIAL PUBLICATION OF THE NATIONAL PARKS ASSOCIATION

VOLUME 42 JULY 1968 NUMBER 250

Front cover photograph by David Muench

The first article in this issue is titled "Capitol Reef: A Geological Monument," and the spirit of the unit has been ably captured in color on our front cover by the widely known American out-of-doors photographer David Muench. The title of the article is actually a little misleading; for of course all our parks and monuments are geological, each in its own way. What is really meant is that Capitol Reef is one of the units of the park system in which geology and scenery are the prime considerations; here, one finds a geological showpiece of the region's own particular period of the earth's past history, and it was with this thought that the near-40,000 acres of the monument were brought under public protection a little more than thirty years ago.

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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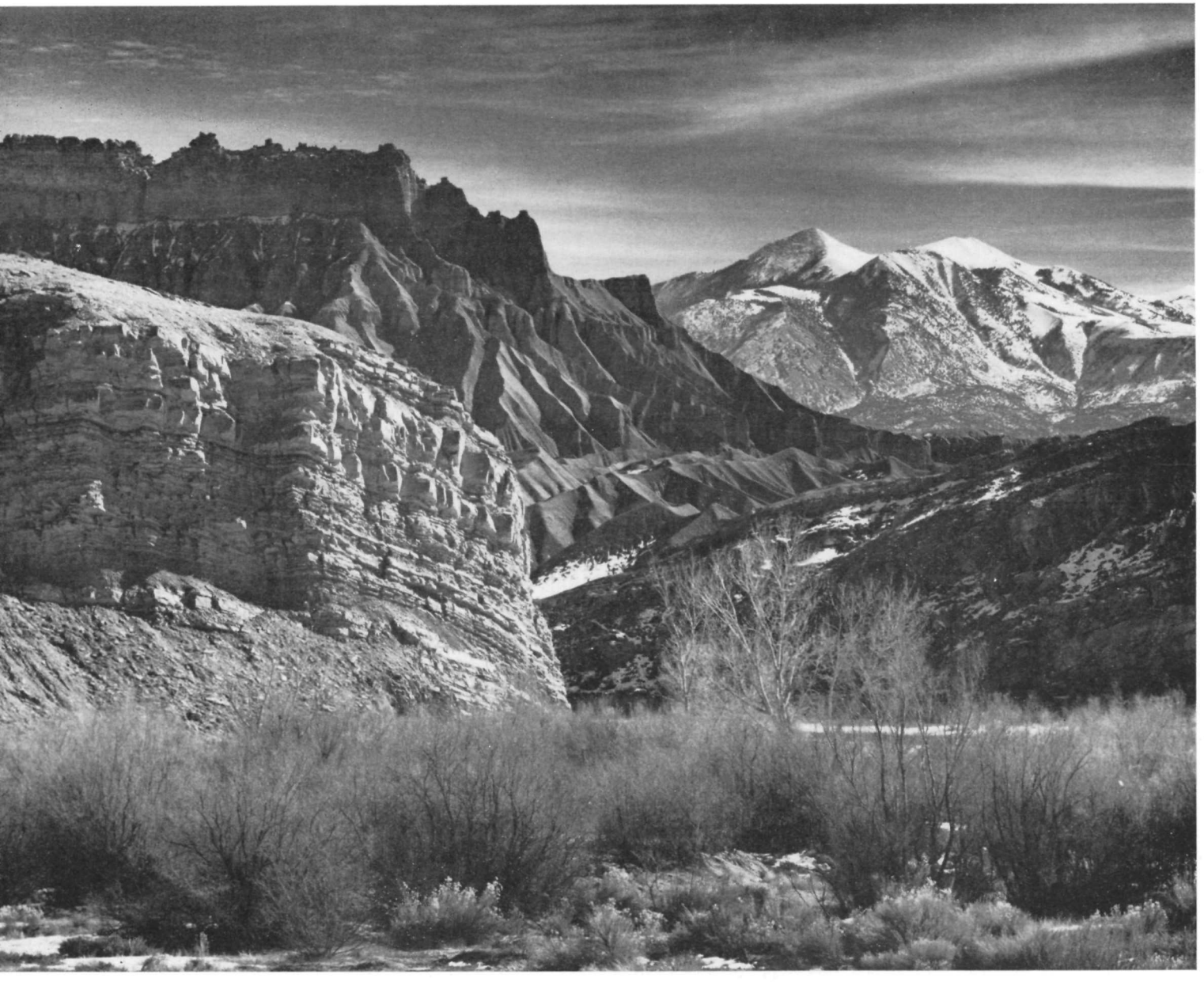
Title Registered U.S. Patent Office. Indexed in the *Reader's Guide to Periodical Literature*. Printed in the U.S.A. Second-class postage paid at Washington, D.C.

NATIONAL PARKS ASSOCIATION
1701 18th STREET, N.W. WASHINGTON, D.C. 20009

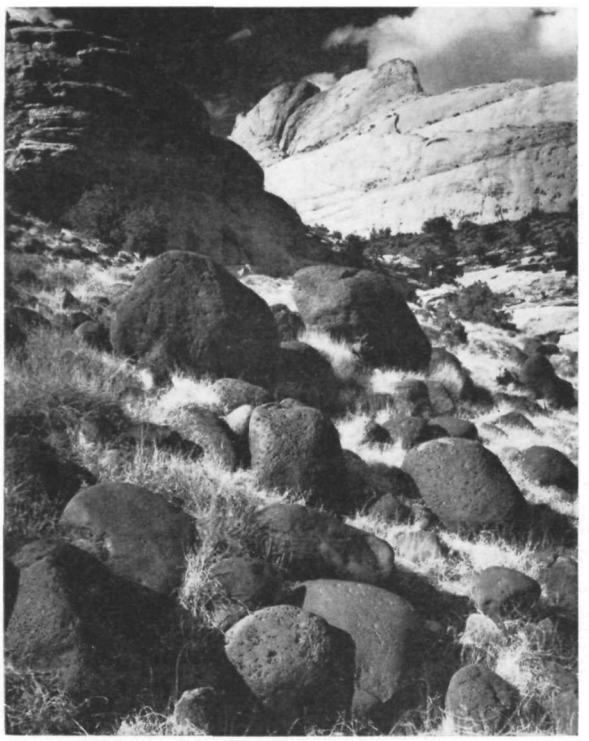


Utah's Capitol Reef Monument and surrounding region picture the story of a million centuries in flamboyant sediments and somber eruptive rocks. A scene on the Fremont River with the Henry Mountains in the distant background.

ONE OF THE MOST SPECTACULAR of all flights over the continental United States is that between Denver and Los Angeles. To cross the Rocky Mountains and the Sierra Nevada at 30,000 feet is impressive enough, but for me the greatest fascination lies in the lands between these giant ranges; the Great Basin and Range Province, covering Nevada and western Utah; and the Colorado Plateau.

Because the mountains surrounding this area deprive it of moisture, vegetation is sparse and the land lies exposed. Above the Colorado Plateau, one can easily follow the courses of rivulets and streams as they merge to form the vast watershed of the Colorado River. One can pick out each contour of the land as it curves into gentle bows that form great mesas, and then doubles back upon itself at the retreating rim of some great canyon. It is like a living topographic map laid out, full-scale, upon the surface of the earth.

The pioneers who traversed this area at ground-level did not have this magnificent view. But, despite their travails in this harsh country, its beauty made so indelible an impression on them that a few felt impelled to remain in it, while those who moved on took with them fantastic tales of its marvels. Today, the fascination of this relatively uninhabitable land is apparent in the vastness of its acreage that has been set aside for the education and enjoyment of our people in national and state parks and monuments. On the Colorado Plateau lie the Grand Canyon; Bryce and Zion National Parks; the Mesa Verde; Cedar Breaks, Arches, and Capitol Reef National Monuments. Only recently a large area has been set aside to preserve



Some 60 million years ago the Colorado Plateau was a plain dotted with volcanic cones and lava flows. Today, little remains to attest the vulcanism beyond a few cones and lava boulders.

CAPITOL REEF

A Geological Monument

By Eleanor E. Gamer

Photography by David Muench

the wilderness of the canyonlands of southeastern Utah in the Canyonlands National Park.

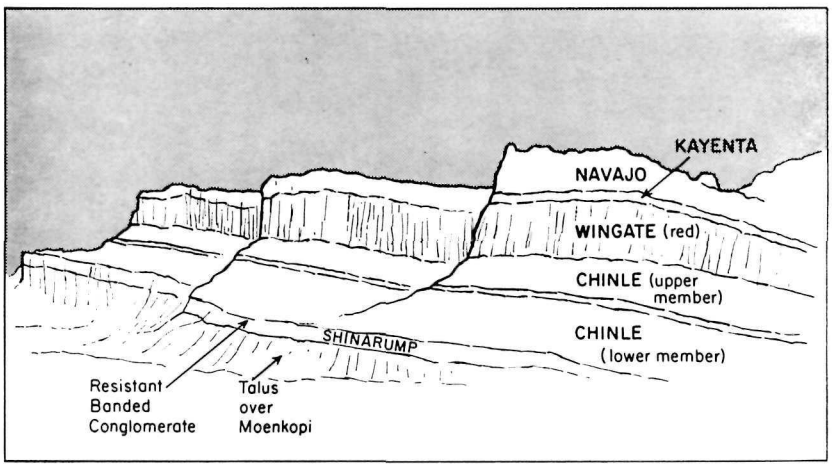
Capitol Reef National Monument is less familiar than many other of these preserves. One of the newer monuments, its 61 square miles were set aside in 1937. Until recently, its inaccessibility has discouraged visitors.

