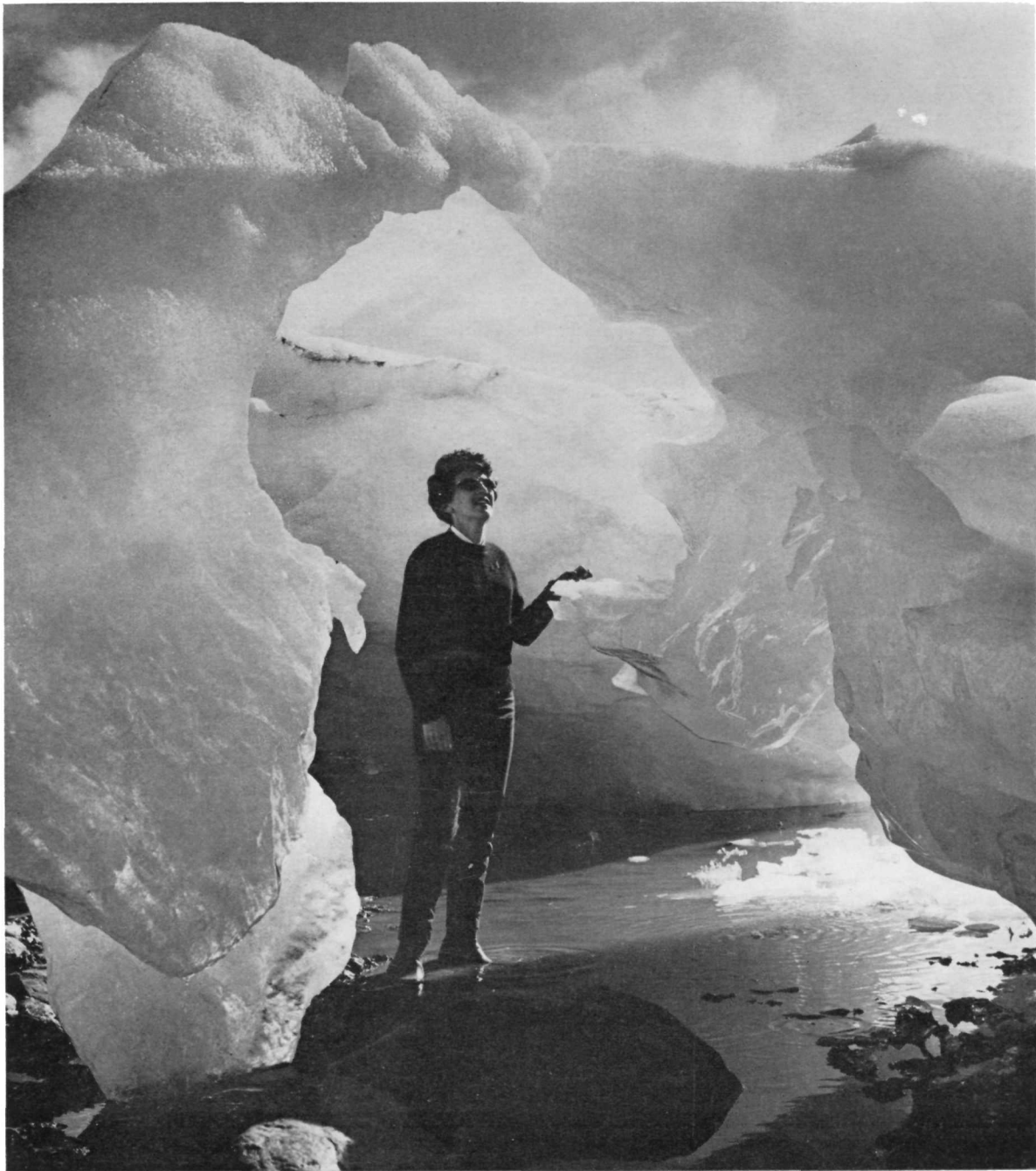


# NATIONAL PARKS *Magazine*



At low tide, icebergs cover the flats in the northern reaches of Alaska's Glacier Bay

*September 1967*

# The Need for a New Water Policy

THE NEWLY CREATED<sup>1</sup> National Water Commission, charged with reviewing America's water management policies, will have a splendid opportunity to serve the nation.

The present operating mandates are from 30 to 60 years old; a complete revision of basic assumptions is the imperative order of the day.

The principal guiding propositions of a new policy, in our judgment, should be the following:

*Proposition 1: A nation-wide system of water renovation and recycling should replace the traditional storage for the dilution and flushing of pollution.*

A revolution has occurred in water purification technology in the last decade, which must be recognized. A comprehensive statutory framework for the eradication of pollution has also been established. The American people, furthermore, are clearly determined that the pollution of lakes and rivers must stop.

A rapid escalation of water purity standards under the new laws appears certain. Municipal and industrial waste water will be given tertiary treatment, removing even plant nutrients. Acid mine waste pollution will be abolished. Cooling towers must supplant streams and lakes for industrial water cooling, because even heat-pollution will be forbidden. Effluents from towns and industries will be returned to streams *at or above*, not *below*, the intakes, to guaranty both purity and unbroken stream flow without need for artificial augmentation. Relatively small re-cycling pools will in almost all cases render larger water supply reservoirs unnecessary. In communities blessed by surrounding farmland and forests, effluents containing nutrients will be spread on the land for irrigation and fertilization.

The big storage reservoir for the abatement of pollution, or so-called water quality control, is a relatively new concept; it is outmoded almost before it was born.

The destructive impact of the big reservoirs, and indeed of any reservoir designed for dilution or augmentation, needs to be more widely understood. The agencies of environmental education, public and private, should dedicate themselves to such understanding. These impoundments are inherently (1) deep draw-down reservoirs, defacing the locality; (2) big-inundation reservoirs, destroying the stream valleys; and (3) mass-eviction reservoirs, displacing solid areas of settlement, by federal power of eminent domain if necessary.

The prevailing myths of water management, such as the notion that all big dams are beautiful and good, have concealed the destructiveness of these projects; it is time for a change.

Renovation will crack the pollution problem. Water will not be stored for the dilution and flushing of pollution; low-flow augmentation, unless in isolated situations, mainly

<sup>1</sup>As we go to press the legislation creating the Commission has passed both houses of Congress and is in conference for the adjustment of minor differences, and signature is expected, so the legislative process can be regarded as being substantially complete.

for esthetic or recreational purposes, will be pointless; indeed, natural stream-flow fluctuations will be recognized as ecologically desirable. The money that would otherwise be spent on storage for dilution and augmentation should be spent instead on treatment plants.

A new bureaucratic-industrial complex, of benign influence, consisting of the pollution prevention agencies and the large manufacturers of pollution prevention equipment, can be expected to arise in place of the malignant older combination, consisting of the engineering agencies, the construction contractors, the polluters, and the real-estate speculators, which has been the mainstay of the big reservoir pollution-dilution water-supply approach.

*Proposition 2: Renovation and re-cycling should replace large storage reservoirs for water supply except in desert country and other special situations.*

Re-cycling, which becomes readily available once renovation has been accepted, is the only system which guarantees unlimited water supplies for such urban and industrial growth as may be deemed inevitable or desirable. The flow of the streams and rivers can now be utilized many times over in passage from the springs to the seas. The once-through system for water supply, like the once-through system for water cooling, must be abandoned.

More precisely, the prevailing practice whereby cities accept used water from upstream communities, cleanse and re-use it, and pass it along for further re-use downstream, will be recognized as an inferior method of recycling, and communities will treat their own waste water, not that of their upstream neighbors. The great freshwater estuaries will be used for direct water supply by the coastal cities, or if need be as re-cycling basins.

The notion of "the complete hydrological development" of river basins is an ill-starred concept which hopefully will prove to be stillborn. The disastrous effects of such a policy should be obvious to the uninitiated. In all river systems carrying anadromous fish, ecological and economic resources of great importance would be greatly injured or completely destroyed. Salt water would capture the saline estuaries, wreaking comparable havoc. Monstrous projects like Rampart Dam in Alaska would be stimulated; in train would come new proposals to divert Alaskan and Canadian waters into huge mountain lakes, and thence even to the Great Lakes; and behold! for such worthy purposes as pollution abatement there! The social, ecological and even meteorological consequences would be incalculable. The planners and engineers have no business playing with such thermonuclear explosives. The proper operating principle is *minimum disturbance*, not *maximum development*.

*Proposition 3: The watershed management approach should in the main supplant the big reservoir system for purposes of flood prevention and local water supply.*

Watershed management has proved its efficacy during the past two decades. It comprises the following elements:

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Front cover photograph by Charles V. Janda

Glacier Bay National Monument, on the south coast of Alaska, is one of the units of the national park system which may be called a wilderness in the true sense of the word, though its southeastern boundary is not many miles from Alaska's capital city of Juneau. The monument was established early in 1925 for the protection of a magnificent mountain, glacier and tidewater terrain in which the principal scientific interest is geological; the monument is, indeed, a living modern laboratory for the study of glacial ice and its associated phenomena. For the non-scientific visitor the two and a quarter million acres of Glacier Bay Monument paint in cold colors a scene of mountains, ice and water which, of its sort, is unmatched on public or private lands elsewhere on the North American continent.

