

NATIONAL PARKS *Magazine*



**Roseate spoonbill: with specialized equipment
it strains tiny crustaceans from Everglades waters**

August 1968

The Big Bad Wolf

THE WOLF HAS BEEN HAVING HIS TROUBLES IN ALASKA and in Canada.

The Nelchina Basin in Alaska has been a protected area for caribou and wolves for over a decade for purposes of scientific research on the wolf-caribou relationship. The caribou population almost doubled during that period to 80,000; wolves increased from a mere 12 in 1953 to perhaps 450 in 1965, and then declined.¹

Among the interesting scientific discoveries was further evidence that wolves may exercise some form of intra-species population control at such high levels.

Illegal bounty killing developed; the hunters and trappers who obeyed the law resented the poaching. Pressure developed for an open season, and a great controversy arose as to how many wolves might be taken.

Biologists think there may be less than 200 wolves now in the Nelchina, poachers having accounted for large numbers during the last three years. Unduly heavy legal hunting might wipe out the total population.

There have been calls in the Alaska legislature for the abolition of airplane hunting and the \$50 bounty.

Serious students of the problem speak of a need for education on the place of the wolf in the economy of Alaska as a valuable resource to be managed for the control of ungulate populations and for the wolf pelts on a sustained yield basis.

Unfortunately, the outmoded bounty system still prevails in Alaska, a management tool not well adapted to its imputed purposes; the large financial gains made by professional bounty hunters build up vested interests; hunting may not occur at the times and places, nor certainly with the restraint, required by scientific management.

The use of poison is also advocated and permitted, by methods and in forms which are both inhumane and destructive to non-target animals.

In southeastern Alaska the problem is the deer-wolf, not the caribou-wolf, relationship. On the islands and the mainlands of the Inside Passage, deer hunting has been a considerable attraction, and the wolf is thought to be a competitor. He gets blamed when the hunters have a hard time and think the deer count is down.

On the Seward Peninsula, the problem has been the reindeer-wolf relationship. The Peninsula has been set aside for raising reindeer; there may be 10,000 surplus reindeer at present. It would seem that a few good wolves would be helpful in balancing the range. But intensive wolf control is maintained with no holds barred as to methods.

Furious battles have developed between segments of the legislature and one or another administrative agency, with much pushing from bounty and meat hunters for wolf control, but also strong pressures from other segments of the public for emphasis on scientific research to determine what the true relationships are between the ungulates and the predators.

Fine work has been done in the United States on some of these questions, at Isle Royale National Park, for example,² and it seems likely that stable balances between the predator and his prey can be maintained with a moderate measure of responsible hunting, where control of any kind is necessary, by private or public hunters without bounties and without poison.

There have been disturbing reports that the wolf population at Mount McKinley National Park has been greatly reduced recently by poachers. The National Park Service should be given an adequate budget to make sure that the Mount McKinley wolves are restored and protected.

Conservationists in Canada were faced with an unpleasant situation this past spring when a group was organized in Sturgeon Falls, Ontario, with the avowed purpose, according to news accounts, of wiping out wolves in that area. It was reported (we find this hard to believe) that the National Film Board of Canada would photograph the "Big Hunt"; the first prize would be \$500 for anyone killing 10 or more female wolves, including cubs.

Citizens in places as far away as Manitoba and Toronto protested and began to call for public education on the importance of a modern attitude toward the wolf as a useful and desirable member of the socio-ecological community.

We trust the people of Alaska and Canada, with the aid of the leadership which can be provided by the fine conservation organizations and individual leaders concerned with such problems there, to protect these endangered creatures for all of us in North America, and indeed for the world.

And we have our own problems in the contiguous United States. The protection of the wolf in Glacier National Park and those national forests where he still survives, as well as in Isle Royale National Park, is vitally important. It remains to be seen whether the red wolf³ can be saved from extinction or absorption in the Mississippi Delta Country. The fears and the troubles of sheepmen and cattlemen complicate matters in settled areas.

Unduly predaceous bounty hunters, sport hunters, meat hunters, and herdsman have no license from civilization to destroy the wolf to serve their own special ends; nor to upset the natural balances which are dependent on predators; nor is the public likely to tolerate large-scale poisoning as a control method much longer.

As Celia M. Hunter has said, "We need widespread education as to the true nature of the wolf and its place in the scheme of things. To make the public aware that the wolf has a value of and for itself, that it is a highly intelligent, social animal, with a structured family life and shared re-

(continued on page 20)

¹ Data with respect to Alaska from "The Big Wolf Witchhunt," Celia M. Hunter, *Alaska Conservation Review*, Spring 1968.

² "Isle Royale: Laboratory of Lake Superior"; Mech, L. David, *National Parks Magazine*, Dec., 1965.

³ Described and illustrated, with distribution map of both gray and red species, in "The Wolf"; Aulerich, Richard J., *National Parks Magazine*, November 1966.



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Front cover photograph by Gale Koschmann Zimmer

"Probably the most interesting and even the most typical bird in all south Florida is the roseate spoonbill," said Robert P. Allen, discussing the birdlife of the then-proposed Everglades National Park in the June, 1937, issue of *National Parks Bulletin*. "Laws and warden protection have helped to increase its numbers in Florida, but these efforts would have been to no avail had it not been for the wild, impenetrable mangrove jungles back of Cape Sable in the [proposed] park area." In this issue of the Magazine one of our authors writes on the life of that "wild and impenetrable jungle" as seen from a canoe on the old Bear Lake Canal.

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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A Running Start on Earthmanship

By Darwin Lambert

A STRANGE THING HAPPENED TO ME while I was preparing an after-dinner program about the history of Shenandoah National Park.

You know those optical illusions—how they change when you blink. Perhaps you have had a slide of semi-familiar scenery in your projection tray backwards, and whenever it flashed on the screen you wondered what was wrong. Or you may have been “turned around” in some place to which you came first at night or over a winding road without views of landmarks—and kept expecting that, when you shut your eyes and turned your head before opening them, north would shift to where it belonged.

I had been seeing Americans as inexorably ravaging nature and greedily consuming the booty—and conservation as continually getting in the way, putting on the brakes, wanting to go back to nature, stubbornly saying “No, no; don’t do that,” yet inevitably losing ground because the controlling majority was driven by a built-in compulsion to conquer and consume. Then, right in the middle of my probing of Shenandoah history, it happened. I closed my eyes, and when I opened them my picture of Americans and conservation, of all mankind, in fact, in relation to earth, had reversed itself.