First mentioned by Col. John C. Frémont, who had seen it from Thousand Lake Mountain on an exploratory journey in 1854, the Capitol Reef area was surveyed during the Powell expedition of 1875. It was settled by 1880, but could support only a few families as only the Fremont River, Sulphur Creek, and Pleasant Creek proved to be permanent streams. There is evidence that small groups of Indians had settled the area, in similarly sparse numbers, in prehistoric times.

Capitol Reef is so called because of its resemblance to the great limestone reefs of marine environments; and because the nature of its massive sandstone caprock is to erode grain-by-grain, forming turrets and domes reminiscent of stately buildings. It lies in an area transitional between the canyonlands of the Colorado River watershed to the east and the high plateaus of Utah to the west, which rise, like a giant staircase, northward from the Grand Canyon.

It is an area of compression of the Plateau's crust into gentle flexures known as monoclinal folds. The fold on which Capitol Reef forms a 20-mile escarpment extends 150 miles from Thousand Lake Mountain to the Colorado River. It is called the Waterpocket Fold because of pockets eroded into the walls of the gorges which dissect it. It

In the illustration at right the author has made a geological interpretation of the upper portion of David Muench's striking photograph on page 7. Diagram B below places the formations in respect to geological time. In the region of the monument shown in the photograph the formations adjacent to the dashed line in Diagram B have been removed by the endless nibbling of erosion.



trends northwest-southeast, the beds of the escarpment dipping gently toward the northeast. Differential erosion has stripped the up-warped limb of the fold to expose the strata on the down-warped side so that the escarpment faces the southwest.

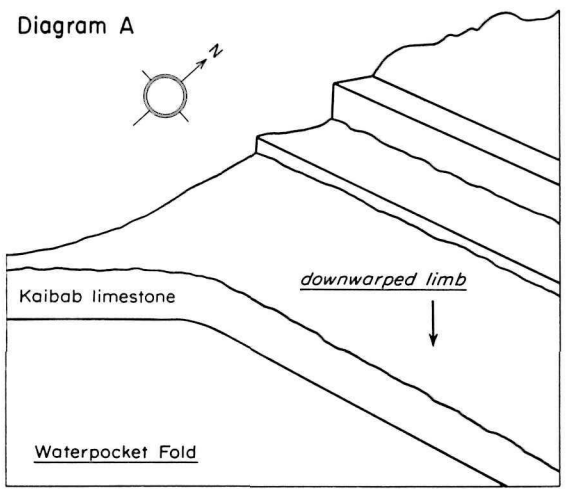
During Paleozoic time, which spanned some 400 million years, the Colorado Plateau was a part of the central continental shield. It was isolated by the development of the Ancestral Rockies late in the Paleozoic Era, and, since that time, has been rising and falling in response to crustal movements, but has never been severely warped, or deeply buried beneath a sea. The sediments exposed in Capitol Reef show evidence of this gentle movement in the essentially flat-lying beds that cover the region.

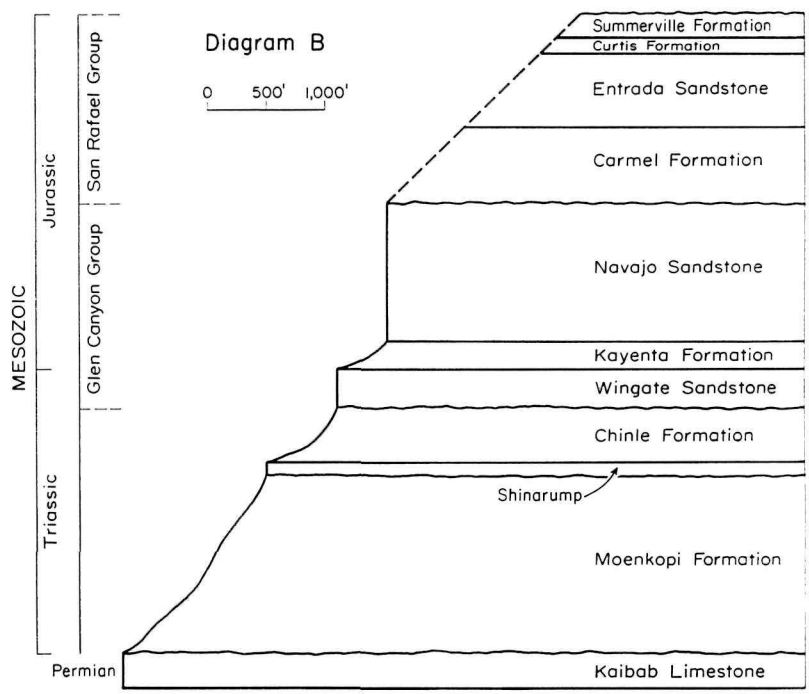
In the last period of the Paleozoic Era—the Permian, some 200 million years ago—the Kaibab Limestone was formed in a warm and shallow sea. Although this formation covers the entire area, it is visible only in the most deeply cut gorges in Capitol Reef. Between the end of the Paleozoic and the beginning of the Mesozoic Era, the Colorado Plateau was elevated above sea level and exposed to the forces of erosion, which stripped and levelled the Kaibab Limestone until the plateau became again the bed of a shallow sea. This stripping of an unmeasurable thickness of the Kaibab represents an unknown time-factor—an unconformity—between one era of deposition and another. In Capitol Reef we are concerned mainly with sediments deposited during the Mesozoic Era, which we believe to have encompassed about 120 million years.

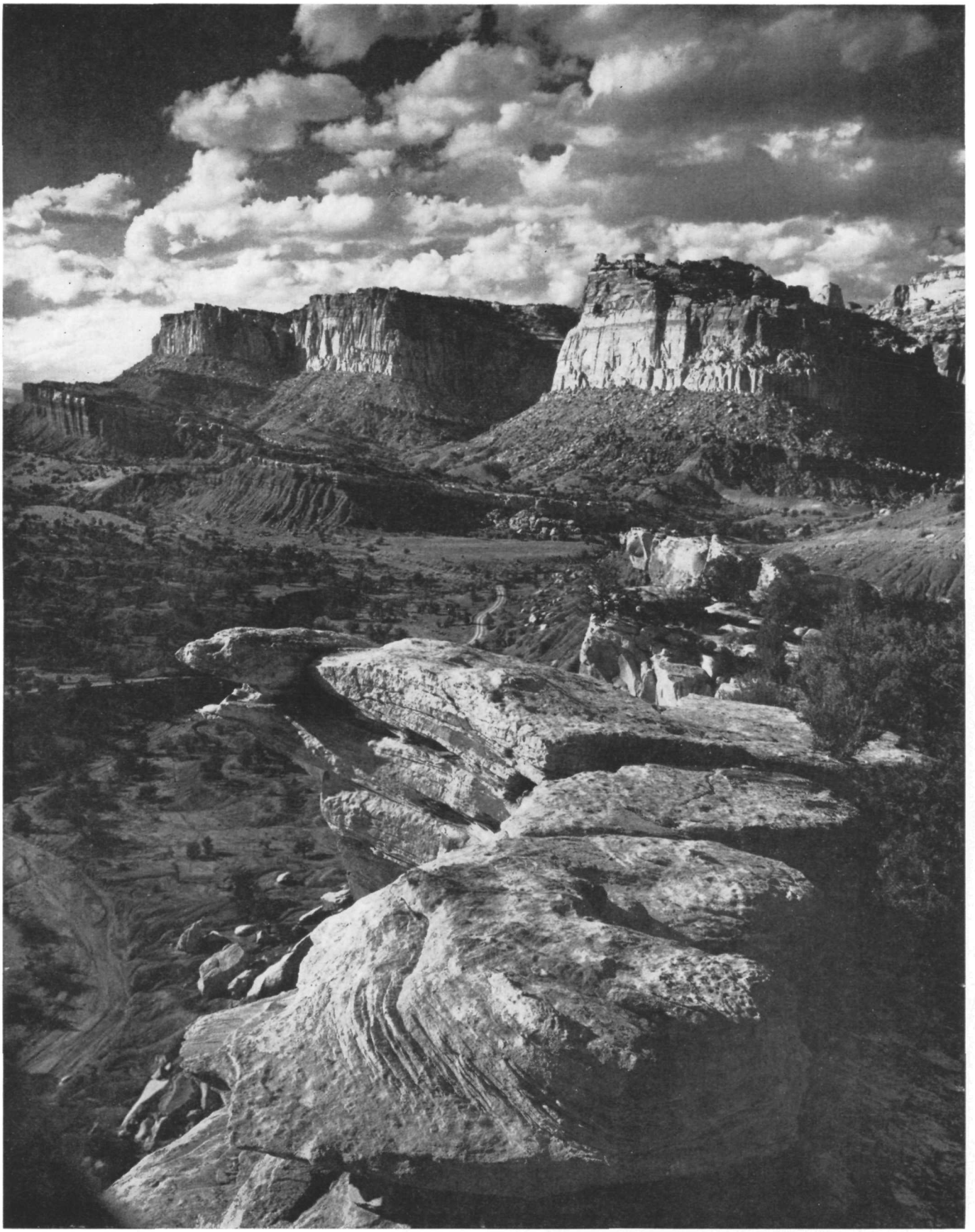
During this time a new highland was forming to the west of the Colorado Plateau, that was to become the Sierra Nevada. Rainfall on the slopes of the growing mountains washed great quantities of detritus into the inland basin. Wedges of sediments thousands of feet thick at the base of the highlands taper off across the basin to its eastern edge. A peculiarity of many of these sediments is their red

Illustrations above and below by Federal Graphics, from sketches by the author.