## 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 35,000 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.

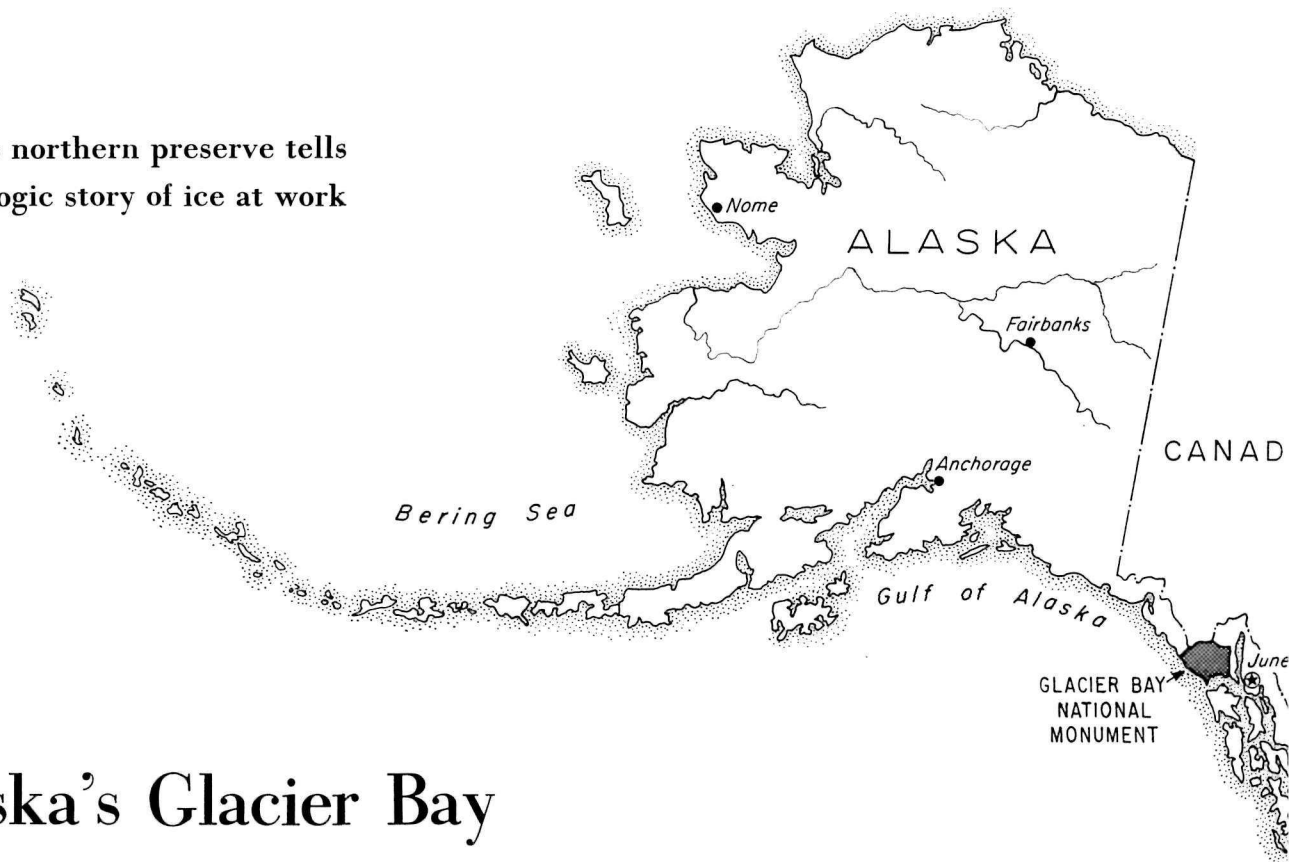
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*La Perouse Glacier, in Glacier Bay Monument, terminates on the open coast of the Gulf of Alaska. Advance of its terminus is held in check by constant pounding of the surf. This glacier is presently undergoing a period of rapid surge characteristic of numerous other glaciers in Alaska.*

A scenic northern preserve tells  
the geologic story of ice at work



# Alaska's Glacier Bay National Monument

By Darwin Lambert

Photography by Charles V. Janda  
National Park Service

**I**N FEW PLACES NOWADAYS are the powers of earth so dominant and the influence of man so puny as in Alaska's Glacier Bay National Monument. This condition, so apt an illustration of the nature-park ideal, stirred me unforgettably as I stood with my wife on the deck of a seventy-foot boat off Margerie Glacier, listening to the thunder, the continual crash and rumble, and watching the inexorable flow of that river of ice.

The terminal ice-cliff towered 250 feet, and from it at frequent intervals great chunks plunged downward in ice-crystal mist, making tremendous splashes of spray, disappearing beneath the surface, then leaping upward as though alive, but gradually finding repose as bergs low in the water. After each great splash, waves raced toward us, dwindling as they came but yet, though we were half a mile off for safety, lifting, then dropping and rocking the boat.

When we had finally pulled ourselves away from the continuing show, we recalled a conversation that had been related to us. A visiting National Park Service official, after watching action-spectaculars at the snouts of several glaciers a few years ago, turned solemnly toward the monument's superintendent. "I'm genuinely sorry," he said "but

I'll have to report to Washington what I've seen. Your park is falling to pieces."

The quip represented the truth, of course—but only a small part of the truth, only a small part of Glacier Bay's profound message. As static scenery the place is unusually impressive, but as natural process—audible, visible, with the touch of ice-tinged wind on the skin, the taste of salt spray on the tongue, and thoughts of irresistible power stirring within—it comes alive as a symphony of sensation, taking on planetary significance in a context of geologic time. Though it may be falling apart, it is simultaneously being reassembled and reshaped, sculptured into strange, rounded domes and deep fiords with glacier-grooved and ice-polished cliffs, or decorated with color and populated with varied forms of life, a world ever different, ever new.

The familiar story of weather is magnified there a thousandfold into powers and patterns of creation. Wind and sun gathering moisture from the vast ocean become again, as they were when we were children, characters in a meaningful drama. The great storms, mostly arising along the Aleutian chain, sail on the prevailing wind and dump endless tonnages of water, largely as snow, on the Fairweather and St. Elias ranges, mountains higher than

any in the other 49 States. Accumulating faster than it melts, season after season, the snow is compressed and transformed into reservoirs of ice. Gravity demonstrates its tremendous power, pulling ice masses downward, making them flow as reluctant water, jumbling them into fantastic shapes, grinding them against the floors and sides of canyons and valleys. The rivers of ice take up rock powder and fragments and carry all along.

Then, at shifting points dependent on fluctuating climate, the warmth of earth finds a balance with the extent of snow-fall and the freezing point of water, and the glacial flows terminate. If still on land, they deposit masses of rock debris as moraines. If they have reached arms of the sea, they are undermined by tides (often 20 feet between high

and low in Glacier Bay) and crumble into bergs that float away, melting gradually, dropping their rock debris into the depths. When the climate favors freezing, glaciers advance, grow in length, covering more and more ground. When it favors thawing, they recede, drawing back toward their sources in the ice factories of the heights.

This glacial demonstration has long attracted scientific attention from around the world. At the time of early explorations about the year 1700, the bay was filled almost to its mouth on Icy Strait by an ice-sheet more than half a mile thick. Climatic change hardly perceptible otherwise has caused recession of fifty miles or more, opening up the bay and the branch inlets.

Muir Glacier, an especially active ice-river that flows

*Below, Riggs Glacier in Glacier Bay National Monument. The area forward of the glacier's front is a mass of closely-packed icebergs and pan ice. Photograph was taken in February.*



forward as much as 30 feet a day, has nevertheless receded nearly 15 miles since John Muir occupied a cabin near its snout shortly before the turn of the last century—the more normal time schedule upset partly by a strong earthquake in 1899. When we tried to reach it, the inlet was so densely and dangerously crowded with icebergs near the Muir cabin site that we had to turn back. Reid Inlet is also frequently blocked by bergs from active Johns Hopkins Glacier. Some of the waterways, such as Lituya Bay on the outer (Pacific) coast, are rendered highly dangerous by tidal rip.

For half a century, at least, Grand Pacific Glacier at the head of Tarr Inlet, site of the most extreme recession, has been playing a game around the Canadian boundary. From 1899 to 1912 this glacier receded about nine miles, allowing tidewater to approach or reach the international line. A short-term advance then forced the water-line southward, but recession resumed. By 1928 the glacier terminated nearly 4000 feet inside Canada. Advances and recessions kept alternating, and by 1948 the terminus was partly in the United States and partly in Canada. The last advance has continued slowly, and U. S. authorities consider the present terminus to be definitely inside our country. Some Canadians have disagreed, however, and in 1964 they revived discussion of a Tarr Inlet port to give northern British Columbia access to the sea. But wiser counsel seems likely to prevail, recognizing that, even if tidewater does touch Canada there at the moment, the situation would be a gamble. No port, no access highway or railroad, could be held against an advancing glacier.

#### *Ebb and Flow of the Ice*

Scientific teams have traced the advance and recession of the glaciers back through the centuries. Fluctuations in climate have not only added or withdrawn great areas and thicknesses of ice but have also controlled the patterns of life. Ancient, broken stumps have been found where flood-carried gravel and advancing glaciers wiped out forests and held the land in sterile captivity for millenia, releasing it at last and allowing life its chance again.

In the present epoch 500 square miles of the vast monument are covered with mature forest, carpeted with thick, cushioning moss. Large spruces and hemlocks are bearded with lichen, and as one moves along the adjacent waterways a screen of alders and other low growth often obscures the secrets within. Among the large land animals are Alaska brown bear, black bear, the unique bluish glacier bear, mountain goat, Sitka blacktail deer, wolverine, moose and wolf.

Finding signs of the recent presence of wild creatures on the beach or in the forest brings new melodies into the Glacier Bay symphony, melodies that might be further developed by sight of the creatures themselves. Coasting quietly into a cove south of Muir Inlet, we saw a three-quarters-grown brown bear at the edge of the forest. He stretched to full height on his hind feet and with a front paw pulled young twigs and leaves within reach of his mouth. While I was still watching him, my wife whispered she saw another—a black bear a mere hundred yards or so from the brown, moving slowly on all fours, turning over rocks near the water, perhaps for tidbits of seafood.

The bears gave no attention to us or to each other. The same day, cruising along quite near shore, we noticed moving white shapes on bare cliffs in and above a brushy forest, and through binoculars we counted 62 mountain goats in half an hour.

#### *Glaciers and the Living World*

Much land has been vacated by ice within recent decades, and is in early stages of a cycle of life. Bare bedrock and moraines of boulders and gravel add stark variety to the views. The glaciers have scoured away what fertile soil existed before. If the ice stays back long enough, new soil will be created. Lichens, fungi and mosses will make a start, preparing the way for such plants as dwarf willow and fireweed that join in preparing for cottonwood and alder, which are forerunners of hemlock and spruce. The full transformation to mature forest requires many centuries, and returning ice may interrupt the sequence at any point and sweep the slate clean of its story of life.

Recession of glaciers has increased the water area within the monument to more than 625 square miles, and wildlife is even more abundant and varied in and over the water than in the forest. Salmon, halibut and crab may be caught by fisherman. Shorebirds and waterfowl may be nesting on shores or small islands and are almost constantly in sight—gulls, murrelets, puffins, loons, ducks, geese, and many others—often in sight by the hundred.