Conservation was saying “Yes, yes; do that.” It wanted to go not “back to nature” (much as it admired Thoreau) but forward to nature (conceiving nature as the total system of reality, including man and our growing science, spreading beyond the merely physical into spheres as yet but slightly known). It was fighting not a holding action against overwhelming forces utterly convinced right was on their side, but an affirmative action against forces no longer sure what it was they had wanted, or why they had wanted it.

I felt a thrill, but I confess I was not quite certain, and still am not, which way around this “slide” should be to project present reality—or whether we are not now in a position to choose either one way or the other and make our choice the truth. What could there have been in the Shenandoah history that caused the reversal? That leaped across a third of a century and suggested I was seeing truly when taboos upon commodity production in certain areas were examples of progress, when decisions not to

build dams added up to forward movement, when dedications of wilderness were signs of a new era instead of echoes from a half-remembered golden age, when such supposedly unrelated things as lower birth rates, court-questioning of power plans for Storm King Mountain, pressures not to build certain airports, and abandonment of highway projects (such as across the Great Smoky Mountains) or freeways (such as in San Francisco) joined to forecast a more glorious, even if more complicated, American future?

Shenandoah, dedicated in 1936, was the first national park created from thousands of privately owned tracts, from land which had run the economic gamut, the first to be lifted from commodity exploitation into preservation as an unequivocal expression of the people’s desire, the first to shake off man’s direct domination under a permanent delegation of primary authority to the healing harmonies of the natural system.¹

The Fabric of a Park

Let us pick at the Shenandoah fabric for glimpses of the primary threads:

Thread One: The area had gone into private ownership more or less concurrently with our snatching it from the Indians. Fortunately, the attractive basic topography had been nature-sculptured of some of earth’s toughest rock and remained little altered, but the soil and flora and fauna had been thoroughly manhandled, or as conservationists might put it, ruined. Most of the land was held in large tracts, up to a dozen or more square miles each, and one way and another had produced income for generations of exploiters, from timber, tanbark, tenancy, grass, even mining until the small deposits repeated their refusals to pay.

Thread Two: The actual residents, numbering nearly

¹ Great Smoky Mountains, dedicated in 1940, and Mammoth Cave, established in 1936, went through many, but not all, of the same vicissitudes during the same period. Shenandoah remained in the cauldron of public decision for more than a decade, and a key factor in its establishment was voluntary contribution of funds by more than 24,000 individual citizens. Acadia, established on a few thousand acres in 1919, was a forerunner in some respects but definitely not in others.



Photograph from National Parks Association archives

“Buy an acre at \$6.” The photograph above, taken by NPA’s Robert Sterling Yard at some time during the drive to establish Shenandoah National Park in Virginia in the early Thirties, typified much of the exploited mountain land that eventually went into park and has since largely recovered. Locale of the photo is uncertain; it may be Fisher’s Gap, where the old Orange-Luray Civil War road (still called “the Pike” locally) reached a saddle in the Blue Ridge just north of the present Big Meadows Campground.

four thousand when park talk started, tended to be owners in their own opinions, but were in reality mostly squatters and informal tenants who herded the legal owners’ cattle or felled and snaked out trees on shares or maintained occupancy through the threat of squirrel rifles. They were not heavy consumers on a per capita basis, average money income in 1930 being less than \$100 per family, mostly from furs, handcrafts, moonshine, wild berries and nuts. They raised corn, potatoes, cabbage, beans, hogs and an occasional milk cow, cut wood for cooking and a semblance of heating, trapped and shot wild meat, and treated their own illnesses with herbs. Despite worsening poverty, due to weakening fertility of cleared land and the swiftly changing economy which surrounded their mountains, they did not exactly reach out for resettlement elsewhere.

Thread Three: In 1894 a small but solid and jovially resilient young man named George Freeman Pollock founded Stony Man Camp, a “dude ranch and resort” later called Skyland. Being fonder of the half-wild scenery than of money, he was unable to recognize defeat even when it jumped on him. He kept rising again to entertain guests with his flare for showmanship, to build more cabins and extend his hiking and horseback trails and land holdings until by 1930 he owned ten square miles on which natural conditions had been partially restored.

Speaking at Pollock’s funeral in 1949, Swami Premananda credited him with having built a cathedral (perhaps the last noun the non-churchgoing deceased would have used)—“not a cathedral of stone and marble, not a magnificent structure where human voices sing in choirs to the accompaniment of organ music. He has built a cathedral . . . where the anthems are sung by bird choirs and the lighting is from the heavens above. It is a cathedral not limited to any denomination. Here men and women from all over the world will come and gather together, people of all faiths and creeds, Hindus, Christians, Mohammedans, Jews. Even the atheist will come and join in the worship of the spirit in that cathedral . . .”

Thread Four: Early in the twentieth century a forester-philosopher named Benton MacKaye observed that the demand for contact with the natural earth-mother rose in parallel relation with density of urbanization. In New England he began promoting a long, long trail. A Washington group he stimulated in 1922 went reconnoitering the Virginia Blue Ridge. Five years later the Potomac Appalachian Trail Club was organized to build and mark 260 miles of new trail from the Susquehanna River southwestward, and this club grew to include among its specific purposes “the fostering of public appreciation and use of the proposed Shenandoah National Park.”

Thread Five: Stephen T. Mather, who as first director of the National Park Service had been striving to mold into a coherent system the magnificent miscellany specially ordained on unspoiled public lands in the West, wrote in his 1923 annual report: "I should like to see additional national parks established east of the Mississippi, but just how this can be accomplished is not clear. There should be a typical section of the Appalachian Range . . ." Secretary of the Interior Hubert Work took up the suggestion and formed a search team.

Thread Six: Committees sprang up throughout Appalachia to impress the team with scenic values in their vicinities. An association called Shenandoah Valley, Inc., was organized to "tell the world of the scenic, historical, industrial, and other values of the famous Shenandoah Valley," and it was able to point to intermittent national park advocacy (by the secretary of the Front Royal-Riverton Board of Trade) antedating World War I. The Virginia State Chamber of Commerce pounced on the opportunity, and the late Harry F. Byrd, about to be elected governor, sent a letter to Shenandoah Valley, Inc.: "I am writing to tender you my earnest and active support in whatever plan you may adopt as to the establishment of the park in the Blue Ridge area. I consider this to be the greatest opportunity for the material advancement of Virginia that has been suggested for generations . . ."