If one allows a flat sheet of paper to lie on a desktop with an edge hanging over a side of the desk, a monoclinal fold will be formed in the paper. Such a fold occurred in earth's surface in the Utah region that includes Capitol Reef; layers of the horizontal limb have since been removed by erosion. Waterpocket Fold is shown in simplified form in Diagram A.







The Waterpocket Fold in southern Utah's Capitol Reef National Monument: to the non-specialist, a wilderness of broken, colorful rocks; to the geologist, a classic wrinkle in the earth's crust.

color, due to the presence of hematite and other iron minerals which form in humid environments. It is supposed that the preservation of these red sediments on the Colorado Plateau is due to their transportation from the well-watered areas in which they were formed to the arid interior basin where such minerals are stable and retain their color.

In the Triassic Period, at the opening of the Mesozoic Era, we find evidence in the rocks that the platform of the Colorado Plateau was in constant motion. On top of the eroded Kaibab Limestone, and filling its erosional irregularities, is the dark red Moenkopi Formation, a 1500-foot thickness of interfingered continental and marine beds. Its soft, sandy shales, including beds of gypsum and salt, indicate deposition in a very shallow, inland body of water, in a climate of great aridity where evaporation was high. We cannot guess at the original thickness of the Moenkopi because its top is planed off by another unconformity. The Plateau rose again for another unmeasurable period above its shallow sea.

The Waterpocket Fold was named for myriad pockets etched into the walls of its gorges. Many pockets retain rain or flood waters.

A subsequent descent of the platform allowed the deposition of the Chinle Formation. Its basal member, the Shinarump, consisting of one to two hundred feet of strongly cemented conglomerate, stands out of Capitol Reef as a narrow cliff. The entire 1000 feet of the Chinle is a mixture of shale, sandstone, and limestone; dominantly dark red, but including bands of purples, lavenders, greens, and white. The layers contain chunks of petrified wood and tracks of dinosaurs and smaller amphibians who were lumbering about on the shores and shallows of an again-retreating sea.

With no sharp break observable, the rising platform began to be covered with terrestrial sediments—sands blown into the area by the wind. Today we find in the Wingate Sandstone the remnants of dunes, intricately cross-bedded as shifting winds formed the dunes first in one direction and then in another. There are 320 feet of this hard-packed, vermillion-hued sandstone. It forms the massive cliff faces of the Capitol Reef. Vertically jointed, it breaks off in great slabs when it is undermined by erosion of the softer Chinle Formation beneath.

The Geologist's "Little" Time

Again, for a "little" time, the platform dropped beneath a shallow sea and a new formation, the Kayenta, was deposited. The Kayenta is a hundred to three hundred feet of mixed red and gray bands of conglomerate, sandstone, and shale. It is not well-consolidated, and forms a slender, banded bench on Capitol Reef between the Wingate cliffs and the domes of the Navajo Sandstone. There is some possibility that the Kayenta is a fluviatile deposit.

The period of submergence, if there was one, could not have been long, and was succeeded once more by the deposition of eolian sands, this time white in color. The Navajo includes 1200 feet of windblown, cross-bedded dune sands, its individual grains frosted and well-rounded, and so well-cemented that erosion can only reduce it a grain at a time, a process resulting in the dome-like structures that give the monument its name.

The Navajo Sandstone forms the caprock for that part of the Capitol Reef escarpment usually viewed by the visitor. On the eastern-dipping slope of the monument a younger rock, the lowest member of the San Rafael Group of Jurassic age, called the Carmel Formation, is visible capping the Navajo; but the terrain there is so forbidding that few visitors to this park system unit see more than a trace of it.

To COMPLETE A rock column of this area it would be necessary to envisage an additional 5500-foot thickness of

Mrs. Gamer, contributor to the pages of this Magazine many times in the past, is a writer and lecturer on the natural sciences, American history, and Oriental culture and religion. She presently makes her home in Colorado Springs.

younger sediments that were, presumably, topping the Capitol Reef at some far-off time. Had we been present at the beginning of the Cenozoic Era (60 million years ago) we might have seen the Colorado Plateau as a flat plain, dotted here and there with volcanic cones that spewed out andesitic lavas over the flat lands around them. The gentle folding of the Plateau is thought to have occurred about Eocene time, shortly after the development of the volcanics, as the volcanics are involved in the flexures. On the Plateau these volcanics are sporadic, and, beside a few remaining cones, all that is left of them are gravel beds and boulders of lava that have been moved by glacial action and erosion into low spots carved into the level of the plain.

What we see today in Capitol Reef, and in the topography of the whole Colorado Plateau, is the result of erosion. In an arid land, when water comes, it comes with immense power. The cloudbursts of the summer months force water into the cracks and joints that winter freezing has made in the rocks. It tears them apart and flushes away the debris, scouring the lower elevations clean of detritus. What we see, in reality, are *two* plateaus: an upper plateau showing a perfectly level horizon and, at the same time, a lower plateau—the new horizon to which the upper level is being reduced. Thus the forces of erosion tend always to balance the forces of uplift from within the earth by the constant dissection, stripping, and removal of what is high, until a base level has been reached. A study of Capitol Reef and the surrounding country of the Colorado Plateau is a study of the major forces and patterns which shape our earth. ■

Some formations of the Waterpocket Fold are soft and easily eroded, as those along the Fremont River Canyon near the monument.

In the days of the Great Depression Government purchase of California coast redwood lands for a national forest was authorized by Congress, and some redwoods were acquired within purchase unit boundaries. Because of World War II and other difficulties only 14,567 acres of some 130,000 acres were acquired for the forest in the Northern Redwood Purchase Unit (map, page 12). Within this unit is a Redwood Experimental Forest (map, page 13) where the U.S. Forest Service conducts research on the harvesting of old-growth redwoods and the management of new redwood forests; the picture below shows a forester marking an old-growth redwood in the Experimental Forest.

Photograph courtesy ***U.S. Forest Service***

THE NORTHERN REDWOOD PURCHASE UNIT: TOO VALUABLE TO LOSE

By Dewey Anderson

FOR YEARS A CONSENSUS of conservation spokesmen has urged a Redwood National Park to embrace the magnificent stands of specimen trees in northern California.

Late last year, the United States Senate approved a bill it thought would provide a compromise to the high costs the establishment of the park would involve. Reaction has built to storm intensity on the key feature of the plan—a trade of 14,500 acres of national forest land for some of the private land which would form part of the national park.

Many conservation organizations have objected strongly to this feature, maintaining that the Senate plan would set a dangerous precedent. As new parks are proposed, they contend, new demands for trades of Federal land will be introduced to make the expensive establishment of national parks more palatable economically. Burgeoning efforts to create a Big Thicket National Park in Texas and a Voyageurs National Park in Minnesota with national forest land as trading stock give credence to their contentions.

But one facet of the efforts to embrace a segment of the mature coastal redwoods in the national park system (where practically everyone seems to agree they belong) has been given only passing notice. It is the intrinsic value of the Forest Service's Northern Redwood Purchase Unit, which would be traded under several plans currently under consideration. Just what would be lost to the nation if this method were used to gain the national park?

The answer to this question should be the real key to determining whether this trading method should be used for securing the park.

A close look at the features and objectives of this Northern Redwood Purchase Unit reinforces a conclusion that the nation would be giving up one of its best investments. It is an investment which has paid for itself many times over. And, like the goose with the golden eggs, it can continue to produce benefits forever.

The case for the public good in retaining the Purchase Unit could be made on the basis of economics alone. Since the Forest Service began allowing timber to be harvested from it in the mid-1950s, the nation has taken in more than $5.5 million from timber sales. The initial investment for the land was less than half a million dollars. Today the land and its resources are valued, according to the Secretary of Agriculture, at perhaps $25 million.

This is only one item on the credit side. Production of another sort from this small forest may shape the future of the 90 percent of redwood forest land in private hands surrounding the superlative groves planned for a national park. This national forest unit is the only sizable area in the nation dedicated to protecting the great stands of coastal redwoods while making it possible for many other uses—lumber production, recreation, grazing, fish and game, and water production. It provides the approach the private landowners (who have final say over more than 1.5 million acres of redwood land) are willing to accept.

Timber Operators Have Helped

The timber industry has been charged with exploitation and devastation of the redwoods. Despite this charge, many timber operators have long recognized their stake in good land management as well as the need to preserve outstanding groves of specimen redwoods. Some of the companies have held choice tracts of redwood groves for years, awaiting the time when public or private conservation funds would be available to buy them. Several are still holding such land.

The timber operators have also come to recognize the need to improve their public image in other ways. They know this can only be done by better management, with broader objectives. As a result, they are willing to assist in and adopt findings of government-sponsored research and demonstration.

The Simpson Timber Company, for example, over the past two decades has cooperated with the Forest Service and several universities in the research work of the Redwood Experimental Forest, the outdoor laboratory for the Northern Redwood Purchase Unit. It is a field laboratory for conducting scientific studies of redwood silviculture and ecology. The findings of the research forest are fed into the management of the demonstration forest.

It is in this cooperative spirit that the Northern Redwood Purchase Unit serves its most productive role. With the demonstration forest, the Forest Service—one of the world's great resource research organizations and sponsor of one of the most effective cooperating systems with private industry—is able to offer leadership.

This was the most notable purpose in establishing the Northern Redwood Purchase Unit. The unit is described by the Forest Service as a publicly-owned area "used for research and for demonstration of 'sustained yield' management in coastal redwood forests."