Crusing slowly on the vastness of Glacier Bay proper, we saw several times the geyser-like breath of whales and once their shiny black bodies larger than our boat, emerging, rolling, twisting, then the flip of enormous tails as they dove into the depths again. Porpoises were numerous. Far off we saw once a series of quick splashes as a dozen headed our way, perhaps for a race. But they soon found our boat too slow, a mere ten or eleven knots. Three leaders opened a different performance by cutting back and forth across our prow, breaking water in quick splashes, showing the tops of their heads and the black, round holes through which they snatch their breath. Four or five more joined in that prow-dance at its height, weaving in and out, almost touching the boat. We saw them easily just under the surface, saw their propelling tails moving up and down with apparent ease, yet driving the five-foot bodies so swiftly through the water that they could run rings around the boat. We felt they were playing with us. We even suspected they knew that we, fellow living creatures, were watching, and they showed off for us, speeding, crossing each other's paths, turning sideways at times the better to show the light markings on their glistening dark bodies, the better to impress us with their strength and skill.

Seals appeared often in the bay and the branching fiords, especially near the glaciers where icebergs were most crowded, sometimes using floating ice as resting places. Anchoring one evening in a cove, we heard seals barking like disturbed watchdogs. They studied us as we studied them, and soon they swam around us, thrusting their heads and chests out of the water, sinking, bouncing out even farther, examining us with much curiosity and, we thought, suspicion.

Glacier Bay National Monument is one of the largest units of the national park system, stretching 90 miles east

and west and 70 miles north and south, containing almost 3600 square miles. It has so many glaciers we doubt if they have ever been counted; but even if they have the count is changing, some glaciers dying but shifting conditions sometimes giving birth to new ones. More than a score of them are tremendous and well known to science and to connoisseurs of scenery. Some are more than 20 miles long with ice cliffs two miles or more wide and perhaps 300 feet tall.

The monument has, in more than one sense, been on ice from the time it was established in 1925. Though it has been so inaccessible that few people have seen it, the reactions of those thus privileged have been strong. The late Senator Harry F. Byrd of Virginia remarked during a visit some years ago: "I have visited every place in the world where they claimed to have scenery. This is the most sparkling and beautiful piece of scenery I have ever seen." Eivind T. Scoyen said upon retirement as associate director of the National Park Service: "During my somewhat more than 60 years of contact with park system areas, I have always been reluctant to pass judgment on what I believe is our outstanding area. However, I am now firmly convinced that on the basis of mountains, snowfields, rivers, lakes, bays, glaciers, wildlife, and scientific interest, this can only be Glacier Bay."

Recent events have moved the monument toward the limelight. A headquarters area has been under development for some years at Bartlett Cove, a few miles inside the bay, connected with the emergency-airport hamlet of Gustavus by a short road. Office, shop, power plant, employee residences, water and sewer systems, boat dock, and other facilities have been established. In 1966 for the first time public accommodations and services were avail-

*A young Pacific Harbor seal. Glacier Bay's population of this animal is estimated at several thousands, and during the summer icebergs in the secluded fiords of the upper bay are literally covered with the mammals.*



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**Darwin Lambert, formerly a newspaper editor, is now a free-lance writer with several books and many magazine articles to his credit. A trustee of the National Parks Association, Mr. Lambert makes his home on the western slope of Virginia's Blue Ridge range not far from Luray.**

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able there. Glacier Bay Lodge was dedicated—with 16 cabin units available for public occupancy, dining and other facilities large enough for lodging expansion. Day-long sightseeing tours were inaugurated on a cruise boat which carried up to 45 passengers, accompanied by a park naturalist. Both enterprises were financed (but not directly operated) by the National Park Service in what officials explain was an exception to usual policy, made necessary because private business had proved unwilling to take the financial risk in a remote area with no record of substantial visitation. The concessions are expected, however, to stand on their own financial feet very soon.

Access from more usual routes of travel had been via private airline, amphibious planes making three flights daily between Bartlett Cove and Juneau, flying time less than half an hour. Recorded visits rose from 1120 in 1965 to 4067 in 1966—but the extent to which these figures cover visitation by unscheduled boats entering monument waters and possibly landing somewhere on the 725 miles of irregular shoreline inland or the hundred miles of Pacific shore cannot be determined without more patrolling personnel. The visitor season is May to September, lodge and sightseeing service to begin about May 23 and run through September 15 in 1967.

Late in 1966, the Interior Secretary's advisory board on parks recommended national park status for the monument—with the new statute eliminating present special provision for mineral prospecting. This would halt staking of additional claims, but would not confiscate existing claims. There is one "patented mine" on Brady Glacier, the firm having drilled through ice in search of nickel. Prospecting and assessment work is also taking place to some extent. The major difficulty at this time, officials say, is unsightly land use and abandonment of property connected with such activity.

National Park Service planning now indicates preservation of most of the monument as wilderness. Officials declare that a minimum of development will serve visitors seeking scenic grandeur, the solace and thrill of wild country, and knowledge of earth processes. By keeping the bay and its arms as the "road," they believe a most rewarding park experience can be enjoyed by large numbers of people without a feeling of overcrowding or overuse (a pattern of access which, incidentally, deserves imitation elsewhere in the park system where suitable channels or bodies of water exist).

The monument is considered to have hundreds of wilderness campsites on the mainland and numerous islands—no facilities provided, the campers to come completely self-sufficient. Since the only access beyond Bartlett Cove is by boat, most visitors eat and sleep at the lodge (or aboard what private or chartered boats may be in use). The regular cruise boat will, however, drop off campers with their gear as desired and pick them up later, thus making possible genuine intimacy with types of wilderness ranging





*Above, an aerial view of a small portion of the Brady Icecap in Glacier Bay National Monument. The large icefield supplies six tidewater glaciers in the monument.*

from mature rain forest to barren rock or fresh glacial moraine.

A nature trail now leads one mile through the forest of Bartlett Cove and returns along the beach, and a marked trail leads also a mile to Bartlett River where there is trout fishing and many bald eagles to be observed (common in coastal Alaska but rare now in other States). Hiking along the river and in many other parts of the monument is quite easy without trails, but there are plans for a few additional trails as need arises. Construction of a few wilderness shelters is also being considered for the future in view of the heavy precipitation.

It pleased us to think, as we neared the end of our Glacier Bay cruise, that though visits to this remarkable place will be increasing the Park Service plans no ambitious "development." No likelihood exists of interference there

with the great process of earth—the natural waxing and waning of the tides, the advance and recession of the glaciers, the natural shaping of topography, the sweeping away of dense patterns of life by elemental forces alternating with the uncovering of land again, inviting life to launch another cycle, the forests to grow again and the mammals, birds and fish to follow their instinctive patterns.

Moving toward the mouth of the bay, we looked back toward cloud-draped peaks, toward the barren rock and the luxuriant forest, toward the floating icebergs on the expanse of shining water. Our eyes found the wake of our boat, and though it stretched far behind us we noted that it was healing, that we were leaving no lasting mark of our passage. And behind us then, as we moved past Point Gustavus into Icy Strait, whales were blowing their geysers against the scenic backdrop toward the sky. ■

# The Mullica: River of Iron

By Gilbert F. Stucker



*Photograph by the author*

**T**HE MULLICA IS AN IMPROBABLE river, strangely alien in its context of time and place. Within two hours of congested, smog-ridden Manhattan, its cedar waters flow clear and virtually unimpeded through a New Jersey countryside of almost wilderness character. Small, the river is barely 55 miles long from its source near the village of Berlin to where it empties into Great Bay on the Atlantic shore; yet it spans vast segments of our history. Verrazano

first sighted it in 1524. Swedish navigator Eric Mullica, whose name it bears, explored it more than a century later. Patriots and ironmasters of the American Revolution secured its meaning in our national consciousness.

My wife and I know the river. In the role of weekend refugees from New York City, we have canoed it on a number of occasions. Usually, we begin our trips at the Mullica campground a short distance below the all-

but-deserted town of Atsion in the Pine Barrens—the remarkable floral and physiographic entity which occupies a quarter of the State and embodies much of its beauty and antiquity.

To find ourselves on the river never fails to come as a surprise; after our confinement in the city, it is like breaking through into a bright new reality, to discover that we are still alive to such things as trees, birds,

## A waterway in the Pine Barrens of New Jersey, rich in human and natural history, merits serious consideration as a national preserve.

For Americans everywhere, there is emerging a new consciousness of the land and its meanings . . . the need for a new relationship with their heritage, natural and historic. In the photograph at left, two canoeists sample the quiet beauty of the Mullica River. The Mullica, in southeastern New Jersey, is the third largest river flowing wholly within the nation's most densely populated State.

the smell and feel of clean earth, free-flowing rivers. The Mullica is an amber sheen, winding between shaded banks. It moves unhurriedly, as if geared to another age than ours—relating us to a time older than history and to those fundamentals from which the fabric of our lives has been derived. Pepperbush, alder, azalea and maple crowd down to the shore, while farther back, pines and oaks edge the sky. Song sparrows greet us. A brown thrasher streaks across our path, topping out his glide in a holly tree. Catbirds call, their soft “mewing” barely audible above the raucous commentary of the crows. In the distance can be heard the clear repeated notes of an ovenbird, and, as we lunch on the bank, the dry rattle of dead leaves tells of a towhee scratching for grubs.