A mischief-maker scheming early-death convulsions for the park proposal could hardly have gathered a more diverse set of interests—extractive exploitation, love of home, social outdoor recreation, love of natural solitudes, federal bureaucracy, and small-business boosterism. Yet these major threads and numerous minor ones entered the democratic loom and remained in process for a dozen years without becoming tangled. Necessary steps were taken in consecutive order—congressional bills enacted within weeks of introduction, extraordinary acts and appropriations of Virginia's legislature, administrative decisions on various levels, court cases by the dozen, and a fund drive in which tens of thousands of citizens contributed \$1,249,000 ("Buy an acre at \$6") to help acquire the land.

The democratic process wove as it never had before (nor has since) and turned out a worthy fabric. The land-owners received fair payment and new, if different, opportunities. The evicted mountain folk met the contemporary world and generally decided they could tolerate more of its goods and more education while possessing only citizens' shares of the beautiful mountains. The urbanites won the wilderness (now complete with deer, cougar and bear). Pollock's dream came true more grandly than even he had dreamed it. Bureaucrats gained the satisfactions of success and the approval of voters, and Virginia boosters saw their communities prosper to the point, even, of requiring parking meters.

Park establishment represented the people's desire, represented conservation, represented progress (of an intriguing type that utilizes, but is not dominated by, material motivation). This example of conservation-as-progress prophesied that we could, with nature's help, create more outdoor cathedrals where they seemed the best use of the land, just as elsewhere, with the aid of

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newly discovered aspects of nature, we might create plants to produce fantastic energy and machines we never wanted until we saw them advertised, or superbumper crops, or megalopolises. It publicly demonstrated that we could refuse the strongly pushed diet of "bread alone" and retain the power of decision across the whole swath of living.

Conservation, once relying on what might be seen as parentally benevolent coups d'etat for even questionable effectiveness, now can awaken the support of a clear majority when most urgently needed. Yet the majority remains largely unconscious of the conservation movement's scope and direction, just as many conservationists remain largely unaware of some of its depths and inter-twinings. More significant fabric is desirable, and before this errant man-earth "slide" can reverse itself again, let us see if its clues might lead to earthwide threads.

Conservation-as-progress—we must reconnoiter swiftly at this stage without precise definition of coined terms if we are to perceive the broad picture—is such an obvious improvement over *all-out-exploitation-as-progress* (appropriate though that concept was considered in the American past) that we might appear to be nursing a truism. Yet I cannot find that its connections with the greater human questions have been adequately traced. Let us start with conservation's warp, which is optimistic in this era of creeping pessimism, being an assumption that man will somehow avoid nuclear (or other) annihilation and continue into future generations which deserve our intelligent concern, thus making the "eat, drink and be merry, for tomorrow we die" attitude less appropriate than it has been appearing to the all-out exploiters smothered to enervation by goods and gadgets. Now let us watch woof-threads being woven in.

The Aims of Conservation

Conservation seeks, for example, continuing additions to space for diverse uses grouped under the term "outdoor recreation," rightly observing the growth of this need, along with the shrinking space requirements of material production and human residence under intensifying urbanization. It advocates planning in wide regions around national parks, not to reduce but to enhance enjoyment by providing conditions best suited for the different types of recreation, with sports activity generally separated from inspirational and meditative uses. In helping to show in the Potomac River basin a pattern worthy of being imitated elsewhere, it pushes use of the fresh-water estuary near Washington in preference to building a series of large dams upriver, definitely not to deprive the city of abundant water but to assure a continuously adequate supply while keeping commodity- or recreation-producing land from inundation and maintaining the scenic-historic river for public enjoyment.

Dozens of woof-threads could be picked out to demon-

strate conservation's broad advance toward, not away from, a new and better life; but let us soar farther in reconnaissance to watch conservation-as-progress growing into an even more generally meaningful concept which we might call *earthmanship*. There is an immediate widening and thickening of the warp as this earthmanship declares that even individuals and societies now termed affluent have not reached a humanly tenable goal. Acceptance of this point automatically puts forward a cure—in the form of the earthmanship task—for the increasingly chronic disease of uselessness which might otherwise terminate in man's being bored to death, perhaps literally, through apathetic neglect of complex problems of survival or through self-destructive violence. Energetic engagement in a truly useful task could reduce the affluence-compulsion (now frequently resulting in forms of "overkill"). The pleasure of imperative incentive and stretch-reached achievement in keeping our planet both healthily habitable and permanently productive could enable us to forego characteristic overconsumption.

Elements of the earthmanship task have been approached by the conservation route as well as by way of economics, sociology, politics, diplomacy and other angles. Work is widespread to hold population down to numbers which earth can support in comfort and dignity. World organization to establish and keep peace has been tried for half a century and might be more successful with "world law" (surely an earthmanship-type plan) strengthening the United Nations. There have been proposals to melt mutual assistance between nations into one drive for plenty, to be expanded worldwide and to draw all peoples, perhaps under United Nations coordination, into the latest technologies of material production, and thereby move toward equalization of opportunity all over the planet, perhaps beginning with such multi-nation projects as the one designed for the Mekong Delta in southeast Asia (and thus far largely neglected). Closer approaches to economic equality, especially when combined with shoulder-to-shoulder effort in a direction everyone wants to go, would surely improve peace prospects and might help broaden, and even lengthen toward posterity, the base of selfishness in using earth's resources.

The earthmanship task might be most aptly described as involving all mankind in helping itself past a yawning slide that drops into a flaming crawling hell (hate-ignited destruction rich in radioactivity and other environmental poisoning, or acute overcrowding and starvation, or both of these plus other horrors) and setting itself instead on a vigorous course of maintaining and improving the planet as a pleasant home for life, productive of material abundance and genuinely conducive to both physical and mental health. Such visions, having the advantage of literal possibility, should be at least as effective in guiding man as hell and heaven were in past eras.

Earthmanship, as here briefly introduced, sounds so

pat it will immediately be considered unrealistic (perhaps simplistic in the new vernacular), yet it is very far from simple and may be the only realistic course left through modern man's complex predicament. It is interwoven with the instincts of life and the basic truths of today's earth, on which the keeping of safe and enjoyable homes and grounds separately, or city by city, or nation by nation, even hemisphere by hemisphere, is no longer feasible. Admittedly, it is too complicated and thus far too nebulous to be packaged in a program. It should, rather, become a fundamental attitude-with-emotion, a reality-based framework for morality, all-pervasive as religion sometimes can be, and thus influence all programs.

To Purchase Expensive Commodities

Earthmanship looks with more than a trace of hope toward technologically multiplied production of sufficient wealth to afford a much higher standard of living than is now known even in America—a standard which, we might dare hope, would enable us and others to buy such expensive items as fresh air, pure water, uncontaminated soil, and ample space where vegetation and animal life replace garbage and junk. Efficiency is continually gaining, but it is sufficient even now, we are assured, if given a clear opportunity, to endow horns of plenty for all, while leaving enough natural earth and human time available for enjoyable fulfillment of varied personalities—providing we steer between back-to-nature and exploitation-as-progress into worldwide partnership of man with man, and man with the greater nature as now both directly sensed and increasingly revealed by science.