Before his recent retirement Dr. Anderson was Executive Director of the Institute of Public Affairs in Washington. He is now the operator of a cattle ranch near Doyle, California. This article was prepared by the author in close consultation with the U.S. Forest Service.

The specific projects carried on in the Purchase Unit are as varied as the possible uses of the forest. Recognizing that timber will continue to be cut on the more than 1.5 million acres of private land of the redwood area, methods are being demonstrated on how this can be done with the smallest adverse effects on the environment. For example, the Forest Service is showing that cutting trees in small patches, instead of in large clear-cut areas, minimizes wind damage.

The demonstration forest has been the stage to show that "patch cuttings" (less than 20 acres), using cable logging systems, can protect the conditions which make rapid regrowth of redwoods possible. These systems minimize the great damage which can be done to soils on steep, unstable slopes pelted by heavy seasonal rainfall.

Other logging methods are also being tested. This is particularly important, since it helps assure that vast acreages of this magnificent species will continue. Even though the range of the coast redwood is limited, it is one of the most productive timber types in the United States. The redwood reseeds easily, sends up new sprouts from its stumps, is highly resistant to almost all diseases and insects, and can even survive forest fires. Redwoods on good sites reach 100 to 150 feet in height in 50 years, and 165 to 220 feet in 100 years.

The experimentation and demonstration is not just a one-way road tailored solely to the needs of the timber operator. With the type of knowledge reaped from the Northern Redwood Purchase Unit, the altruist on one hand and the harvester of timber on the other can both have what they want. Forests will produce the product, but the forest will not be destroyed.

Another feature of the management demonstration program has shown that the desires of recreationists and other outdoor enthusiasts can also be met in a "working forest." Adjacent to zones of significant public use or where outstanding groves and other unique features exist, timber harvesting and other land uses have been modified to retain the natural settings. Landscape architects and foresters have proved that pleasing landscapes can be retained without turning an area into a park.

Recreationists are also benefiting from demonstration practices to preserve fish and wildlife. The Northern Redwood Purchase Unit contains two miles of frontage on the Klamath River, one of the most favored spawning streams of the Pacific Ocean salmon and steelhead. In addition, it has ten miles of other spawning streams. Because the streams are natural reproduction sites for an estimated 16,000 silver salmon, steelhead and sea-run cutthroat annually, the impact of deteriorated water conditions could be devastating. Protection practices for this fish life are being pioneered by the Forest Service.

These efforts to secure the values of good watersheds and suitable fish habitat are carefully considered in planning timber harvests, road locations, and other land management activities. Still other experiments have shown that judicious cutting of timber can increase mammal and bird populations.

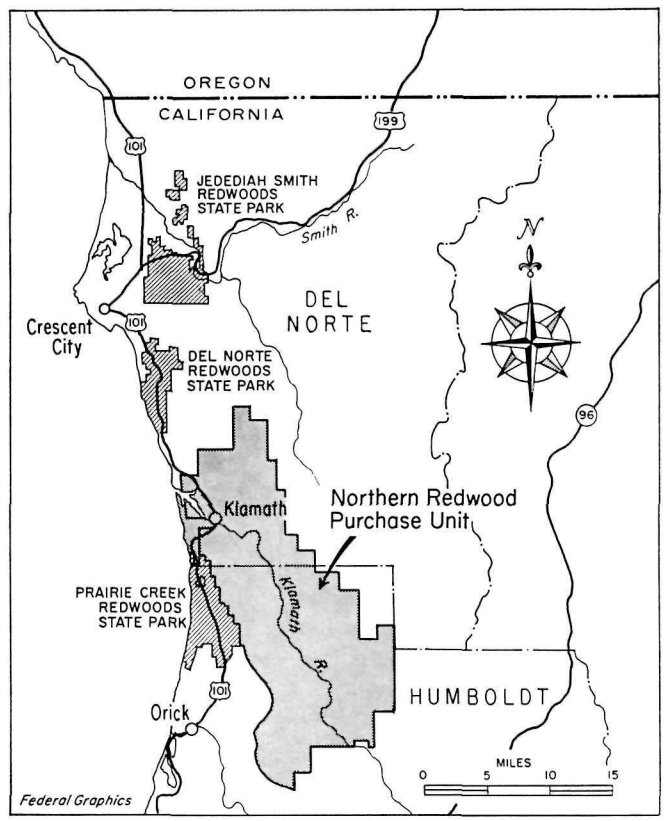
Perhaps as important as any of the other demonstration work this small forest offers is that of coping with the "people problem." Demands for activities in the great out-of-doors are expanding far faster than recreation lands are becoming available.

Few question the need for a national park of magnificent redwoods which people from all over the world can view with awe. But there is a far vaster number who want to leave their city dwellings as often as possible to hunt, fish, camp, picnic, boat, hike, or simply commune with nature.

How these masses of people in the natural environment will affect that environment is still being tested. With an eye to the dangers of too many people, the Forest Service is developing recreational sites in the Redwood Purchase Unit. Industry, too, is discovering the public relations benefits of making its land available for recreation uses; and these actions have the effect of dispersing recreation users, so that the more popular areas will not be severely damaged.

This brief listing of present and potential benefits can leave little doubt of the value of this unique piece of forested real estate. It is not only paying for itself monetarily, but it is doing a more important job of providing a blueprint for the continued existence of the redwood region ecology. What is more, because of the close interdependence of many parts of the redwood region's watersheds on other parts, it is possible that knowledge gained

The Northern Redwood Purchase Unit as it was originally authorized.



from the Northern Redwood Purchase Unit could guard the welfare of the proposed national park itself. Such knowledge may well be useful in helping to protect the park's surrounding watersheds.

Senator Clinton Anderson, at one point in the Senate debate, said the trade of Purchase Unit lands for private lands would help some timber operators at the expense of others. He said it would be "robbing Peter to pay Paul." In the broader view, relinquishing this publicly-owned Northern Redwood Purchase Unit could be robbing future generations of the knowledge needed to properly use and maintain our great redwood resource for the nation's enjoyment and economy.

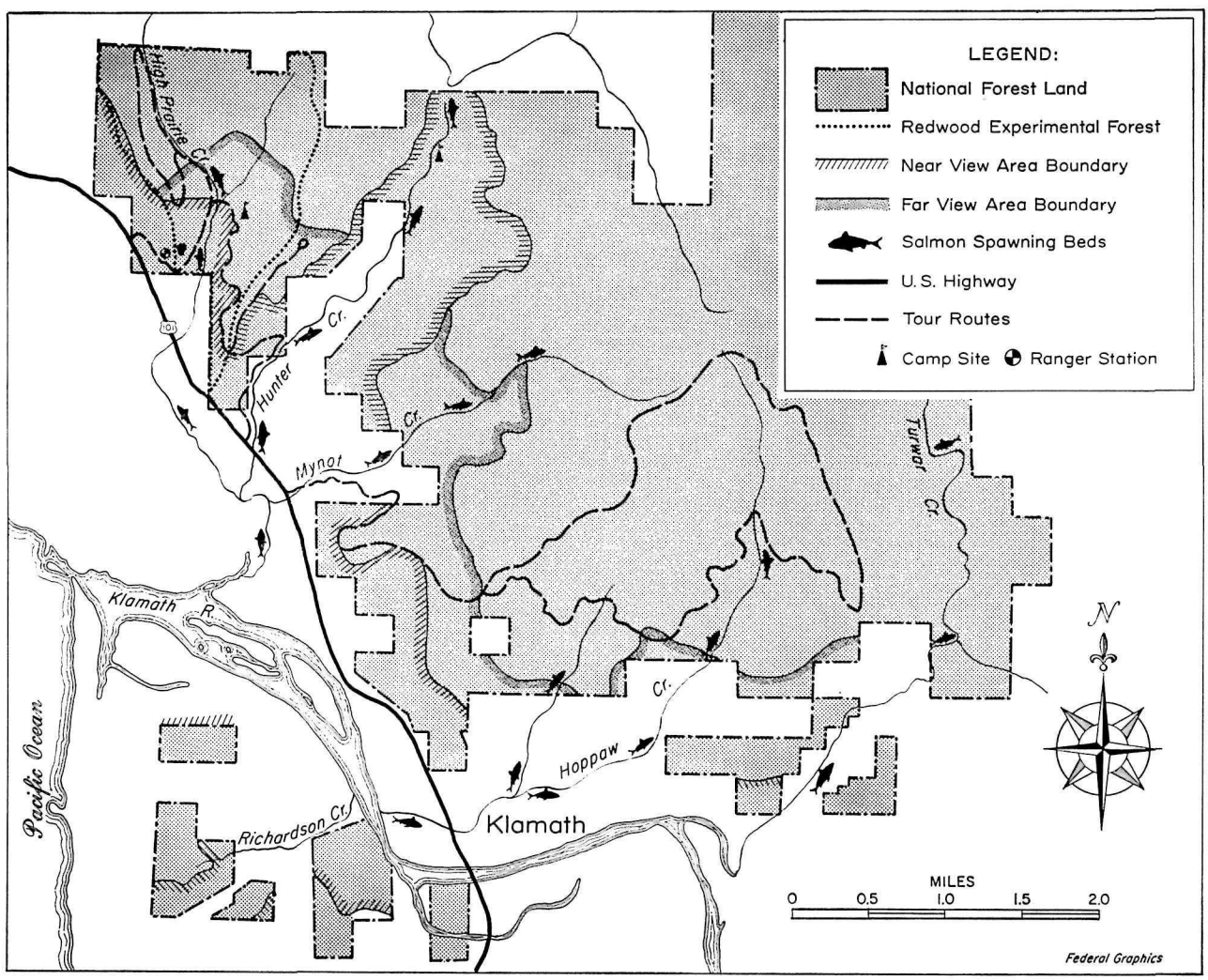
We are now face to face with the need to insure vastly more, not less, growing green trees about us in order to live and breathe clean air, to drink pure water and to re-create our spirits. We need the Redwoods National Park as part of all that, and we need much more. We need more forests in perpetual upkeep, yielding their many benefits to our burgeoning population.