### A Wealth of Animals

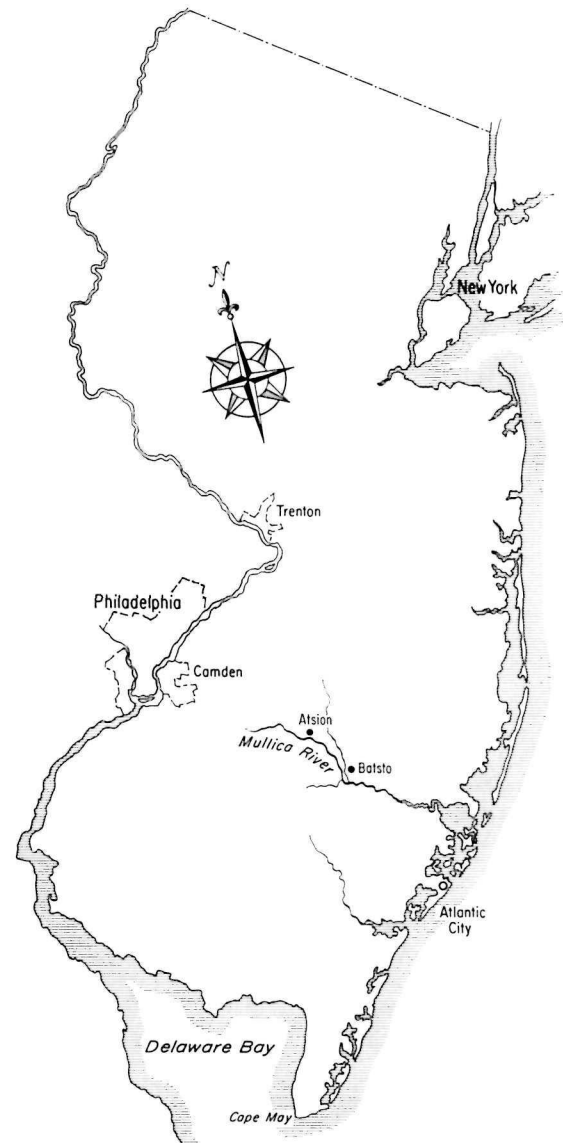
If one is fortunate, he might spot an otter, a bald eagle, or, possibly, at night, looking closely, the rare Pine Barrens treefrog, *Hyla andersoni*. Turtles are not uncommon, at least not the “painted” and “spotted” varieties, but it is unlikely that the small bog turtle, *Clemmys muhlenbergi*, will show itself, and it may be well that the huge snappers are not numerous, as some weigh sixty pounds and are reputed to have unpleasant dispositions. We saw old beaver cuttings in places. Tracks in the sand revealed where a deer had come to drink. A thousand deer are said to range these woods of the Wharton State Forest, along with foxes, raccoons, red squirrels, opossums, rabbits and such game birds as quail, grouse and ducks.

At intervals, the leafy corridors through which we paddled opened to disclose broad grassy savannas where

an intruder was apt to flush a woodcock or a green heron. In the miniature eddies left by our paddles, streamers of club rush swirled, and slender filaments of the bayonet rush, like waving hair, lent form and substance to the current. One expected to glimpse a pickerel in the depths—one of those elongated “fresh-water wolves” which share the river with bullheads, eels and, occasionally, during the spawning season, the herrings which were once so plentiful that they sold in the local markets for fifty cents a hundred.

We nosed our canoe around a bend. Ahead, the river cut into the bank, exposing the bright sands and clays of the Cohansy formation. It is not a very ancient rock; most geologists place it in the Miocene Age, although some, in the absence of conclusive fossil evidence, refer it to the Pleistocene Ice Age. Nor is there agreement as to its origin. Deposited at a time when the ocean overlapped the Jersey coast farther inland than at present, it was once thought to be entirely marine. Recent studies, however, suggest that it may have accumulated in a variety of ways: offshore, in estuaries, in dunes and on beaches, and perhaps as stream deposits laid down by the ancestral Mullica. Today, it underlies the nearly 2000 square miles of pitch pine, oak, white cedar and huckleberry brush which comprise the Pine Barrens.

As in many other parts of America, it was the timber that attracted the first settlers. By 1700, their axes were ringing and oxen were dragging the great boles to the sawmills along the Mullica. Pine was the mainstay. It grew to be 200 years old then, stood 75 to 90 feet tall and produced as much as ten thousand board-feet per acre. Its wood went



into the floors, sills and beams of their houses, into boats and waterwheels, and provided the “coaling wood” (charcoal) that fired their forges. From it came turpentine, rosin and pitch. The resinous knots brightened their homes at night, and lighted the way when they traveled or went spear-fishing in the dark of the moon.

Of the other trees, the chestnut oak rendered bark for tanning their leather, but the most sought after of all was the swamp-loving cedar. Straight-grained, light and durable, it was transformed into many uses from shingles and interior trim to pipe organs and, as late as World War II, it went into the hulls of PT boats. Dead trees, buried for centuries in the peat bogs and found to be sound, were “mined”; one of them measured six feet through the middle and had more than 1000 annual rings.

The Pine Barrens were the collecting

grounds for many of our early American botanists. To them came the Bartrams, William and possibly John, Thomas Nuttall, C. S. Rafinesque, Gray, Torrey—drawn to attend the spectacle of creation, bringing to their endeavors that childlike wonder and sense of the miraculous which are the mainsprings of scientific investigation. Here, following along the Mullica shore, William Canby explored for his lobelias and sundews; C. W. Eddy searched the bogs on the Batsto tributary where he was the first to find the *Schizaea pusilla*, the strange tiny fern known only from this region, Nova Scotia and Newfoundland, Frederick Pursh found the bog asphodel, and unknown rushes revealed themselves to Knieskern and Pickering. Through their discoveries, a beginning was made in the study of one of the world's most interesting floras, offering many avenues for research, particularly in plant morphology. The botanical fraternity was to be amazed by the variations, within a species, which some Pine Barrens forms exhibited—knowledge which was to enhance our understanding of plant evolution and the possible origin of mutations.

#### Discoveries, Tangible and Otherwise

These naturalists discovered better than they realized. They discovered more than new forms of plant life; they discovered their own identity with the American land. For, theirs was not only a desire to *know*, to intellectualize their findings and fit them into a taxonomic frame; they had come to these woods at the bidding of a deeper need—a universal human need to *experience* the reality of nature. Through that experience, as they conducted their explorations, they perceived their relationship, as men, to the natural world. Seeing from within their own involvement, their eyes were opened to nature no longer simply as the *object* of their investigations, but as the very subject of human existence.

It was in the bogs that much of their work transpired—mysterious places enclosed in a darkness of cedars, where the water lies still and black. “Old man’s beard” tree lichens (*Usnea barbata*), said to be the choice nesting material of the parula warbler, hang like tattered lace from the branches. Lily pads cover pools edged with sweet bay, laurel and fern which grow out of a

carpeting of sphagnum moss.

Sphagnum, and the peat which results from its decay and compaction, has much to do with the character of the Mullica River. From it is derived the water’s clear amber color and high acidity. Its antiseptic qualities, seated in a phenolic compound, which once put sphagnum in hospitals as a surgical dressing, made the river a favorite of the old windjammer skippers when they wanted a drinking water that would “keep” on the long voyages.

The bogs have distinguished the Mullica in still another way, for it was in their depths that the substance of history lay gathering through time in the form of red-brown, rubbly masses of iron. Leached out of the underlying rocks by ground water, the iron had been carried in solution to concentrate in the stagnant, organically-rich bogs. There, bacterial action induced precipitation of the iron as limonite, the common bog ore, eventually forming extensive accumulations. It was in these deposits that the human drama of the region found its well-springs, and, reaching full flood, sent the Mullica coursing into the currents of our national existence.

The man who released the floodgates was Charles Read of Philadelphia, lawyer and business entrepreneur. He had visited the Mullica bogs and saw the possibilities. Not only was the ore present in quantity, but in quality, assaying 45 to 47 percent iron, with some of it proving as high as 56 percent. In lieu of a convenient source of limestone, flux could be obtained from the oyster beds at the river’s mouth, manpower was available in the settlement of Pleasant Mills, charcoal from the forest trees and water-power from the river.

In 1765, Read commenced building his iron works—starting at Atsion where the river widens into a lake. Some seventy million gallons of water flow through the lake in a day, dropping nine feet at the lower end. Read put in a dam and harnessed the flow to a waterwheel which operated the bellows of his forge. He also dammed the Batsto branch, and he erected a furnace at Batsto village as well as at two other locations farther removed.

A few miles above Atsion, Read’s men opened up the first diggings in the shallow coves and backwaters, diked off the deposits, drained and “mined”

them. Forty-foot barges, similar to the “Durham” boats used by George Washington in his famous crossing of the Delaware, carried the ore to the smelter, and from there, as pig metal or finished product, it headed seaward in the holds of Mullica-built schooners.

#### A Familiar Pattern

In such guise did the beginnings of the Industrial Revolution reach these Jersey pinelands, establishing itself, as in other places, through the agency of a river—the power of moving water to drive machinery for converting the raw materials of the wilderness into products for human use. In its local development, it was to follow a universal pattern—a pattern based on the myth of “inexhaustible” resources.

Like most myths, its origin is obscure. Possibly it sprang from the awe and bewilderment of the first European explorers on their encounter with the American wilderness. Conditioned to the measured distances and limited resources of the Old World, they must have been overwhelmed by what they found on this continent—a vastness and abundance that dwarfed their preconceptions and to which there seemed no end. Small wonder that they thought of America as limitless and inexhaustible, and that this fallacy should have been perpetuated from generation to generation until finally shattered by the truth.

Conceived in ignorance and committed to the lie that unrestricted land-use was an inalienable human right, this myth was the driving force behind the economic exploitation of the country. Read, himself, lived by the myth. It fired his ambitions, shaped his dreams, and in the end it claimed him a victim, pushing him beyond the limits of his own personal “inexhaustibility.” By 1773, depleted in health and finances, he was forced to retire, selling his holdings to his associates.

Business expanded under the new management. The communities of Batsto and Atsion became factors in the growing economy of the colonies. Batsto was turning out the “finest hollow ware in America,” assorted pots, kettles of 30 to 125 gallon capacity, Dutch ovens, skillets. It manufactured pestles and mortars, weights, forge hammers, grating-bars, stoves. George Washington, hearing of the workmanship and quality of its rust-resistant iron, pur-

chased several of its ornate firebacks for his Mount Vernon home.

He was to have greater need of Batsto. As an arsenal for the American forces in the Revolution, it was to contribute much in the form of cannon, shot and ball ammunition, and fittings for caissons and army wagons. Washington's quartermaster general, Nathaniel Greene, had a hand in the plant's management for a time, as did patriot John Cox who organized the iron workers into a respectable militia company.

Batsto also played a vital role in keeping the supply line open to Valley Forge during the winter of '77-'78. With both New York and Philadelphia in British hands, this posed a difficulty. The most direct route in from the coast lay through Batsto, followed in a general way up along the Mullica, and then crossed overland to the Delaware. The forward anchor for this line was the privateer base near the mouth of the Mullica, which operated as a port of entry for contraband as well as a springboard for forays against British shipping and naval units. The line's pivot and strongpoint lay twenty or so miles up the river at a vaguely-defined place called "The Forks," the head of navigation, where the Batsto, Nescochague and Mechescatauxin rivers joined the Mullica to form a natural rendezvous area. Remote from the sea and the long arm of the Royal Navy, yet it was accessible to 100-ton vessels, a maze of river meanders, marshes and dense woodlands that had been a smugglers' roost since the 1750's. Here, not unnoticed by Tory spies, contraband schooners nosed into their backwater meeting places with the wagon trains.