Partial tasks, large but not too vague—such as substituting biological controls for lastingly poisonous pesticides, negotiating further nuclear guards, designing and building cities with natural open space within or close around them to reduce urban discontent while retaining urban advantages, cutting overconsumption (boredom-boasted or war-and-riot-connected or, as is likely, both), working out re-use of cluttering containers, avoiding infliction upon ourselves of miles-wide, continent-long swaths of nerve-addling, poperty-threatening sonic booms—will combine with other bits of environmental wisdom into a growing earthmanship, keeping our whirling, speeding spacecraft in condition to serve us well generation after generation.

Fortunately, there is no danger of solving all the problems simultaneously, so we can count on continually challenging incentives as a major part of our reason for living. And as we move forward with nature—treating earth not as a mere mine from which to extract material riches but as the sacred ground and spring of both tangible and intangible abundance and as our only home—we will experience from time to time the satisfaction of reaching a higher true standard and art of living than had been known before. ■

ROYALTY IN YOSEMITE

By John W. Bingaman

ON OCTOBER 15, 1919, A MOST impressive train left Merced, California, for the Yosemite Valley, carrying King Albert of Belgium, who was touring the United States following World War I.

The first rays of the morning sun were just peeling into the depths of the canyon of the Merced River when the King awoke. When the train halted for a few moments at the little town of Bagby, 39 miles from El Portal, the King stepped to the platform of his car to get a breath of frosty air. He greeted a little group of miners and their wives; then, descending, took the hand of a baby boy who was in the arms of his proud mother. Albert breakfasted shortly thereafter with his Queen, Elizabeth, and Prince Leopold.

The train which carried the royal party over the mountain grade to El Portal consisted of 10 cars. Among the notables accompanying the party were Brand Whitlock, ambassador to Belgium, William Sproule, president of the Southern Pacific Railroad, and Gov. William Stephens of California. The Yosemite Valley special train was in charge of two veteran Southern Pacific employees, Conductor R. B. Monnett and Engineer Charles Grant.

One interesting thing about King Albert's visit was the relationship that developed between the King and Ranger Billy Nelson, a former Yosemite Valley employee who was one of the early park rangers. Nelson was assigned to the royal party as a guide; and, being a straightforward fellow, said to King Albert when they met, "They told me what to call you, but I don't remember all those terms. Tell you what, you call me Billy, and I'll call you King." The two men became fast friends, and remained so for many years.

It was late afternoon when Ranger Nelson guided the royal party up the four-mile trail to Glacier Point. Extra service was provided for the party by the manager of the Sentinel Hotel, Mrs. Cook. Martha, my wife, was waiting on table in the main dining room. I was second cook. Martha said she was absolutely speechless when it came her turn to serve at the Queen's table; she was not at all sure that things were being done properly. However, the service pleased the Queen and she thanked the girls who were waiting on table.

While the royal party was having coffee near the hotel fireplace that evening Prince Leopold insisted on a camping trip in the wilds of Yosemite Park. After some lengthy consultation with the King and Park Superintendent W. B. Lewis, it was arranged for the Prince to have his camping trip. A major in the Belgian Army was assigned as his bodyguard, and Ranger Billy Nelson was named guide. I was camp cook by special appointment to the Prince.

Plans were made to depart at eight in the morning with saddle horses and two pack mules, and to proceed to the Bridalveil Meadows, twelve miles distant, in the headwaters of Bridalveil Creek—a most picturesque mountain meadow. Food and camping equipment were packed on the two mules.

It was a beautiful, clear autumn day, with the red, shimmering leaves of the quaking aspens in their fall colors. Deer were feeding along the

creek and a brown bear scampered off into the woods. It was late afternoon when we arrived in the Bridalveil Meadows to set up camp for the night. While the Prince and the major were busy unrolling their sleeping-bags I prepared the fireplace and grate for cooking the evening meal. Soon I had ham steaks, boiled potatoes, corn, and plenty of coffee boiled in an old tin coffee-pot. For dessert we had applesauce made from apples grown in the Yosemite Valley. The guests remarked on how good it all tasted in the wilds. After the evening meal was over we relaxed near our campfire. Many tall tales were related by Billy and me of the early days in Yosemite. We were tired from the day's horseback ride and by nine o'clock were snug in our sleeping bags.

Billy was up early to round up the horses, giving forth a war-whoop which brought all of us out of our sleeping-bags. A white frost had settled over the meadows and ice was a half-inch thick on the water-bucket. We soon had a fire going, and with bacon and eggs in the pan, coffee, and flapjacks on the griddle we were ready for a camp breakfast. The Prince wanted to flip the flapjacks over "just like the cowboys do out on the range." I was happy to show him this little outdoor twist, which pleased him no end; and the Prince was able to get some of the flapjacks back in the pan without mishap.

After breakfast we packed and departed on our return ride by way of the Illilouette Canyon trail, arriving at the Glacier Point Hotel in the afternoon. The following day the royal party members left Yosemite from Glacier Point by stagecoach via El Portal, where a special train was waiting to take them back to Merced to continue the world tour. ■

Mr. Bingaman is a retired district park ranger of Yosemite Park who makes his home at Lodi, California. He is author of several books on the natural and human history of Yosemite, most recent being *Pathways: Story of Trails and Men*.



Desperate hand-to-hand fighting filled Chickamauga's woods and fields during Civil War battle. Now, to maintain scene as it was then, National Park Service invites local farmers to grow crops. View is from Wilder Tower, looking toward the east.

VISIT TO CHICKAMAUGA

By Lila M. Bogue

Photographs courtesy National Park Service

IT IS OVER ONE HUNDRED YEARS since the last man fell at Chickamauga in northwest Georgia during the Civil War. As our family stood on the edge of the thirteen square mile National Military Park, just nine miles south of Chattanooga, the sense of death was with us. This was the scene of one of the hardest fought and bloodiest battles of that great and tragic conflict.

The dark, deep Georgia pines enclosed the battle area in a sense of sanctity. The words of the then-famous song seemed to waft through the air. "Farewell, Mother, you may never press me to your heart again . . ." The hushed

sighs of a breeze were gingerly stirring. We had traveled under threatening skies, and now a jolt of thunder rippled like a drum roll.