Conservationists are intent upon restoring the cut-over and little-used lands of the California Pacific slopes to their former beauty and usefulness as forest-clad areas. In this, as was the original intention, the Northern Redwood Purchase Unit plays a central role.

I know of no difference of view among leading conservationists across the nation—all support the establishment of a Redwoods National Park. Many believe that a meaningful park can be accomplished out of the vast funds in the national treasury without trading off a vitally important part of our national forest lands, and are using all their energy and the persuasive powers of the national conservation organizations to that end. Many are committed also to reforesting America, a goal worthy of the best efforts of all who are concerned with the welfare of our people and their need for substantial contact with nature.

Coast redwood lands presently managed by the U.S. Forest Service as the Northern Redwood Purchase Unit are shaded on the map below, which is an enlarged portion of the map opposite in the vicinity of the town of Klamath. Map includes most of the Purchase Unit lands, but there are a few small, scattered parcels not shown. Adjacent to zones of significant public use the Forest Service has designated "view" areas where timber harvesting and other land uses have been modified to assure a near-natural appearance. The Redwood Experimental Forest lies in the High Prairie Creek watershed in the northwest sector of the map.

Adapted from a U.S. Forest Service map



MARAMEC: PIONEER IN MISSOURI IRON

By Velma E. Zimmerman

MISSOURI WAS THE FIRST STATE west of Ohio to mine and smelt iron. History tells us that iron mining was first begun in 1815 in that State and has continued up to the present time, except for brief intervals during the period from 1825 to 1850. From 1815 to 1943, Missouri produced 10,911,262 gross tons of iron ore with a total value of nearly $40 million.

Still standing as testimony to Missouri's history as an industrial pioneer is the Maramec Iron Works, near the town of St. James. The Works was established in 1826 by a banker and iron merchant—Thomas James, of Chillicothe, Ohio, and his superintendent, Samuel Massey.

According to one account, authenticity of which is doubted by some, a group of Shawnee Indians on their way to Washington was allowed to camp on the James premises. Their decorative body-paint of hematite, an iron oxide, attracted the attention of Mr. James. Upon inquiring about its source, he was told of a mine in the West beside a huge spring.

On their return from Washington, James sent Superintendent Massey with the Shawnees to inspect the site of the mine and spring. He found it to be as the Shawnees had said, and thereupon made a favorable report. In 1826 Massey returned to the site and construction of the iron works was begun. It was completed in 1829 at a cost of $40,000, and organized on an Eastern 18th Century plantation plan.

Thomas James sent his son William to Missouri in 1843 to assist in the project. In 1847, William bought out Massey's interest and became manager. Under his influence the community lost some of its feudal characteristics and became somewhat of an isolated company-town. The settlement consisted of the plant buildings, store, grist mill, school, post office, saw mill, and wagon and blacksmith shop. There was a manager's house, nearly a hundred workers' cabins, and a boarding house. The population climbed to about five hundred.

Thomas James died in 1856 and his son continued as manager; William later bought out the other heirs and became sole owner. The furnace, originally built in 1828, was replaced in 1857 under William's management, and Maramec became an iron works of large operation.

This was a "cold blast," charcoal-fired furnace. About a hundred times daily it was charged through the tunnel head at the top of the stack. Each charge consisted of a bushel of half-charred wood—referred to as "brands"—18 bushels of charcoal, and 640 pounds of iron ore. Wheeled to the tunnel-head, these ingredients were dumped into the furnace in alternating layers. An air blast, entering through tuyere nozzles near the bottom of the crucible, urged on the charcoal. Molten iron ran into the hearth below, to be drawn off about four times a day and run into molds in the casting-beds of sand in front of the furnace. Capacity of the furnace was up to 14 tons of iron per day.

The products were castings of various types, and iron ingots. Ingots were commonly referred to as pig iron, because the molds for the "pigs" were formed on each side

of a central runner called a "sow." Some of the pig iron went from the furnace to the bloomery, where it was converted into wrought iron. A large quantity of plow molds, kettles, and bar iron was made, normally; but during the Civil War practically all of the output went into cannonballs or into plate for gunboats built in St. Louis.

Prosperity at Maramec continued through the period 1860-1870. Then, upon the discovery of rich iron deposits in the region of Lake Superior and the competition of newer, "hot blast" furnaces. Maramec began to decline.

In the hard times which followed the panic of 1873, William James unsuccessfully tried to modernize the Works and convert it to "hot blast." New equipment was purchased, but it was never installed; and in 1876 the furnace was "blown in" for the last time. Today Maramec Iron Works, five miles south of St. James on State Highway 8, is in its original setting near Maramec Springs. It is open as Meramec Springs Park, supported by the James Foundation, for the enjoyment of the people of Missouri and the nation, and as a reminder of the State's early iron industry.

At Meramec Springs, Missouri, the well-preserved blast-arch, stack, and other stone foundation-work of the Maramec Iron Works (retaining the older spelling of Meramec) recall the early days of ironmaking in that State.

Photograph courtesy Missouri Commerce: Massie

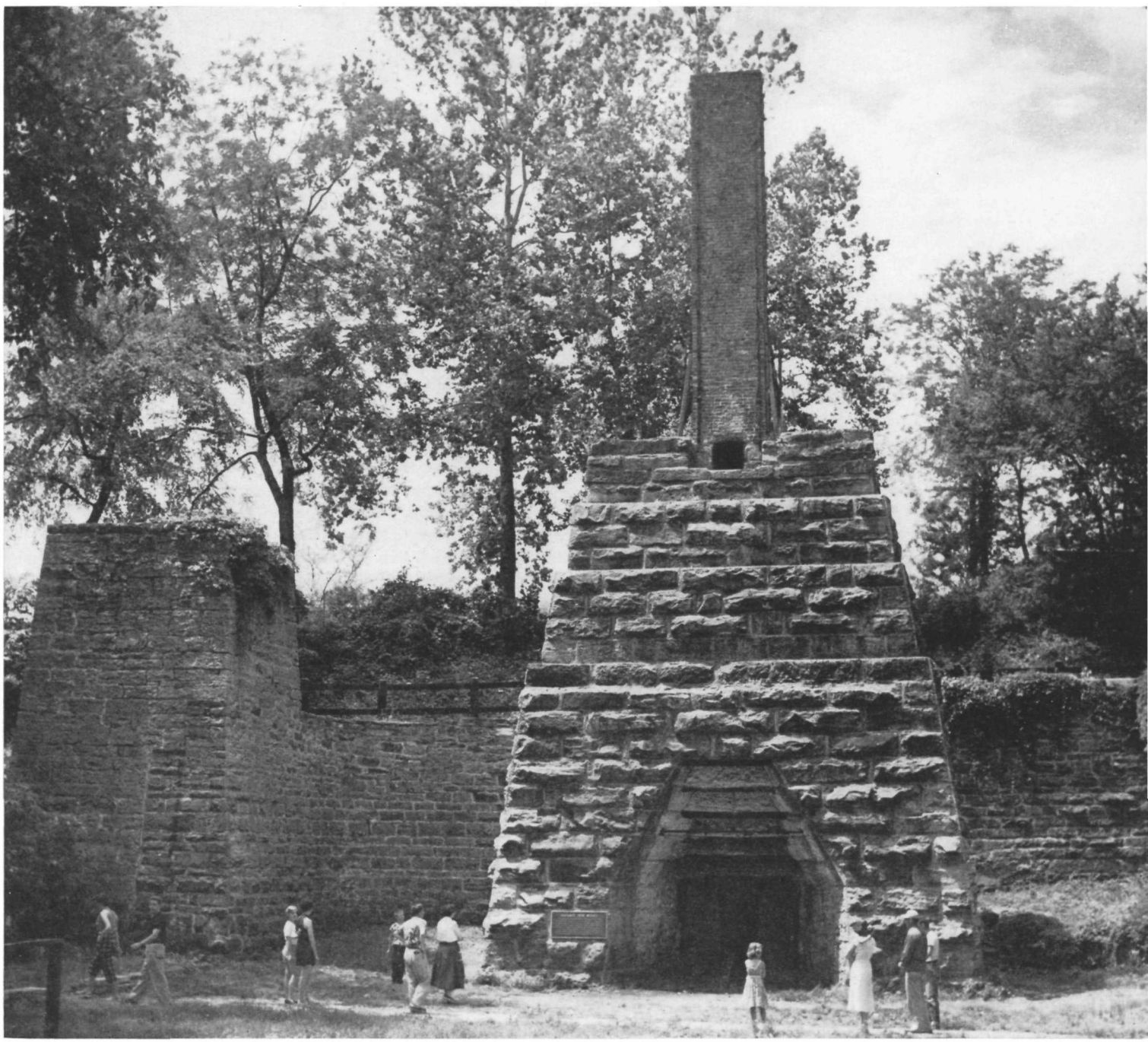


Plate 1

Entrance to Pipestone National Monument near Pipestone, Minnesota. The monument was authorized in 1937 to protect a deposit of catlinite long utilized by the American Indian in the crafting of peace pipes, tablets, and other objects.