The inevitable, of course, happened. A British squadron of twenty sails appeared opposite the mouth of the river one October morning in 1778, to disembark the King's 5th Regiment and a battalion of volunteers. Encountering only token resistance, they stormed and took the fortified position guarding the inlet, set fire to the village of Chestnut Neck and moved on toward their pri-

*Photograph by Alma H. Stucker*

*An invitation to serendipity. But a few miles from the roar and fumes of the New Jersey Turnpike, the road at right leads through pine barren solitudes from Atsion to Quaker Bridge. Along such roads lies a part of every American's future—a new understanding of the natural world and his place in it.*





*A remnant of Atsion's past. Rumored to have been a monastery, this huge stone building once employed 170 workers and variously served as cotton mill, paper factory and cranberry-packing plant.*

*Photograph by the author*

mary targets, Batsto and "The Forks."

An aroused citizenry, however, stood in the way. New Jersey "minutemen," hastily organized, concealed themselves at a favorable spot along the line-of-march and, as the redcoats approached, blasted them with musketfire. The unexpected show of strength, plus the report that General Pulaski and his "legion" of mounted infantry were on their way, sent the British back to the coast and eventually to their waiting ships. It had been no more than a skirmish, but to the people of the Mullica it was the Battle of Chestnut Neck—the point in their history through which they entered directly into the trauma which brought the nation into being and made their valley their own.

Batsto emerged from the Revolution a bustling center of almost a thousand people, to face grim years of depression as the new American republic struggled to find itself. In the capable hands of the Richards family, the Jersey bog-iron industry managed to survive and, as the country's economy at last took hold and gained headway, boom times returned.

Annual production at Batsto rose to 800 tons, as orders from Philadelphia and New York, for gas and water pipe, poured in. The new forge "with four

fires and two hammers" was turning out bar-iron at a record rate. From the slitting and rolling mill came a steady volume of sheet metal, nails and wagon tires.

Eight miles away, at Atsion, the story was the same. Its output was matching Batsto's ton for ton. The future looked bright. The Richards built a manor house there in 1826, and the following year put up a company store which today serves as a ranger's quarters—a quaint, chapel-like structure with a bellfry. For some years, life in the community moved to the sound of its bell—calling the men, 120 of them, to work in the morning, announcing their noon-period lunch, tolling them home at the end of day. In its iron song was the sound of time, summoning the workers in iron to iron's end.

They had seen the end coming early in the 20's, in the dark, vitiated pools where the ore had once lain thick. They had seen it in the diminishing woodlands. Yet, few realized. There were more bogs along the river . . . more trees. But the played-out deposits multiplied; nor were new ones found to replace them. The cut-over lands edged farther into the forests. Men were laid off. Plants closed, Atsion among them.

It would be twenty years before the ore beds could replenish themselves, the experts said; they had been used up faster than they could regenerate. More than likely, the delicately-balanced ecology of the bogs, upon which the deposition of the iron depended, had been disrupted and possibly destroyed by the mining operations.

What had taken place had happened before, and deplorably, was to be repeated many times as men pushed farther into the continent, securing for themselves the goods of the land without heed for the other fellow or for the future—blindly undermining, in their myopic self-concern, the wilderness base on which they built. These exploiters possessed little, if any, understanding of natural processes and the complex interrelationships through which they functioned. They saw themselves, not as part of a natural order, but as superior creatures, conquerors of the land. The concept that they belonged to a larger fraternity than that of men did not occur to them; the rest of creation existed for their profit and pleasure. They, too, believed in the myth of "inexhaustible" resources.

Following the collapse of the iron industry, Batsto and Atsion witnessed a spate of short-lived activities. At Atsion, a huge stone building was erected which was to have a checkered career as a paper factory, cotton mill and cranberry-packing plant. Batsto became occupied with glass-making, specializing in window panes and the clear globes which adorned the streetlamps of our eastern cities during the gaslight era. But the spirit of the communities had ebbed and with the passing years their hold on existence grew tenuous.

#### The Wharton Estate

They might have passed from existence altogether had they not become part of the Wharton estate, a 96,000-acre tract which Joseph Wharton, Pennsylvania industrialist and philanthropist, began acquiring in 1876. His interest centered on the Mullica River and its system of tributaries as a possible water source for the expanding city of Philadelphia. He proposed that it be developed. Fortunately, New Jersey's public officials felt otherwise, and the proposal was defeated in the state legislature.

The area, however, held other attrac-

tions. A man with a deep sense of the past, Wharton was not unaffected by the charm and significance of the old villages, and while he went about the business of building up his estate—raising livestock, experimenting with cranberries and sugar-beets, reforesting and lumbering—he took steps to preserve its historic endowments, particularly at Batsto.

Wharton's work of preservation was germane to the future—a future too distant for him to participate in, but one which owes much to his efforts. In 1954, the State of New Jersey, under its conservation-minded governor, Alfred E. Driscoll, purchased the Wharton tract and designated it a state forest. Four years later, the State's Department of Conservation and Economic Development initiated its program of natural and historic rehabilitation for the property. Today, as a result of that program, the New Jersey that

rose out of the iron bogs along the Mullica and its tributaries has been retained not only in form, but in aspect.

In the face of the ever-mounting threat from industrial expansion and urban sprawl, these historic features and the pinelands and rivers which gave them substance require adequate protection. To accomplish this, the New Jersey Audubon Society, Pine Barrens Conservationists, and Wildlife Preserves Incorporated have recommended the establishment of a Pine Barrens National Monument which would preserve approximately 550 square miles of the region, including the Wharton tract with its 60 miles of canoeable waterways and the villages of Batsto and Atsion. Legislation which would permit placing the Mullica River separately under federal protection, following a study of its qualifications, is contained in Pennsylvania Congressman John P. Saylor's "Scenic Rivers Act," H. R. 90,

introduced during January of this year.

Let an urgency attend our deliberations. The opportunity to acquire such a rich natural inheritance close to our teeming centers diminishes daily. There have been efforts in the past to convert these lands into industrial parks, a maneuvering ground for National Guard armored units, and airports. The area is currently under study as a possible site for New York City's fourth jetport.

More than 20,000,000 people live within a three hours' drive of the Pine Barrens. They live crowded together in an artificial, over-industrialized environment having the highest population density in the United States. They live in dire and increasing need of space—the open space of natural areas—conveniently at hand, where they can experience those basic realities which answer the hunger of the spirit and serve to combat the dehumanizing effects of our technological civilization. ■

*Below, an ironmaster's mansion at Batsto village, a munitions-making center during the Revolution. Maintained by the New Jersey Department of Conservation and Economic Development and open to the public, the 36-room structure reflects the early wealth garnered from the bogs of the Mullica and its tributaries.*

*Photograph by the author*



*California conservationists and scientific institutions have interested themselves in further protection for a relict native tree*

## A Helping Hand for the Torrey Pine

By Bruce Dillon

**T**HE TORREY PINE IS A PERNICKETY tree, growing only in California, and there only along the ocean in the northwestern part of San Diego County, near the small city of Del Mar, and on Santa Rosa Island, off the coast a few miles southwest of Santa Barbara.

The tree has the most constricted habitat range of any species of pine in the nation.

Currently there is a move to save the last unprotected mainland stands of Torrey pine, approximately 214 acres adjoining California's Torrey Pines

State Park; the move is being made by both local groups and the State. An allocation of \$1 million from the State may be forthcoming; if it materializes, it will be used to purchase approximately a half of the property being sought. However, even if the money is

*A view from the proposed Torrey pine extension area into the existing Torrey Pines State Park beyond the marsh.*

*Photograph courtesy University of California - San Diego*





obtained it must be matched by the local groups through various fund-raising campaigns so that the remaining unprotected trees can be saved.

The existing Torrey Pines State Park, located near Del Mar, is always filled to capacity during the summer months. But the 214-acre Torrey pine-studded addition would be kept as nearly as possible in its natural state except for construction of a nature study center, to be used by students from kindergarten through college, and development of nature trails.

The reaction of many people who see the Torrey pine for the first time is that "it is different, picturesque, beautiful." There are those who make a special trip to the San Diego area just to see the relict tree.

First botanical notice of the Torrey pine was made in 1850 by Dr. Charles C. Parry, botanist and geologist for the United States-Mexico boundary survey; Parry arrived in San Diego by ship in 1849, and was in the area for two years. Realizing that the tree was unknown to science up to then, Dr. Parry named it *Pinus torreyana*, or Torrey pine, in honor of his former botany professor, Dr. John Torrey of Columbia University.

#### The Tree Described

In its natural habitat the mature Torrey pine is rather small, as trees go, with only a moderate number of well-developed branches. It is seldom cut for lumber because of the nature of its wood, which is soft, light, brittle, and wide-grained; it is not often used even in fireplaces.

Although the tree has been planted in and around the San Diego area, few people care to have it in their yards because of its shedding characteristics. As with other pines, the leaves are slender needles borne in a cluster, with a sheath of scales around each base. The needles are dull green or grayish, some seven to twelve inches long, stouter than in most other pines, and occurring five to a cluster.

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Mr. Dillon is news editor of the Encinitas, California, *Coast Dispatch*, and in that capacity has helped publicize the need for additional protection for the Torrey pine, unique to the California coast.

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From the time of its discovery the Torrey pine has enlisted the interest and support of many individuals and organizations. First known champion of the tree was Dr. Parry, who returned to the area 30 years after his first trip and found that little attention had been paid the pine. Parry appeared before the San Diego Society of Natural History and urged that group to secure the tree against extermination. The Society took the necessary action, and in 1885 a sign was posted in the Torrey pine region warning against removing, cutting, or destroying the trees.

#### Later Protective Efforts

A strong movement to secure preservation of the pines was initiated in 1916 by Guy L. Fleming, who was later to become first director of the Torrey Pines State Park. Miss Ellen B. Scripps, of La Jolla, purchased several lots of Torrey pine habitat near her home and held them until her death in 1932, when they were willed to the City of San Diego for a park.

Because the area seemed of national significance both in content and use, the Torrey Pines Preserve was turned over to state control and maintenance in 1956, more than a hundred years after Parry's discovery of the tree.