Springing from these forest deathbeds are emblems of a nation's guilt and grief. Over 600 monuments and 1200 cast iron markers dot the battlefield. There we saw Indiana paying tribute to her Seventy-second Regiment; Ohio immortalized her Fifty-ninth Regiment; we caught glimpses of Kentucky, Georgia and Pennsylvania regimental monuments; on and on, the Confederate and Union markers stood side by side.

We had driven with our children to Chickamauga, the oldest and largest military park in the National Park System, to recapture part of our family's and nation's heritage. We wanted to check the archives at the Park Library so that we might retrace the steps of Great-Grandfather Martin who fought with the Fifty-ninth Ohio Regiment.

Martin had fought at Chickamauga on September 19 and 20 in 1863 as a prelude to the battle on Lookout Mountain and Missionary Ridge in Chattanooga. But the mountain and ridge were scenes of Yankee victories, and Grandfather Martin passed down stories of Confederate General Braxton Bragg and his bloody Southern victory at Chickamauga.

Chickamauga is nestled in the foothills of the southern Appalachians. Passing through the countryside, we saw the cotton, peanuts and tobacco that have been cultivated since the state was named after King George II of England. In addition to truck farms and orchards, we saw evidence of the still-operative quarries.

As in Grandfather's day, this part of Georgia was the home of hard-working people who tilled the thin, clay soil. The traditional, white-pillared plantation mansions were absent. Modest farm houses were planted upon the red dirt.

The dusty records, smelling of things long past, revealed that in these fields at Chickamauga approximately 34,000 Union and Confederate men were killed, wounded, or missing in the battle. This one major conflict constituted a substantial portion of the more than 600,000 deaths in the Civil War; disease and limited medical knowledge killed far more men than bullets. World War I claimed 116,000 American lives and World War II, 405,000.

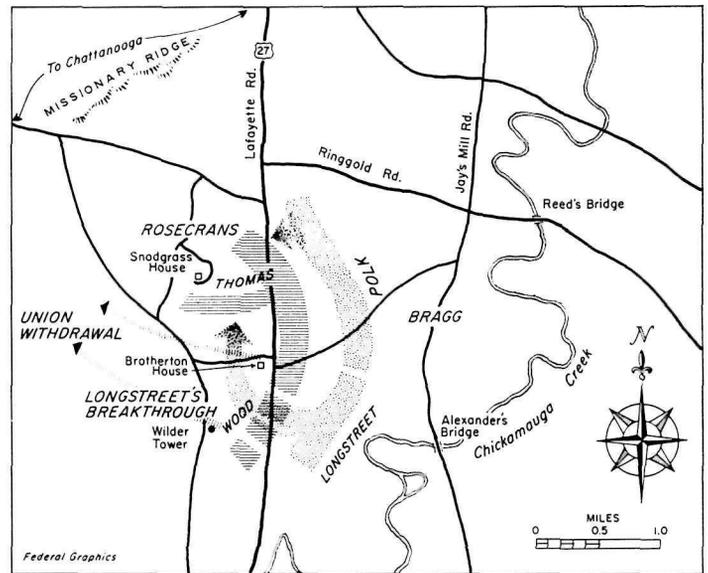
When Grandfather Martin fought in that fall of 1863, the Mississippi River was in Union hands and the Confederacy to the west was cut off. The gateway to the heart of the South was through Chattanooga, a hub for rail lines to all parts of the Confederacy. Union forces had occupied Chattanooga on September 12. The northern armies planned to move through Chattanooga into Georgia and Alabama in order to split the eastern Confederacy in two parts. Below Chattanooga just nine miles away on the other side of the city's natural defense, Missionary Ridge, lay the fields of Chickamauga. Under Union General William S. Rosecrans, Grandfather Martin with the Fifty-ninth Ohio moved toward Chickamauga to counter the Confederate objective of recapturing control of roads to Chattanooga.

Confederate General Bragg wanted to cut off all Union supplies and communications to the besieged city. Most of his 66,000 men had crossed Chickamauga Creek by the morning of September 19. Fighting began shortly after daylight and developed into a general battle along a line nearly four miles long between the Southern armies and Rosecrans' 58,000-man force.

Costly Battle Commences

The first day of battle was a series of charges and counter-charges, first in favor of one side and then the other. Many times Bragg was forced to fight before he was in position. At the end of the day clouds were tinged with red from north Georgia dust, and two important roads were still held by Union forces.

During the night Grandfather Martin, who was a medical corpsman, dragged the wounded and dead from the stained



earth and did what little he could. Moans could be heard and the acrid stench of gunpowder mixed with the scent of the pines.

Bragg, short-tempered and fractious, was well-known as a stern disciplinarian and rugged fighter. Frantically busy during the dusk, he called a campfire meeting with his generals. He divided his force under two commands. General James Longstreet was to head six divisions and act as his left wing, and General Leonidas Polk was given command of five divisions to act as the right wing. Bragg's plan was to feint heavy action with his right, while holding the left in reserve. After engaging Union forces with his right, he would pivot with the left and push on to victory.

A heavy fog hung over the area the morning of September 20. Bragg, personally directing the battle, rode into General Polk's camp at six a.m. and found his men wholly unprepared for battle. Polk had slept outside his lines that night.

The fog and the readying of the troops delayed the start of battle until nine a.m. This gave the Union forces time to realign their hastily formed position.

That day the hard fought and bloody battle started when the Confederates pushed hard against the Union left. Rosecrans had formed a hook-shaped line the night before and it held well against the Confederate onslaught.

Rosecrans was returning that morning to his headquarters after having severely reprimanded General Thomas J. Wood. Rosecrans was angry but soon forgot as he directed the activities of battle.