PIPESTONE CARVING TODAY

By John S. Sigstad

Pipestone National Monument is located north of the City of Pipestone, Minnesota. Easily reached via U.S. Route 75, Minnesota State Highway 23 or 30, the monument is open throughout the year. The National Park Service provides a modern visitor center, museum, and paved trail.

The prime attractions for the visitor are the quarries where Indians, ancient and modern, have extracted catlinite or red "pipestone." The pipestone is a "red, fine grained, siliceous argillite"(1), is readily carvable, and may be polished to a high luster.

Bisected by westward-flowing Pipestone Creek, a tributary of the Big Sioux River, the monument is best characterized as a level prairie grassland. The pipestone deposit is buried within a formation called the Sioux Quartzite, a metamorphic Pre-Cambrian rock which outcrops locally. Much of the monument area is covered with glacial deposits of unsorted, unstratified sand and gravel.

Precisely when the first Indians began carving pipestone cannot be said with certainty, nor do we know whether the first red pipestone they used was catlinite from southwestern Minnesota or was a similar material obtained elsewhere. The time of use and distribution of catlinite has been the subject of intensive research by the author for two years. The idea of carving soft red stone has a history of several hundred years in North America. So many materials resemble the pipestone from Minnesota, however, that detailed chemical analyses are necessary to distinguish one from another. Regardless of the length of time involved in the exploitation of pipestone sources, the quarries in Minnesota are certainly the most extensive of their kind.

George Catlin, the famous frontier painter, was the first man to publish an account of the quarries, and it was for him that the pipestone was named "catlinite." When Catlin visited the quarries in 1836, the Sioux or Dakota were claiming control of the area (2), although it is likely that other groups were also exploiting the pipestone.

Late prehistoric and historic archeological sites in the Plains frequently yield pipestone artifacts and fragments of all shapes, but the best known of all are the T-shaped tobacco pipes, often referred to as "peace pipes," or calumets. One of the more intriguing pipestone artifacts which occur in some sites are tablets, the function of which remains unknown. Frequently these have mythological figures scratched on them (Plate 2).

Acquired by the United States as a part of the Louisiana Purchase, the quarries continued to be controlled by the Sioux until the 1850's. The national monument was established in 1937, and ten years later the right to dig pipestone was restricted to Indians. In 1957, the original 115-acre monument was expanded to 283 acres, and the following year the present visitor facilities were completed (3).

Current administrative policy stipulates that any Indian who wishes may obtain permission to quarry pipestone, although only three families are at present actively engaged in quarrying and carving. These families include that of George Bryan, an Ojibwa, that of Harvey Derby, a Sioux, and Ted Taylor, also a Sioux. Ephram Taylor, Ted's brother, was an active pipe-carver until his death in the summer of 1967. Quarrying and carving is a part-time activity for these people, and they realize minor incomes from the sale of their crafts.

In quarrying the pipestone the major obstacle is removing the very hard quartzite matrix which encloses the pipestone. Currently four to eight feet of this tough matrix must be removed in order to expose the pipestone stratum. This is accomplished by driving wedges into fissures and seams which occur throughout the quartzite. During the winter, water freezes in these expanded joints and they are further expanded through frost heaving. During the spring and summer, blocks of quartzite, thus separated, are broken into smaller pieces with sledgehammers and moved out of the way. Sometimes water must be pumped out of the pits because the water table in the area lies at approximately the same level as the pipestone layer (Plates 3 and 4).

Once the quartzite has been removed it is a relatively simple matter to remove large tabular slabs of pipestone with a hammer and chisel. These slabs are then stored at the homes of the quarriers, where most of the carving takes place (Plate 5).

It has been suggested that pipestone becomes more difficult to work when it has been exposed for a prolonged period, perhaps as a result of dehydration*. The author was told that this could be overcome by burying the weathered stone in moist sand or earth for a time, although this practice was never observed.

Quarrying is permitted only with hand tools, although before the quarries came under National Park Service protection the use of explosives was tried. Blasting, in addition to the fact that it is prohibited, is impractical because it results in fragmentation of the pipestone as well as the quartzite.

Selecting a piece of stone for carving is the first step in making a pipe or other item. A number of criteria are employed in this selection. Stone for carving ought to be free of seams which might separate during carving. The stone should be soft; the softer it is the more likely it is to be selected (4). Next, the object to be carved is blocked out with a carpenter's saw. Dressing and shaping are accomplished with a file. Perforations are made with a brace and bit. Power tools are not used, and the hand tools used by contemporary carvers, while more efficient, are not sig-

Plate 2

Above, a prehistoric catlinite tablet, function of which is unknown. Below, pipestone quarry at Pipestone National Monument. The scale rests on bottom of pipestone stratum which is about 10 inches thick at this location. Plate 2, courtesy the National Park Service, 1967; Plate 3 by the author, 1967.

Plate 3

* Apparently it is some quality other than lithological hardness which varies.

Mr. Sigstad is a doctoral candidate in anthropology at the University of Missouri. In 1965 he carried out an archeological survey and made test excavations at Pipestone under sponsorship of the National Park Service; since then he has been studying both the monument and the geologically enigmatic rock-type called catlinite.

Plate 4

National Park Service policy stipulates that any American Indian may obtain permission to quarry pipestone. Plate 4 shows Jeff Derby, member of a Sioux family presently engaged in quarrying and carving, driving wedges into the quartzite which lies above and below the seam of pipestone (catlinite). Plate 5 pictures the home of George Bryan, an Ojibwa also engaged in quarrying and carving; pipestone slabs may be seen leaning against the wall at the left of door. In Plate 6 a pipe or calumet is being drilled. Photographs by author, 1967.

Plate 5

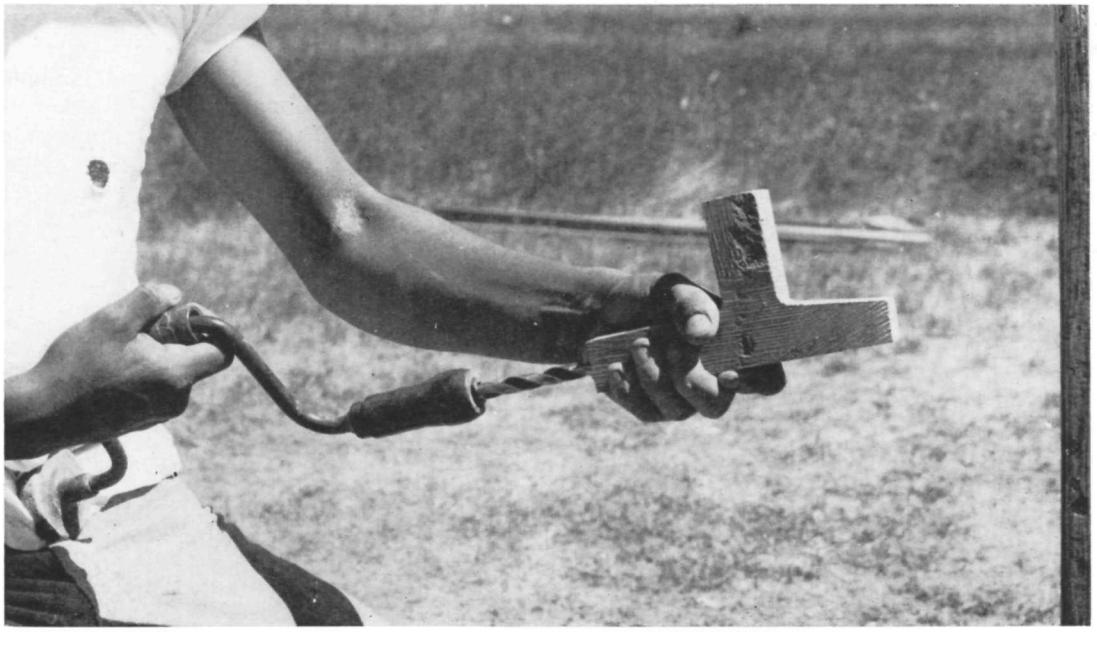


Plate 6

Plate 7

Best known of the pipestone artifacts which have been recovered from archeological sites in the Plains are the T-shaped peace pipes or calumets, as that being carved in Plate 6. Plate 7 shows another style of pipe—the disc —being dressed in a 1967 photograph by the author.

nificantly different from their stone counterparts used prehistorically in terms of the results achieved (Plates 6 and 7). Finally, the carver polishes his handiwork by slowly heating it over a stove and briskly rubbing it with a paraffin-impregnated cloth. Usually, several similar pieces are produced simultaneously in order to save time.

Pipes and a variety of other items are carved by men, the women specializing in the production of small turtle effigies. It is interesting to note that the turtle figures as a predominantly feminine symbol in the lore of the Sioux (5).

In spite of the numerous cultural traditions which play a part in the art of pipestone carving, the activity today functions as a financial supplement. If the carvings were not marketed, it seems most unlikely that the craft would continue. The Pipestone Indian Shrine Association was created to provide a dependable market for the sale of pipestone carvings in cooperation with Pipestone National Monument and the National Park Service. The Association maintains a sales counter in the Visitor Center at Pipestone National Monument, in addition to handling mail-order sales.

It should not be construed that all of the pipes now being produced are intended for sale. Annually, in several locations, Indians of the Plains region hold social-ceremonial gatherings, usually called "pow-wows," which are attended regularly by those who are able. At a pow-wow a good pipestone pipe is a much appreciated gift between friends, and sometimes one is awarded as a prize to a dancer or singer who gives a particularly skilled performance. A fine pipe, for example, was awarded to a group of singers at the 1965 pow-wow in Flandreau, South Dakota, by George Bryan.