In the 214-acre parcel of pines being sought by modern-day conservationists there are an estimated 3000 trees. (These conservationists might be the last of an active breed of tree-savers, for by the time the one-year-olds of today reach the age of 30, it is likely that all of the presently undeveloped areas of California worth saving will either have been saved or developed into suburbia.)

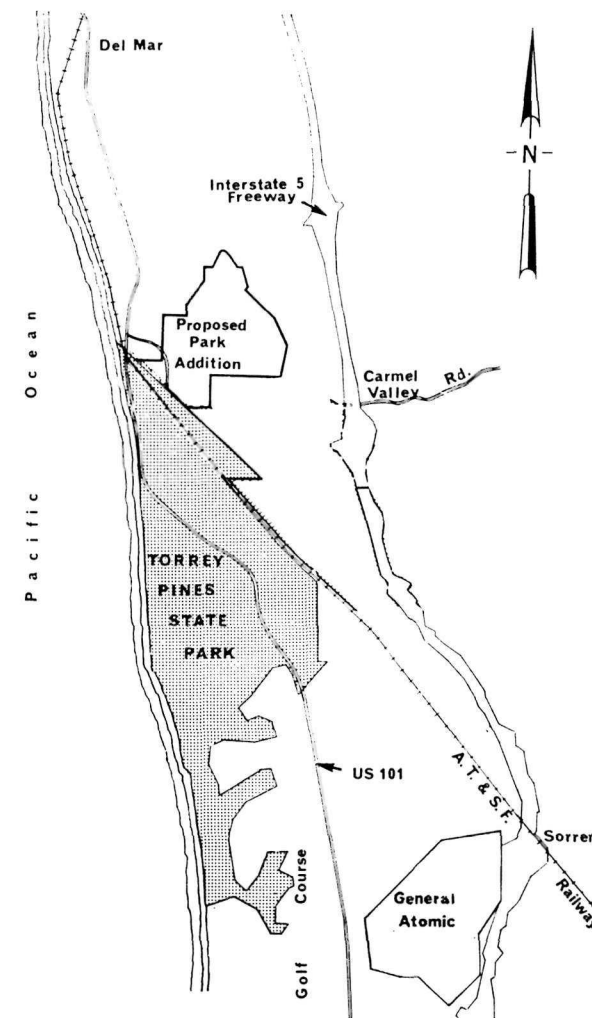
Perhaps one of the most important reasons cited for the preservation of the additional Torrey pine land is the proposed nature study center. The center would be open to the public, with students especially welcome. It would be the first of its kind in San Diego County, and would provide an excellent opportunity for visitors from all over the country—indeed, the world—to familiarize themselves with California's many natural phenomena, including the Torrey pine.

The center itself would serve as a guide to the Torrey pine area, blending in with the natural features of the

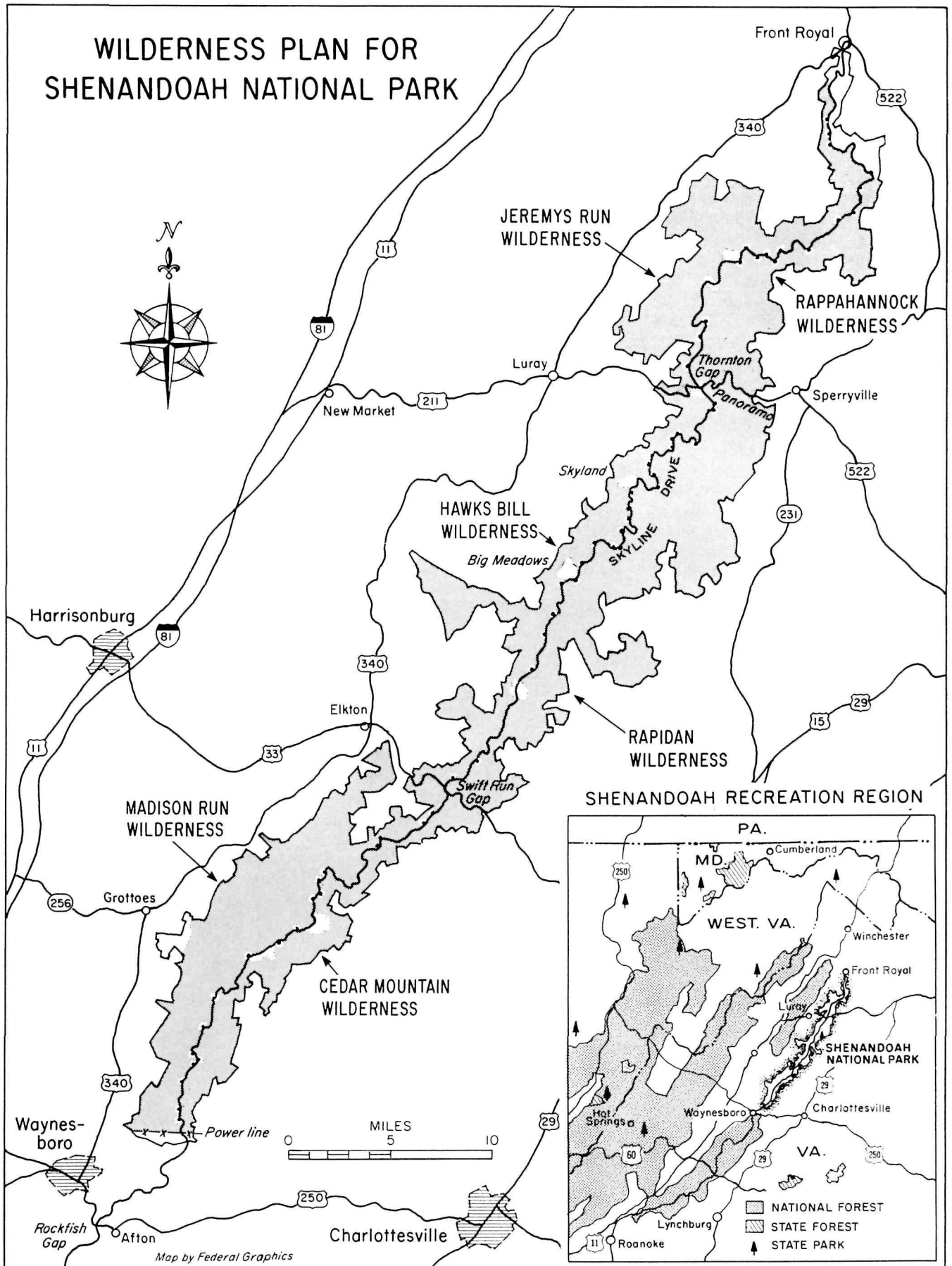
terrain. Its goal would encompass the elementary philosophy of natural history, nature study and biological principles. A program of continuously changing displays would be available for organized leader courses, school tours, and the general public.

Some months ago the Council for the Extension of the Torrey Pines Reserve was organized to seek state funds for purchase of the needed property. Though \$1 million may be secured from the State, the remainder must come from local sources; and the most liberal interpretation of the word "local" must be used by members of the Council. All who are acquainted with the proposal know that the property must be acquired soon. Otherwise, the itching trigger-finger of the developer may decide that the pernickety Torrey pine should no longer be pernickety. ■

Map courtesy the "Coast Dispatch"



# WILDERNESS PLAN FOR SHENANDOAH NATIONAL PARK



Map by Federal Graphics

# A Wilderness Plan for Shenandoah National Park and the Surrounding Region

Synopsis of a presentation by the National Parks Association at a public hearing of the National Park Service on establishment of wilderness in Shenandoah National Park, at Luray, Virginia, June 14, 1967

THE BLUE RIDGE MOUNTAIN CHAIN of west-central Virginia, which parallels the folds of the Appalachians farther west in the State, is a province of great scenic beauty and geological and botanical interest. The Ridge was settled early in the formative days of the nation, and its heavily forested and steep terrain was patched for several centuries with small, isolated farms. During the early decades of the present century there was a strong movement for establishment of one or more national parks in the Eastern mountain country; and out of this movement was born Shenandoah National Park, a long, narrow strip of land straddling the Blue Ridge in Virginia from Front Royal on the north to near Waynesboro on the south. It is likely that the park would not have been established had there been no provision for a "scenic road" along the summit of the mountain range—the so-called "Skyline Drive," which today plays an important part in planning for wilderness in Shenandoah Park.

Since establishment of the park in late 1935 and subsequent removal of buildings, the rude farms that dotted the high elevations of the Blue Ridge and its lower "hollows" have been steadily invaded by the Eastern hardwood forest, whose pioneers in this region are the sassafras, tulip poplar, persimmon and black locust, along with exotic paper mulberry and ailanthus;

*Map opposite outlines the six wildernesses that would be established in Shenandoah National Park under the National Parks Association's wilderness plan. Small white areas within stippling are exclusions for lookout points on Skyline Drive where there might be trail-base developments for wilderness users. Other exclusions have been made necessary at points of existing intensive facility development, as at Thornton Gap. Regional inset details the many recreational opportunities that exist in the mountain-and-valley terrain of the Alleghenies to the north, west and southwest of Shenandoah.*

and once again much of the Blue Ridge has taken on the character of wilderness.

But within a day's drive of the Ridge and the park lives a substantial fraction of the nation's population. The beauty of the Ridge and an ever-improving highway network have combined to mount great pressure for additional development in the park. On the other hand, the objective of a national park and monument system, seen in the organic act establishing the National Park Service, was protection rather than development; provision of facilities in parks was viewed as secondary to the protection mandate. If eventual overcrowding in Shenandoah Park, or any of the other great parks and monuments, is to be avoided, there must be a shift in emphasis toward use of the myriad outdoor recreation opportunities that exist in the surrounding regions.

Most of the use in Shenandoah Park is by automobile. The map opposite shows how the park is cut lengthwise by the Skyline Drive, which tends to concentrate development on the ridgetops, and how it is further compartmented by two major transmountain roads. Since there is no reason why wilderness should not extend to the edges of roads and to park boundaries, this Association delineates six wilderness areas in Shenandoah Park, bounded on the map opposite. Small exclusions are provided, in this wilderness plan for the park, around the lookout points on the Skyline Drive to permit continued scenic-vista cuttings and trail-base developments; the latter are provided to meet the needs of those venturing into the park's foot or horse trail country. Several exclusions are necessary at points where intensive facility development has already occurred.