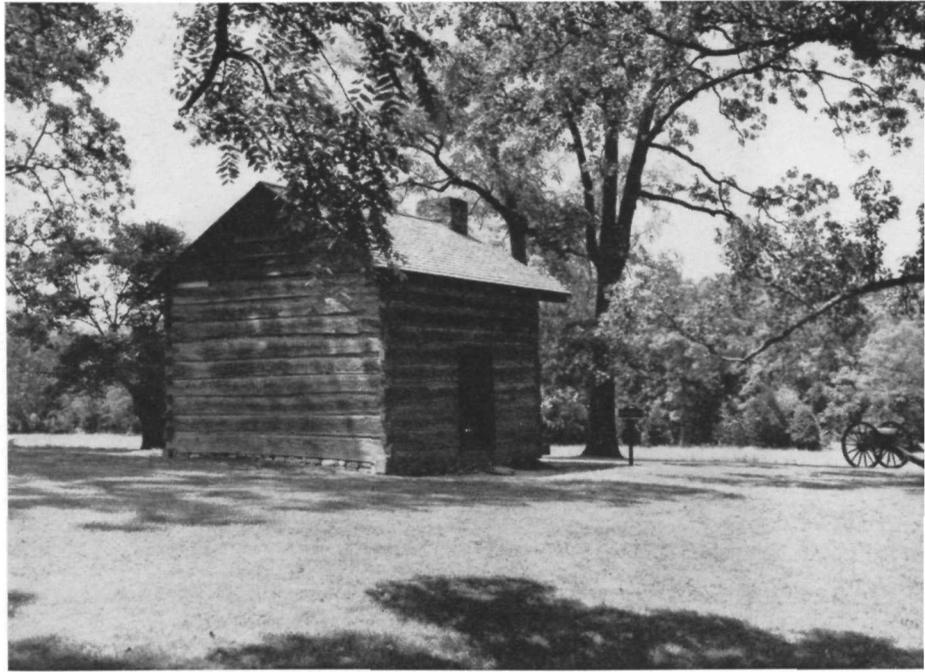
In the early forenoon, Rosecrans was holding his own but Bragg's savage attacks against the Union left continued. As the battle wore on, Rosecrans ordered General Wood to move left to fill a gap in Union lines which did not really exist.

Wood knew, in removing his division to the left, it would create a gap in the line. Yet the sharp words of Rosecrans' reprimand still smarted on his ears. Instead of sending an aide to interpret the order, Wood withdrew to the left.

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Map at left shows course of events on September 20, 1963 at Chickamauga. At the right is Brotherton House where at 11:10 a.m. that day Longstreet broke through gap left by Union General Wood. Snodgrass House, below, served as Federal hospital during battle. General Thomas stabilized Union lines on Snodgrass Hill, earning the nickname "Rock of Chickamauga." His forces withstood Confederate attack from 2 p.m. until after dark, when he covered the Union retreat, then withdrew toward Chattanooga.

»



When the gap in the line opened, three divisions of the Confederate left under General Longstreet surged through the line. Union soldiers, in firing across at the Confederates, felled their own men as well. The Union lines broke and confusion was rampant.

Only the Union left remained, commanded by General George H. Thomas. Thomas was nicknamed "the Rock of Chickamauga" because he stayed to repulse Longstreet's onslaughts the rest of the afternoon. After dark Thomas covered the Union retreat that finally proceeded towards Chattanooga.

At sunrise on September 21 Bragg learned that he had won the battle. All Union forces had retreated to Rossville at the foot of Missionary Ridge.

We felt General Bragg's presence as we followed the

battle action by reading from flat, iron tablets, gray for the South, blue for the North. The battleline tablets criss-cross the creek and fields and are placed, according to available records, where the actions occurred. Several old weathered buildings and numerous artillery pieces added to our feeling that we had stumbled back into the past.

The mood of battle and articles of war are still there. We are startled as we look across a plowed field. Clouds of battle seem to hover. But a lowly lime spreader emerges, bringing us from our dream back to reality.

We followed Grandfather's steps up a wooded knoll when we stumbled upon a Johnny Reb captured in arrested action in granite. The base of the statue is imprisoned in the roots of a blackgum tree and his head is in the branches. The tree seems to be enfolding him, tenderly trying to erase the hurt that was once his upon the battlefield.

Misshapen bullets still abound in the soft earth. The wind increases and the pines angrily shake their branches. It is cold. The children chatter with delight as we spot a flat bullet from a Springfield rifle.

We wondered if this was the type of bullet that was responsible for Grandfather's limp. He was lucky; he returned to his family. He entered a medical school, such as they were in those days, and practiced as a doctor in a small riverfront town in Ohio until his death in 1887.

Today, visitors to another famous monument far from the site of the Chickamauga-Chattanooga National Military Park find inspiration in a tangible offering of the northwest Georgia area. In 1914 and 1915, rich imperial white marble from Tate, Georgia was hauled to Washington, D. C.; the glowing Georgia marble came from a quarry not far from the South's last great victory, to be made into the benign seated figure of Abraham Lincoln, locking together forever the terrible tragedy of citizen against citizen in the War Between the States. ■

Impressions from the Mangrove Country

By Gale Koschmann Zimmer

Photographs by the author

The Bear Lake Canal in Everglades National Park begins near the Buttonwood Canal just north of Flamingo and runs to East Cape Sable as a part of the Homestead Canal of World War I.



EARLY MORNING BEFORE THE HEAT. A brisk breeze from the southwest across Bear Lake. You slide the canoe off the truck and down the bank to the water, and one person climbs in to paddle around to the dock. There you load the lunch, water, cameras and insect repellent. The little three-horsepower motor is fastened on the flat stern of the canoe. But in the cool of the morning you feel energetic and so you prefer to paddle.

Almost silently you leave the small rickety dock and enter the canal. This is the Bear Lake Canal, so called; it begins near Buttonwood Canal just up from Flamingo and runs—if you follow it to the ultimate—to East Cape Sable. Along the way it passes the Fox Lakes and Gator Lake. This canal is one part of the Homestead Canal, dug in the World War I era to afford transportation and access to the Cape Sable region, then destined to be used for farming. At any rate, it now is one of the best canoe trails in Everglades National Park.

The first awareness is of the mangroves. Before 1960 with its devastating hurricane, the mangroves completely roofed over the canal. Everywhere there was deep green. Tiny patches of sunlight filtered through to dance on the water. Now the canal is open to sky and sun. The area all around is filled with gray trees, large and small, wispy skeletons of that earlier forest. But at the canal bank the forest grows again. Buttonwood with the shaggy twisted limbs leans out over the water. Red mangrove treelets appear from beneath the ancient arching roots of their dead ancestors and display healthy crowns of waxy leaves and the ever-reaching, ever-twining root system typical of their kind.

White and black mangrove line the shore too—the latter with a small forest of asparagus-like pneumatophores at their roots. These slender fingers, reaching up through the water, have a small woody interior surrounded by a thick layer of white spongy padding. Perhaps they function much as do cypress knees—and cypress knees function how? There are many unanswered questions yet about even the most obvious features.

A dark furry form crosses in the water from left to right. A raccoon foraging his territory.

As you paddle slowly and rhythmically along, the sudden frantic squawking of a startled little green heron broadcasts his disapproval of being interrupted in his food search. He in turn sets off a Louisiana heron, also noisy, who rises from his perch and takes off down the canal, long legs flopping awkwardly behind.