In sum, carving pipestone is not a "lost art," although certainly there are fewer individuals practicing the craft today than at some times in the past. Attractive pipestone items are still available at very reasonable prices to those who fancy them. Whether or not the next generation of Indians will choose to perpetuate the craft remains to be seen. ■

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News and Commentary

Everglades Park Plan

The Army Engineers' plan for supplying Everglades National Park with adequate supplies of fresh water, in study for the past several years and commented on in this Magazine on numerous occasions, has crystallized to the point where it is ready to present to the Congress, having been recently approved by the Board of Engineers for Rivers and Harbors, in Washington. Prior to its approval the Engineers invited the views of conservationists and other interested persons.

Briefly, the plan would raise the levees around Lake Okeechobee in central Florida to accommodate additional water storage, both natural inflow and water recovered by backpumping through canals from the Florida east coast; would improve the canal system leading south through the Conservation Areas toward the park to provide better water flow, and would provide additional capacity for conveying water into the park.

The most serious conservationist objection to the plan during its preliminary phases was the absence of schedules showing proposed deliveries of water to the park when the park needs water, and guarantees that deliveries would be made at such times—in other words, that the park would receive its fair share of dry-season or drought water whether the deliveries pleased other regional water users or not. In its examination of the plan as approved by the Board for Rivers and Harbors, NPA found no such schedules and guarantees. In an April statement to the Board NPA President A. W. Smith said the Association believed the plan completely inadequate for protection of the park and as a consequence completely inadequate as an over-all program for water management in central and southern Florida for comprehensive human purposes; that the plan ought to be sent back to lower echelons for revision to provide the needed schedules and guarantees.

Association Views on a Redwoods Park

The National Parks and Recreation Subcommittee of the House's Interior and Insular Affairs Committee recently heard public testimony in Washington on the various proposals for a Redwoods National Park on the north coast of California. On invitation, this Association presented its views in the matter.

The Association said that a very sizable redwoods park would be in the public interest, embracing the largest of the areas proposed by the Government and the various American conservation organizations; that is, a park that would include lands in both the Mill Creek and Redwood Creek watersheds, with a substantial connecting corridor. It would also include three existing State redwoods parks. Beyond this, the Association recommended establishment of a Redwoods National Forest comprising the entire Coast redwood belt, in which socio-ecological forestry practices would obtain. In putting the forest together, managerial easements instead of fee-simple purchase might well be considered. The Association opposd as contrary to the public interest the suggested exchange of Forest Service lands in the Northern Redwood Purchase Unit for privately owned land for inclusion in the park.

Mammoth Master Plan

A hearing for the purpose of receiving suggestions on a master plan for Mammoth Cave National Park was held on May 26 at the old hotel operated in the park by National Park Concessioners, Inc. There were 58 registered speakers and others who came without advance notice. By necessity, presentations were limited to five minutes. Making a statement for the National Parks Association was Dr. Walter S. Boardman, NPA's consultant in conservation.

Many other conservation organizations were represented, and most supported the regional plan outlined by the National Parks Association. There was strong local sentiment against any wilderness proposal for the park, with some advocating swimming pools and golf courses for the unit.

There seemed to be widespread misinformation as to what the National Wilderness Protection System really means. The story had gone forth that all roads, including Highway 70 between Park City and Brownsville, Kentucky, would be closed. Such unfounded rumors have done great damage to the objective consideration of the best public interest in the park.

Will Success Spoil the National Parks?

This is the title of an excellent series now running in the *Christian Science Monitor*. Staff reporter Robert Cahn, accompanied by photographer Norman Matheny, visited more than 20 units of the national park system, spending the better part of a year looking into many of the major problems besetting the parks as well as enjoying their beauties. The main articles discuss important decisions now pending which will determine the future of the parks. A companion series on the paper's "Family Features" page describes some of the parks' lesser-known treasures.

The thoughtful series should be widely read. The Association commends the *Monitor* for this responsible and significant contribution to a wider public understanding of the values at stake in the critical years immediately ahead. The weekly full-page articles began May 1 and will continue for 15 weeks.

Booklet on "Hard" Pesticides

Members who have an interest in the problem of pesticides may wish to send for an excellent booklet recently published by the Michigan Department of Conservation. Copies of *The Case Against Hard Pesticides* may be obtained without charge by writing to the Publications Room, Michigan Department of Conservation, Mason Building, Lansing, Michigan 48926. The Department reports that it will furnish copies of the booklet in reasonable quantities to people who would like to undertake distribution on their own.

Worthwhile Interior Publications

Many of our members will want to know about several excellent guidebooks published recently by agencies in the Department of the Interior. *Room to Roam* is a handsome, full-color recreation atlas covering all Federally owned lands in the West, with particular attention to lands under jurisdiction of the Bureau of Land Management. It is illustrated with color photographs and detailed color maps locating 450 million acres of lands administered by BLM, plus national parks and national forests, wildlife refuges, Indian lands, major cities and connecting highways. The many recreation opportunities listed include 457 found on the public lands. (50 cents).

Guides to Outdoor Recreation Areas and Facilities has been compiled by the Bureau of Outdoor Recreation listing a number—though not all—of the regional, State and national outdoor recreation guidebooks published both privately and governmentally. The volume provides a cross-reference section on camping, fishing, hiking and hunting. (40 cents).

Camping in the National Park System, a publication of the National Park Service, lists NPS areas where camping is permitted, along with the season, duration of stay permitted, number of sites available and facilities in each area. All are numbered and keyed to a map. (25 cents).

Any or all of these publications may be secured from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402.

Protecting Streams & Wetlands

Progress comes more often in little steps than in giant steps, and conservationists have learned to cheer each small manifestation of growing responsibility toward our lands and waters, wherever it appears. In this spirit we salute the States of Maine and Montana for the passage of two measures which will help to preserve the beauties and naturalness of their waters by halting practices which have been allowed in the past.

Under Montana's new Stream Preservation Law, the State's Fish and Game Department is requiring the contractor to dig an equal footage of crookedness for every yard of a creek, Prickly Pear, eliminated by straightening for construction of Interstate 15. "If a creek is four miles long before road work, it must be four miles when the contractor is through," said an enforcement officer for the department.

Although the department does not claim that the new crooked streams will be the equal of the old from the point of view of a fish, it believes that firm application of the stream law will serve to keep destruction at a minimum. The new law applies to state, county and city governments, and the Bureau of Public Roads is cooperating with the State. So far, however, cooperation from the Corps of Engineers has not been forthcoming.

Maine's new law is perhaps not so colorful as Montana's, but it is no less significant. There, it is now illegal to remove, fill, dredge, drain sewage into, or otherwise alter any wetland bordering coastal waters unless approval has been obtained from the Wetlands Control Board. The procedure calls for an application, a petition and a hearing.

Toward Help for the Various Bears

The bear's propensity for travel, plus his size and strength, have always posed difficult challenges to would-be researchers on these magnificent animals. Two events of the current year, however, mark at least the beginnings of coordinated research efforts that are broader-scale than those conducted in the past.

Between August 26 and 30, a workshop on bear research and management designed to encourage the informal dissemination of ideas among bear researchers will be held in Whitehorse, Yukon Territory, Canada, in conjunction with the 19th Alaskan Science Conference. Dr. A. M. Pearson, conference co-chairman, remarks that studies on all species of bears often get "bogged down" because the accumulation of data is so slow. The efforts are usually long-term, he adds, and sometimes lack a clearly defined purpose. For details on the conference, write to Dr. Pearson, Box 968, Whitehorse, Y.T., Canada.

At an earlier, formal international meeting of polar bear scientists held under the auspices of the International Union for the Conservation of Nature attendance was restricted to two representatives from each of the five Arctic-land countries which together encompass the full range of this endangered species. At the conference, delegates agreed on a coordinated research plan and formed a permanent international committee. Dr. S. M. Uspensky of the Soviet Union was elected first chairman of the new "Polar Bear Group," which will function under the auspices of the IUCN.

Governments have been reluctant to enter into any commitment regarding the polar bear until the answers to a number of critical scientific questions have first been obtained. The accomplishment of a circumpolar research program which may obtain fundamental data about the mammals therefore becomes a necessary first step in the development of a pan-Arctic management plan for the species, which is obviously of primary importance. The participating countries, in addition to the USSR, are the United States, Denmark, Norway and Canada.

Two Conservation Victories

The second battle of Antietam has ended.

Secretary of the Interior Stewart L. Udall and the Potomac Edison Company have announced agreement on a routing which will take a new high voltage power line about three miles north of the famous Civil War battlefield in Maryland.

Readers will recall this Magazine's report of last October on the controversy that arose when the power company's plans to run a 500,000-volt power transmission line across the Antietam battlefield, and through an area rich in history and scenic beauty, came to light. At that time we noted that the power of aroused public opinion was the only weapon available to opponents of the route, who included Secretary Udall. The Secretary's only recourse was to refuse Potomac Edison permission to cross the Chesapeake and Ohio Canal unless the routing was changed. This he did, knowing public opinion backed him strongly. NPA members who undertook to express their support of Mr. Udall can be proud to share credit for this favorable outcome.

A related event which may be the direct result of the Antietam fight was the passage by the Maryland Assembly of a bill giving authority over power line routes for the first time to the Maryland Public Service Commission, which previously had no such power.

A second victory in another conservation struggle which was reported in this magazine's July issue came when Governor Otto Kerner of Illinois approved acquisition of the Goose Lake Prairie area for an Illinois Prairie State Park. Congratulations to the Chicago Open Lands Project, the Illinois Nature Preserves Commission, and to Illinois Conservation Director, William T. Lodge!