A number of old tracks, relics of the

wagon-roads of the mountain people, cross the Ridge at various gaps; these, while closed to the public, are maintained for fire-fighting purposes. While they are negotiable with four-wheel-drive equipment they are, properly speaking, trails, and pose no problem in designating wilderness in the park.

To protect the small amount of wilderness available today to Easterners, visitor facilities in Shenandoah which are neither protective or interpretive in nature should be located outside the park. To end reliance on the Skyline Drive for park entry and exit, trail bases should be established outside the wilderness areas with full public services—campgrounds, liveries, parking lots, lodges—under private management. Cooperation of the State in regulating this development and in maintaining a high-quality environment around the developed areas should be secured. Towns at varying distances from the park, like Front Royal, Luray, Grottoes, Elkton and Waynesboro, could do much toward relieving park congestion by offering the sophisticated vacation facilities wanted by many, and camping opportunities in the nearby George Washington National Forest could be expanded. Farther out in the region there are unlimited outdoor recreation opportunities in the ridge and valley systems of the central Appalachians, with their national forests and many state parks and forests.

In conjunction with such large-scale planning to reduce the pressure on Shenandoah National Park, a radio-linked outdoor recreational information center system, in which the U. S. Forest Service, National Park Service, and state recreational agencies would cooperate, could well be set up to advise travelers of camping and other recreational opportunities in the region, along with the status of their availability at the moment. ■

## The Need for a New Water Policy

(continued from page 2)

(1) intensive land-use management, with the well-known contour cultivation, pasture and hayland priorities, reforestation, and soil conservation, restoration, and improvement, reducing run-off, erosion and siltation, and replenishing underground water supplies; (2) networks of small flood-retarding structures on the feeder streams of the tributaries, designed primarily to make large flood-storage reservoirs unnecessary, but equipped with gates and supplemental storage capacity for irrigation and local water supply where desirable; and (3) flood plain protection against incompatible construction, by zoning, covenants, easements, or in some cases acquisition, plus local flood-protection works where desirable, plus polders or other flood-utilization structures where advantageous, plus flood-damage insurance, plus a measure of sensible accommodation to the idea that no flood management system will give 100% protection at any reasonable cost.

The watershed management system should *supplant*, not merely *supplement* the big storage reservoir system. At most, the big reservoirs should supplement watershed management in unusual situations, as where urbanization has pre-empted the feeder streams and tributaries. Flood prevention benefits should be attributed to the retarding structures all the way from source to river-mouth.

A very thorough investigation of the relationships between watershed management and the big storage programs in this country during the last 20 years ought to be made. The express or tacit agreements between agencies which may have limited watershed management in favor of big storage should be exposed for public understanding.

Great issues are at stake in these decisions: the survival of ancient plant and animal ecologies throughout entire watersheds and river basins; the preservation of countless natural stream valleys, with all their biological, recreational and esthetic wealth; innumerable established human enterprises and communities, with their freight of memories and aspirations, their histories and landmarks, now frequently threatened by cruel destruction; the solitudes and quietudes of the countryside, the forest, the wilderness; indeed, the quality of the entire natural outdoor environment.

*Proposition 4: The streams, rivers, and lakes, the watersheds and river basins, should be managed for the social and cultural purposes of a mature civilization, not merely for economic purposes.*

This means that the *intangible* values of society must be given at least commensurate consideration with the tangible values, essentially economic, in policy determination.

Among the vital values everywhere are those of *stability* as contrasted with *development*. A partly unconscious major premise which has spoiled our thinking in these matters is that economic growth will continue toward infinity. It is absurd and dangerous, and needs to be re-examined.

With respect to population, the American nation has

more intelligence, we believe, than to keep on proliferating indefinitely. Present trends are toward two or three children, as against the three or four of 20 years ago; the opinion-formers and the moral agencies of the nation will increasingly be teaching restraint in numbers; hopefully, the net rate of population increase could fall rather quickly toward stabilization. Resource management programs should be projected, at least in alternatives, against these possibilities.

In terms of industry, and urban-industrial expansion, planning based on a differential expansion and contraction, looking toward a salutary stabilization or consolidation, not indefinite growth, can help curb the harmful impact of construction upon the environment.

Despite the obvious need to bring several different minority groups into the affluent society, the disposition of the nation to absorb gadgets might rather suddenly come to a halt. If peace should break out between nations, the warfare economy might find itself at a loss to make full use of its industrial plant capacity. The dangerously accumulating unemployment potentials of automation would become explosively apparent. Pyramid-building (big roads, big dams, ill-considered urban demolition and high-density reconstruction) would be the disastrous consequence. But the true growth trends of our society lie in education, security, the social services, and the cultural pursuits, and planning could look in those directions.

Some of the other traditional purposes of river basin management should now be minimized or discarded. Hydro-electric power development has for the most part passed the point of social profitability. River navigation should not be added any more to the complexity of an already confused and wasteful transportation system. Environmental considerations which call for letting the world alone are much more important than these fringe economic benefits, if benefits they be.

With respect to recreation, more stress must be placed on regeneration, less on mere excitement. The salesmen of excitement are strongly motivated by economic considerations, and have much influence. But a quiet stream valley park, preserving nature as it is, with here or there a modest lake on a side stream for fish or waterfowl, or for quiet boating, will be prized by a mature society much more highly than motorboat racetracks. Current planners are infatuated with big water surface recreation; reservoirs for this purpose are thought to be indispensable; yet the estuaries and bays are endangered and unprotected. Such perspectives must change.

The new National Water Commission will not be just another interdepartmental committee composed of representatives of the operating agencies, but comprised of Presidential appointees presumably free from agency and interest bias. We trust that they will take a generalist's view of the needs of the nation as a whole and consider the social and cultural objectives of our society, and not merely the economic and engineering problems. This Association has long advocated the establishment of such a Commission, and we extend our best wishes to its members as they set out on what we trust will be a creative and fruitful enterprise.

—A.W.S.

# News and Commentary

## The Natural Beauty Report

The Citizens Advisory Committee on Recreation and Natural Beauty rendered its Annual Report to the President and to the President's Council on Recreation and Natural Beauty on June 29. Among other admirable items, it contains an excellent statement on *Interagency Recreation Planning*, summarized as follows: "We recommend that the Council develop policy directives and guides for interagency recreation planning." In the definitions used by the President's Council, trail country, canoe country, and wilderness areas are included in recreation lands. The statement proposes the coordinated development of visitor accommodations on public and private lands outside the national parks, to take the load off the parks. This, of course, is the regional planning approach which the National Parks Association has been advocating for a long time, and it is gratifying that the Committee has recommended it to the President and the Council. As we have often pointed out, the Council could implement a directive in this matter by the device of a signed interagency agreement, which it has already employed frequently.

## The Lower Black Canyon of the Gunnison River

One of today's interesting protection possibilities focuses on the Lower Black Canyon of the Gunnison River in west-central Colorado, adjacent downstream to the existing Black Canyon of the Gunnison National Monument. The lower portion of the Gunnison's awesome slash into the earth's surface, ably detailed by geologist Wallace R. Hansen in the July issue of this magazine would, it seems, outstandingly complement the story of the existing monument; rather, perhaps, it would complete that story.

Since most of the land involved in the idea is public land, a number of methods for protection seem to commend themselves to consideration. Addition to the existing monument would be one such method; recreational area status within the national park system would be another; still a third would see the Bureau of Land Management operate the large tract of land under discussion as a specially managed and protected natural area of the public lands (though not necessarily officially classified by that name). The Bureau has been looking at its own lands over the past several years with a view toward delineating areas of special scenic, scientific or recreational merit;

many conservationists have supported the Bureau in its effort, feeling that there is no longer any reason why the Bureau should play the role of orphan among the Federal land administration agencies. Perhaps the Lower Black Canyon might be considered as a public landholding worthy of special BLM protection and development, as one possible approach to its best utilization.

## Weldon F. Heald

Shortly before this issue of the magazine went to press, the National Parks Association was notified of the death of trustee Weldon F. Heald who, with his wife Phyllis, had lived in Tucson, Arizona, for a number of years. An active conservationist and national park enthusiast, Weldon Heald had been talking, writing and advising on national park and conservation matters up to the time of his death; members of the Association will doubtless recall many of the articles he furnished this magazine in recent years; much of the photography for these was the work of the author also. As a long-time professional writer, Mr. Heald had produced more than 650 magazine articles, for the most part oriented toward conservation, travel and the out-of-doors generally, and was the author of two books, one of which is scheduled for fall publication. As a special adviser to the Secretary of the Interior on national park matters, Mr. Heald was a member of several field-investigation teams charged with the evaluation of potential new national parks. Though for many years a Westerner by choice, he was born in Milford, New Hampshire, and had, in earlier life, received a degree in architecture from the Massachusetts Institute of Technology. He was 66 at the time of his death in late July.

## Ernest Dickerman Receives American Motors Award

On a happier note, NPA is proud to announce that one of its trustees, Ernest F. Dickerman of Knoxville, Tennessee, has been recipient of an American Motors conservation award for 1967 for outstanding contributions at the non-professional level in the field of renewable natural resources. Mr. Dickerman, chairman of the Conservation Committee of the Smoky Mountains Hiking Club, was cited for his tireless efforts in working out precise recommendations and mapping for wilderness areas in Great

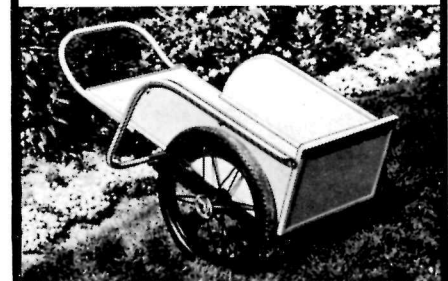
Smoky Mountains National Park and for organizing public opinion in support of the plans. With a background of more than 25 years of familiarity with the Great Smokies region, Mr. Dickerman gave up his private work in 1966 to devote full time to formulating his wilderness plans and recommendations.