The water of the canal is itself interesting. Here it is



The area on both sides of the Bear Lake Canal is filled with gray trees, wispy skeletons of a mangrove forest that was destroyed by a devastating hurricane in 1960.

sheltered from the breeze and still. It is a red-yellow-brown, from tannic acid from the mangroves. It is not really deep. If the canoe overturned, for example, you could wade rather comfortably while putting it to rights. Of course, there would be other less comforting aspects of overturning the canoe.

The canal is somewhat affected by the tide. That area of mangrove root covered at high tide, exposed at low, is encrusted with tiny curling tubes, a veritable network of white, limey vermicelli. These are the tube-homes of worms, tiny denizens of the mangrove-marine area, feeding on plankton from the water.

Also on the roots are barnacles in their little crater homes, and the "coon oysters"—ordinary oysters which in places take to living in trees instead of on oyster bars. The hurricane destroyed many of them but in time they too will return in greater number.

Jousting with Mosquitoes

As you stop to inspect the micro-fauna of a mangrove root, the ubiquitous and eager salt marsh mosquitoes move in. Out comes the repellent and you cough, swat and spray all at the same time. Mosquitoes are only beginning now in this season; through the summer and fall their unbe-

lievable numbers make canoeing in the mangrove most uninviting.

In the water, however, are killifish, gambusia and other small eaters of mosquito larvae. Although each tiny fish can consume prodigious quantities of larvae, there are still more than enough mosquitoes to go around. Some of these tiny fish are the same in salt water as in fresh. They move with the seasons, inland and out.

The sun is up full now, and it is hot. No other word for it. You put on a wide-brimmed sun hat and roll down the sleeves of your shirt. Long-sleeved shirt and long pants are the most satisfactory garb for canoeing in this area, as they are protection against both sun and bugs—and scratches, if you leave the canoe to explore on land. Land, such as it is, is mostly slick marl mud or a boggy peat of rotting vegetation. The impenetrable mangrove forest, augmented by the storm-felled trees at the base, is not ideal for hiking exploration.

You have paddled some three miles and are beginning to tire. Now the motor is handy. Paddling is so much more esthetic; somehow it seems fitting to paddle a canoe. But if you are something of a tenderfoot, you cannot go far on paddling alone. Now, motorized, you move little faster than before; you stop often to photograph the great and

In Everglades Park the mangrove area supports a wealth of orchids and air plants. Below, a butterfly orchid plant in bloom.



From the sand of the canal's shore a fiddler crab stares fixedly at camera and cameraman.

small of mangroveland. One of the fascinating remains of hurricanes are the exciting abstractions formed by the vanished mangroves: great bleached and twisted complexes of once-massive trees, and delicate compositions like the characters of oriental writing.

Suddenly, ahead, the canal explodes in white feathers as hundreds of ibis and egrets take to wing. These birds feed in the shallows of mudflat and coastal prairie, seeking fish and other small aquatics. For only a brief time each year are they here, then the season and its watery abundance moves on and the birds disperse. You can identify white ibis and their blotchy brown and white young; wood storks, American and snowy egrets, an occasional great white heron, sundry ducks.

Strung here and there are spider webs. There are legions of spiders in this area. Two of them are particularly attractive. One is the "spiny-bodied spider," like a tiny crab, a small, nearly round creature with a light-colored hard shell covered with small black spines and a touch of red here and there. The other is black, small, wiry and possessed of a shining silver area on its abdomen.

On the trees, especially the rough-barked buttonwood, are orchids and airplants. The mangrove area of all the park is perhaps richest in these accoutrements. Butterfly orchids predominate; others may be mule-ear orchids, night-smelling orchids, cowhorn orchids. The profusion of airplants adds a bizarre note. These grassy or spiny plants have large red flower bracts in spring, to be tipped by the tiny, deep-purple flowers themselves.

A splash in the water, then another and another. These are mullet, disturbed by the vibrations from the boat. Leaping mullet are common enough. It is a rare outdoorsman, though, who can resist making quite a tale out of the one who jumps right in the boat. And they do! More than one canoer has been slapped in the face by a leaping mullet which probably was flopping back in the water before the startled victim had any idea what was happening.

Blue crabs also are common in this canal. Periodically one is seen scudding off into the depths. They reach good size and are enormously edible—but do not reach out to grab one with your bare hands. Even a small crab can give you a nasty pinch, and a blue crab is a formidable opponent in hand-to-claw combat.

Overhead now are half a dozen roseate spoonbills—the large pink birds with the flat bill. They, too, feed in the mudflats throughout the mangrove area, walking along, bill in water, swinging their heads from side to side and straining out their food.

Life of the Coastal Prairie

You have reached the bend in the canal where the mangroves nearly disappear, to be replaced with the lower scrub of the coastal prairie. You pull over to the bank and stop for lunch. As you look about, you see eyes looking back from a nearby tree. A barred owl, not really perturbed but watchful, views the entourage with wide, deep-brown eyes. He seems to listen to every word said and watches the lunch disappearing. You are within ten feet of him; but as long as you make no sudden move in his direction, he will stay.

At the base of the trees is a thick forest of succulent

plants. These are *batis* and *salicornia*. Both are common in this salty area of the coastal prairie. Slender, jointed plants of bright and dark green, they form a slippery cushion for walking. Floating past toward the sea are brown-green blocks of thick spongy scum several inches square.

Dark shiny heads break the gleam of water surface. Mangrove terrapins, one of the diamondbacks, ever-curious but too wary to come close. They inspect, then submerge. You head down the canal. Suddenly there is a black elongated creature rapidly crossing the water. It is one of the mangrove water snakes. There are two color forms of these uncommon reptiles, red and black. Their scientific name is *compressicauda*—"flat tail"—a useful rudder for water travel.

As you proceed, a pair of night herons take flight and you leap-frog with them. They fly only a short distance and sit in another tree on the bank, then precede you down the canal from tree to tree. These are black-crowned night herons, with brilliant red eyes. Also seen here are the somewhat rarer yellow-crowned night herons. The birds seem less affected by the small chugging of the motor than the paddling. At least with the motor they know just where the intruders are and cannot be taken unaware.

The Red Mangrove

The red mangrove trees are in their season of growth and fruit. The roots send out more roots, the branches drop aerial roots, the small yellow blossoms have become acorn-like brown fruit. From the tip of each of these develops a "radicle"—a long yellow-green finger. Then the fruit falls into the water and floats until it lodges on a mudbar or among debris. Roots appear from one end of the radicle, leaves from the other. And a new mangrove begins.

On the half-submerged roots and branches, small black bugs suddenly come to life and race off to concealment. The roots seem literally covered with them; these are marine isopods, relatives of the pill bug.