A Cornerstone for the Wilderness System

In a signing ceremony at the White House President Johnson recently formalized wilderness status for the San Rafael Wilderness Area in Los Padres National Forest. This California forest is the only habitat of the California condor, a bird on the current list of rare and endangered species. San Rafael thus becomes the first wilderness area to be set aside under the provisions of the Wilderness Act.

Mr. Johnson subsequently sent to the Congress proposals for adding 26 additional areas to the National Wilderness Preservation System, five of which are administered by the National Park Service. These lie within the Petrified Forest National Park in Arizona, Lassen Volcanic, Lava Beds and Pinnacles National Monuments in California, and Craters of the Moon National Monument in Idaho.

Fourteen of the remaining 21 are located in the national wildlife refuges, seven in the national forests. They are: Mount Baldy, Pine Mountain and Sycamore Canyon in Arizona; Desolation Valley and Ventana in California; Flat Tops in Colorado; Cedar Keys, Island Bay, Passage Key and Pelican Island in Florida; Okefenokee in Georgia; Edmunds and Birch Islands in the Moosehorn Refuge in Maine; Monomoy Island in Massachusetts; Huron Island, Michigan Islands and Seney in Michigan; Spanish Peaks in Montana; Great Swamp in New Jersey; Wichita Mountains in Oklahoma; and Wisconsin Islands in Wisconsin.

Proposals to add the San Gabriel Wilderness in California, the Washakie Wilderness in Wyoming's Shoshone National Forest, and Mount Jefferson, in the Mount Hood area of Oregon, to the National Wilderness Preservation System were sent to the Congress last year.

Reviews

KAUAI AND THE PARK COUNTRY OF HAWAII. By Robert Wenkam. The Sierra Club, San Francisco. 1967. 160 pages, illustrated with color and black and white photographs. $25.00.

Man has greatly abused the Hawaiian Islands, and much of that proverbial and haunting beauty which was the Islands has been brutally destroyed. Of course, much also remains to attract and win its visitors. A little of the original natural beauty and wilderness of the age-old Islands exist today on the Island of Kauai. There, on northwestern Kauai we may, if we are wise, establish a national park.

The story of Kauai and the opportunity to preserve it is told in color photography, and in poetic and more prosaic words in this recent exhibit format book of the Sierra Club.

For one who has never been there, the idea occurs that the book does more than justice to the Hawaiian Islands. It may, in fact, present in its pictures—and in feelings reflected therefrom—a beauty and wonder beyond the original. The thought persists that without seeing the reality of what is portrayed here one cannot know with surety that Kauai is indeed a foretaste of Paradise.

For anyone who has longed to see and know the Islands, this book is a wrenching experience. It is walking on the red earth, luxuriating in the verdant cover, feeling the sun and wind, hearing the surf, sensing nature as we were surely intended to know it.

Anyone who is not able to go to the Hawaiian Islands immediately will find the cost of the book an inexpensive passage. For those who have been to Kauai, the book will bring pleasant memories and serve as an irresistible point of departure for innumerable conversations.

—Carlos S. Whiting

THE BLUE RIDGE. By E. J. Wilhelm, Jr. Published by the author, c/o Department of Geography, University of Virginia, Charlottesville, Virginia 22903. 1968. 103 pages, 63 photographs. Paperback. $2.95 (plus 30¢ postage).

This work is notable in that it introduces fundamentals of ecology so important to man's future while simultaneously revealing life and scenery in the Blue Ridge Mountains. "Man and nature in Shenandoah National Park and the Blue Ridge Parkway" is the subject. It is treated under three main headings—"The Physical Landscape" describing geologic origins, today's land and climate, plant and animal life; "The Cultural Landscape" including Indians, discovery and settlement (history of mountain folk); and "Blue Ridge Communities" featuring

interrelationships of plant and animal forms in the major kinds of forests, meadows, balds, and waters.

"The Blue Ridge is a complex, living landscape," Dr. Wilhelm writes. "Everything connected with it is life or contributes to life. The trees that spring from the soil to form high canopies, the shrubs, plants, mosses, fungi, and other vegetation that make up the forest understories, even the minute soil particles, enable many kinds of animals, including man, to find food and make homes. Without natural plant life, the wildlife of the Blue Ridge could not exist. All these creatures belong together, for all play their destined part in life's outdoor pageant."

The many intriguing details of the intricate natural balance (and disturbance by man's efforts at "conquering nature") represent "a complete cycle from original wilderness, through almost total degradation, to natural environmental renewal." The text is aimed toward popular readership and (aided by the attractive photographs) will provide deeper-than-normal understanding of these famous mountains and of indispensable springs of human health everywhere.

—Darwin Lambert

THE CONSERVATION DOCKET

SINCE THE LAST CONSERVATION DOCKET a number of measures of interest to the conservation world have been introduced into the Congress. Studies of the government land-administering agencies required under the Wilderness Act are now beginning to result in many formal proposals for additions to the national wilderness system, so that this Docket and others of the future will be devoting many lines to prospective new wildernesses as well as other conservation measures. As usual, we abbreviate a House bill as H. R., and a Senate bill as S.

H. R. 14849. Would delegate to the States control, regulation and management of fish and wildlife on Federal lands other than those in which States have ceded exclusive jurisdiction to the United States. To Committee on Merchant Marine and Fisheries. A companion bill in the Senate is S. 2951 on which hearings were held in Washington June 18 and 19 by the Senate Commerce Committee.

H. R. 16547. To designate 65,000 acres in the Gallatin National Forest of Montana as the Spanish Peaks Wilderness. To Interior and Insular Affairs Committee.

H. R. 16553. Similar to H. R. 14849; to same committee.

H. R. 16561. To designate 95,000 acres in the Los Padres National Forest of California as the Ventana Wilderness. To Interior and Insular Affairs Committee.

H. R. 16582. To designate 63,500 acres in the Eldorado National Forest of California as the Desolation Wilderness. To Committee on Interior and Insular Affairs.

H. R. 16628. To designate 5330 acres of Pinnacles National Monument in California as wilderness. To Committee on Interior and Insular Affairs.

H. R. 16777. To designate certain lands in the Island Bay, Cedar Keys and Passage Key wildlife refuges in Florida and the Wichita Mountains Wildlife Refuge in Oklahoma as wilderness. To Committee on Interior and Insular Affairs.

H. R. 16996. To designate part of the Monomoy Wildlife Refuge in Massachusetts as wilderness. To Committee on Interior and Insular Affairs.

H. R. 17310. To designate lands in the Seney, Huron Islands and Michigan Islands wildlife refuges in Michigan as wilderness. To Committee on Interior and Insular Affairs.

H. R. 17326. Similar to H. R. 17310, and to same committee.

S. 1004. To authorize the Central Arizona Project without the Bridge and Marble Canyon dams, including authority for the Secretary of the Interior to enter into a power purchase agreement with private interests which might construct a thermal generating plant in Arizona. This is the Administration's Central Arizona bill. It has passed both House and Senate and, as of this writing, is awaiting a House-Senate conference to iron out differences between the two bodies. Signature of the conference version by the President will conclude the Central Arizona phase of the larger Pacific Southwest Water Plan, ramifications of which have occupied the attention of conservationists over a number of years.

S. 2984. To prevent importation of endangered species of fish or wildlife into the United States and to prevent interstate shipment of reptiles, amphibians and other wildlife taken contrary to State law. The general aim of this bill is to try to stop the traffic in illegally taken native and foreign animals which are being jeopardized as viable species; in particular, the American alligator. To Committee on Commerce.

S. 3157. To establish the Potomac National River in Maryland, Virginia and West Virginia. To Committee on Interior and Insular Affairs.

S. 3314. To designate certain lands in Lava Beds National Monument in California as wilderness. To Interior and Insular Affairs Committee.

S. 3315. To designate certain lands in Lassen Volcanic National Park in California as wilderness. To Interior and Insular Affairs Committee.

S. 3316. To designate certain lands in Pinnacles National Monument in California as wilderness. To Interior and Insular Affairs Committee.

S. 3317. To designate 95,000 acres in the Los Padres National Forest of California as the Ventana Wilderness. To Interior and Insular Affairs Committee.

S. 3318. To designate 63,500 acres of the Eldorado National Forest in California as the Desolation Wilderness. To Interior and Insular Affairs Committee.

S. 3399. To amend the Federal Aviation Act of 1958 to provide for regulation of public exposure to sonic booms by aircraft over the United States. Provides among other things that the Administrator of the FAA shall prohibit nonmilitary aircraft from producing sonic booms. To Committee on Commerce. [Ed. note: As this was written the House had just passed a similar bill by a vote of 312-0].

S. 3460. To designate certain lands in the Wichita Mountains National Wildlife Refuge in Oklahoma as wilderness. To Interior and Insular Affairs Committee.

S. 3502. To designate certain lands in the Seney, Huron Islands and Michigan Islands wildlife refuges in Michigan and the Gravel Island and Green Bay wildlife refuges in Wisconsin, and the Moosehorn Wildlife Refuge in Maine as wilderness. To Interior and Insular Affairs Committee.

S. 3403. To designate 142,000 acres of the Routt and White River national forests in Colorado as the Flat Tops Wilderness.

Photograph courtesy U.S. Forest Service: Leland J. Prater

"These Coast redwoods, incomparable among forests, are a national possession no matter who holds title to the lands."—Robert Sterling Yard, 1926.

THERE ARE LITERALLY HUNDREDS of different magazines published in this country. Some are designed merely to entertain; some to whisk the reader across country or around the world; some to inform; some to educate. Most have one thing in common, however: once read, they may be easily discarded. Their purposes have been served.

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