## "We Expect to Win"

In the June number of the Magazine there was a story about the effort to save Mason Neck on the Virginia shore of the Potomac River not far south of Washington. The story was titled "We Expect to Win," which, in fact, is the only attitude conservationists can afford to take in projects of the kind. Now it appears that "they" may actually have won. The three-year battle spearheaded by the volunteer group called the Conservation Committee for Mason Neck was apparently decided late in July when The Nature Conservancy purchased 1711 acres of the Neck from prospective developers. The Conservancy will hold the land until public funds become available, perhaps in 18 months or thereabouts, to the Federal, State and regional agencies which have mapped the Neck for compatible park and wildlife refuge purposes. The July purchase will undoubtedly afford large savings to the governmental agencies, as they in turn

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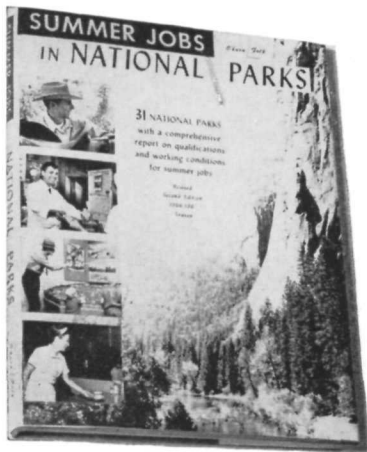
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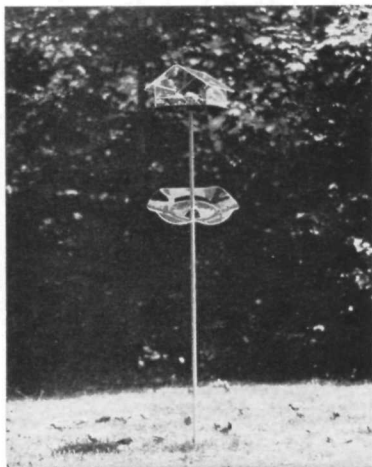


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will be able to acquire the land from the Conservancy at cost. The Department of the Interior proposes to request money from the Land and Water Conservation Fund under the provisions of the Endangered Species Act for the Federal portion of the acquisition, to create a 950-acre national wildlife refuge primarily for the protection of the Neck's bald eagle population. Virginia would establish a state park on its portion of the Neck, to eventually be part of a larger state park proposed for the immediately surrounding region.

**A New Wildlife Refuge**

A major addition to the national wildlife refuge system was recently announced by the Interior Department—the 4924-acre Barnegat National Wildlife Refuge on the marshy New Jersey coast in Manahawkin and Barnegat Bays. About half the acreage has been leased to the Government by the American Telephone and Telegraph Company for the sum of \$1.00, while the balance of the land will be purchased with money from the sale of Federal duck stamps. Announced at the same time was a large addition to the Erie Wildlife Refuge in Pennsylvania, and a small addition to the Wertheim Wildlife Refuge on Long Island's Great South Bay.

**Predicting Everglades Water Needs**

Fishery biologists at the Institute of Marine Sciences, University of Miami, have developed a system for predicting the fresh water requirement of aquatic plants and animals in Everglades National Park, according to *Sea Secrets*, publication of the International Oceanographic Foundation, of Miami. Recent serious shortages of fresh water have stressed the need for biological estimates of water requirements, and have threatened the valuable pink shrimp and sportfishing industries. The system of predicting biological water need is based on the recently discovered close relationship between ground water levels in the Shark River Valley and the positions of lines of equal salinity, called isohalines, in the coastal estuaries. By measuring ground water level in any one of three wells in the watershed, scientists can predict salinity in the estuaries throughout an 85-mile area along the south Florida coast, from the Keys to Everglades City. The height of the water in the test wells can warn authorities when salinities are too high, and tell them how much fresh water should be delivered to the park and when to deliver it.

**Review**

**FOSSIL SHARK AND FISH REMAINS OF NORTH AMERICA.** By Gerard R. Case. 1967. Large-format brochure, profusely illustrated with photographs and line drawings. Available from the author, 225 St. Pauls Avenue, Jersey City, New Jersey 07306. \$2.00 postage paid.

The house of amateur geology has innumerable corridors that lead to a potentially rich—and often humbling—relationship with the living and dead worlds of the past, and with the mechanics of the earth. I have no way of knowing how many of the 35,000 readers of this Magazine may be walking one or more of geology's corridors in an amateur fashion, trying to catch and interpret the beams of light that glint through glass opaqued by the ages; the number, I suppose, is quite substantial. There are mineralogists, paleontologists, glaciologists, crystallographers, stratigraphers, and a host of others; many amateurs have, indeed, made brilliant contributions to their sciences in times past, al-

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though perhaps the opportunity in this regard may be a bit less today than formerly. In any case, one and all of these restless minds are fascinated with their own particular kinds of truth.

Gerard R. Case has made a contribution to the cause of that specialized paleontologist who searches the appropriate places for fossil fishes and their relics; more specifically, fossil shark remains, which usually means shark teeth, since the animals have no bony skeleton. *Fossil Shark and Fish Remains of North America* is an 8½x11-sized brochure, printed on high-quality paperstock, which is essentially a visual aid to the identification of sharks' teeth of various geological ages as well as the fossilized parts of some other fishes that may be encountered by the amateur collector or student. In a work of this kind photographs are critical. Many of the "guides" to geologic collecting fall dismally short in this respect, with dull or thumb-sized reproductions pretty much valueless for identification purposes—most especially for the amateur at whom they are mostly aimed. There is no criticism of Case's volume on this score; pictures are large and clear, and text mainly identificational, with hints as to collecting localities and collecting techniques.

—Paul Tilden

## THE CONSERVATION DOCKET

DURING LATE SPRING AND EARLY SUMMER a number of measures touching in one way or another on the interests of the conservation world were introduced into the 1st Session of the 90th Congress. Among these were:

House Resolution 7796, to establish a Council on Environmental Quality. The bill would indicate recognition by Congress of the importance of restoring and maintaining environmental quality and the need for Federal, State and local cooperation toward this end "to create and maintain conditions under which man and nature can exist in productive harmony." The measure was referred to the House Committee on Interior and Insular Affairs.

H.R. 10721, to amend the Federal Power Act to accomplish, among other objectives, a due regard for the conservation of scenic and other natural resources in the construction of high-voltage power transmission lines. To Committee on Interstate and Foreign Commerce.

H.R. 10921, to establish the National Park Foundation, which would encourage and receive gifts of real or personal property, or income from these, for the benefit of the National Park Service and its services to the public. To Committee on Interior and Insular Affairs.

H.R. 11236, to amend the Rivers and Harbors Act of 1965 to prohibit collection of fees under the Land and Water Conserva-

tion Fund Act at projects under jurisdiction of the Army Engineers. To Committee on Public Works.

H.R. 11283, to establish the C&O Canal National Historical Park on the Potomac River in Maryland, West Virginia, and the District of Columbia. Section 3(d) of this measure makes provision for "public non-park uses" if they are found to have "greater public necessity" than park uses. To Interior and Insular Affairs Committee.

S. 814, to establish a National Park Foundation, as H.R. 10921 above. To Committee on Interior and Insular Affairs.

S. 1555, to amend the Colorado River Storage Project Act to remove the prohibition against constructing dams or reservoirs authorized in the Act within national parks or monuments. To Committee on Interior and Insular Affairs.

S. 2001, to establish a National Lake Areas System. This measure looks in general toward restoration of the commercial, recreational and esthetic values of the nation's lakes, whether under State or Federal jurisdiction. It would authorize a study to consider the lakes that should be included in a National Lake Areas System, and an advisory committee to recommend inclusion of specific lakes to the Interior Secretary. To Committee on Interior and Insular Affairs.

S. 2059, to authorize construction of the Six Bridge dam and reservoir on the Monocacy River in Maryland. The Six Bridge dam is one of the 16 high dams on the Potomac and its tributaries projected by the Army Engineers. To Committee on Public Works.

S. 2227, to amend the Federal Power Act in order to provide for regulation of the construction of electric power transmission lines near national parks, national forests, national historic sites, and certain other areas in order to preserve the historical, recreational or scenic character of the areas. To Committee on Commerce.

Proposed regulations published recently in the *Federal Register* by Secretary of the Interior Stewart L. Udall have been designed to minimize damages from future mineral exploration and mining on lands under the Department's jurisdiction, which total more than a half-billion acres in all categories. Under the proposed regulations holders of permits or leases, issued in the future for exploration or extraction of minerals, will be required to submit specific plans for restoring areas to be affected by their operations. (Note: while coal is not a mineral, geologically speaking, the proposed regulations also cover that substance as well as others in the same category; i.e., bitumen and cinders.) Unless the person or firm is willing to guarantee by performance bond the financial costs of minimizing on-site and off-site damages to the Federal lands and waters for which they are responsible, and to reclaim the site of the operations in accordance with approved plans, the Department would not grant permission to operate.

The Acting Superintendent of Cape Hatteras National Seashore has recently published a notice of proposed rule-making in the *Federal Register* which, among other ob-

jectives, would place stricter controls over the use of off-road vehicles on the shore and among the dunes of the Seashore. Such vehicles, of the four-wheel-drive type with oversized tires, are used by sport fishermen, seashell collectors, and others for transportation to fishing sites and for combing the beaches. The regulations would set forth areas in which such vehicles could operate, and would require a permit from the Superintendent for operation.

Four recent appointments in the Department of the Interior will be of interest to conservationists.

• David S. Black of Washington, D.C., has been named Under Secretary of the Interior. Former head of the Bonneville Power Administration, Mr. Black succeeds Charles F. Luce, who resigned recently to become president of the Consolidated Edison Company of New York. Mr. Black has served as Assistant Attorney General and Counsel to the Public Service Commission of the State of Washington before coming to the capital city in 1961. He was General Counsel of the Bureau of Public Roads and later was with the Federal Power Commission.

• Dr. Milner B. Schaefer of the University of California has been named Science Adviser to Secretary of the Interior Stewart L. Udall. Dr. Schaefer is currently director of the Institute of Marine Resources at the University's San Diego campus. He succeeds Dr. Thomas F. Bates, who will become vice-president of Pennsylvania State University.

• Harthon L. Bill will be the new Deputy Director of the National Park Service. Mr. Bill, formerly NPS Assistant Director for Operations, succeeds A. Clark Stratton, who is retiring.

• The new Chief of the Division of Federal Coordination for the Land and Water Fund, in the Bureau of Outdoor Recreation, will be David Brown, who comes to his new post from the Hudson River Compact Staff, of which he was chief.

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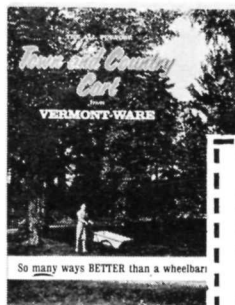
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