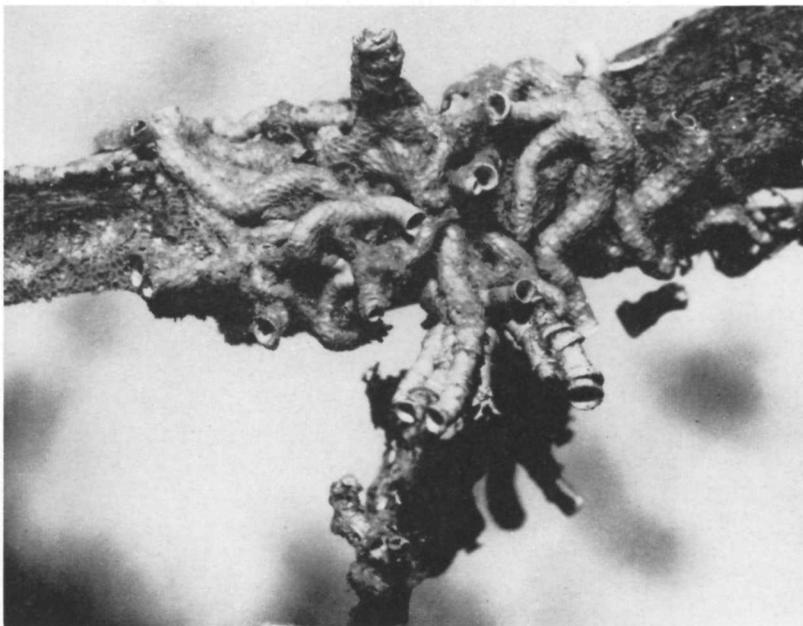
Fiddler crabs inhabit the mudbanks of mangrove creeks and canals. They have holes in the mud from which they emerge into the sun. But vibrations send them scooting back to cover. Male fiddlers have one enlarged claw—the "fiddle"—and this they wave at the female. She must pick her mate by his claw and the motion of his waving.

You are nearly back to the dock now. The day is still bright and clear, a brilliant blue sky is stroked by wispy clouds. The breeze is still up and keeps the day from seeming too hot. As you approach Bear Lake again, three huge white pelicans take off from the lake itself and circle overhead before alighting on the water.

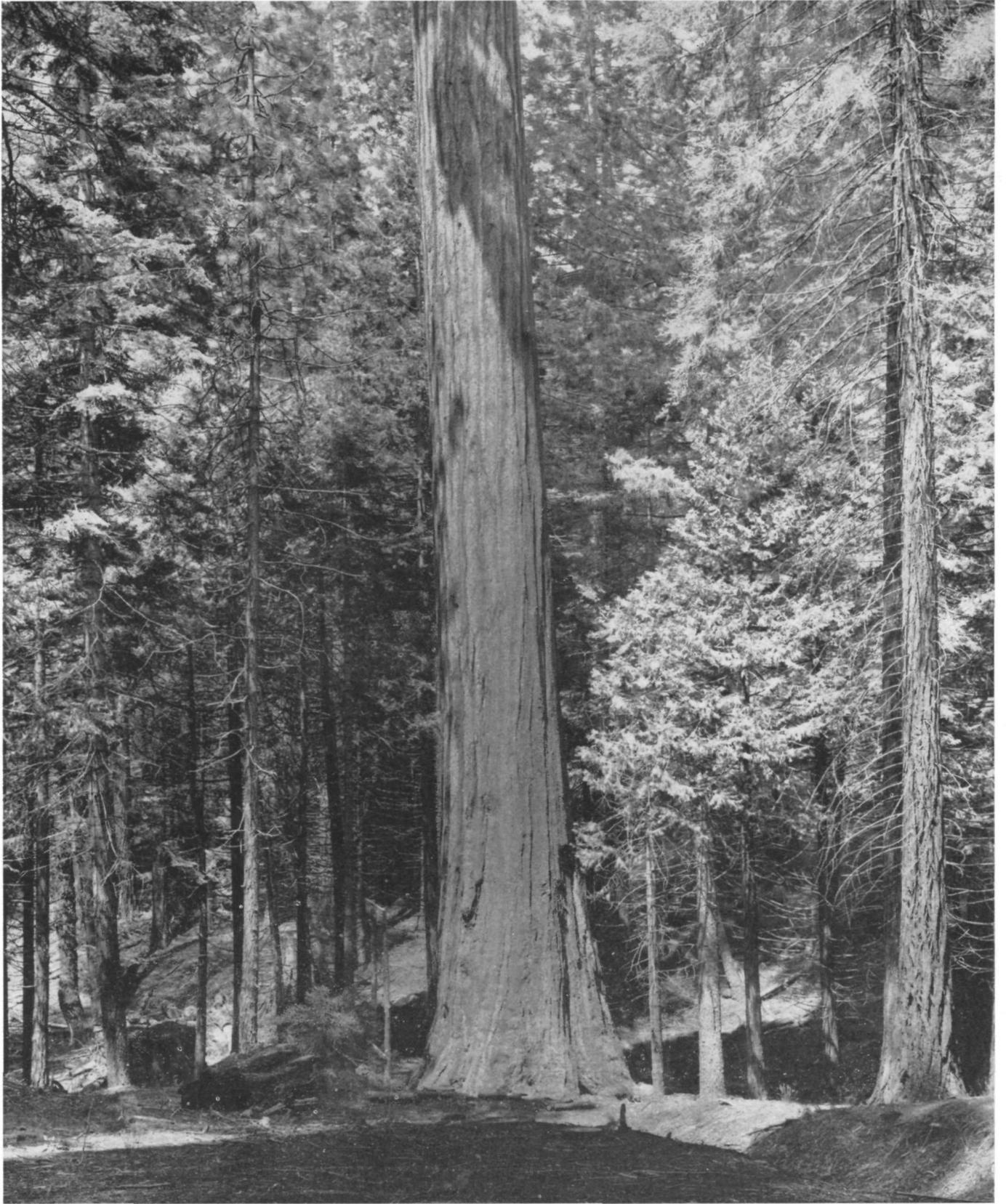
Near the dock there are soapsuds! Great drifts of suds, like bubblebath. No, this is not evidence of detergent pollution in the water; rather, it is from natural pollution by tannic acid and other chemicals seasonal in occurrence. The foam arises on a windy day on the waters of the mangroveland. It is blown and washed ashore, where it collects along the bank and around the roots.

Rather wearily you unload the gear and lift the canoe onto the truck. Sunburned and salty you are; but, also, you are much more aware of the rich biological variety that is to be discovered in the mangrove country of Everglades National Park. ■

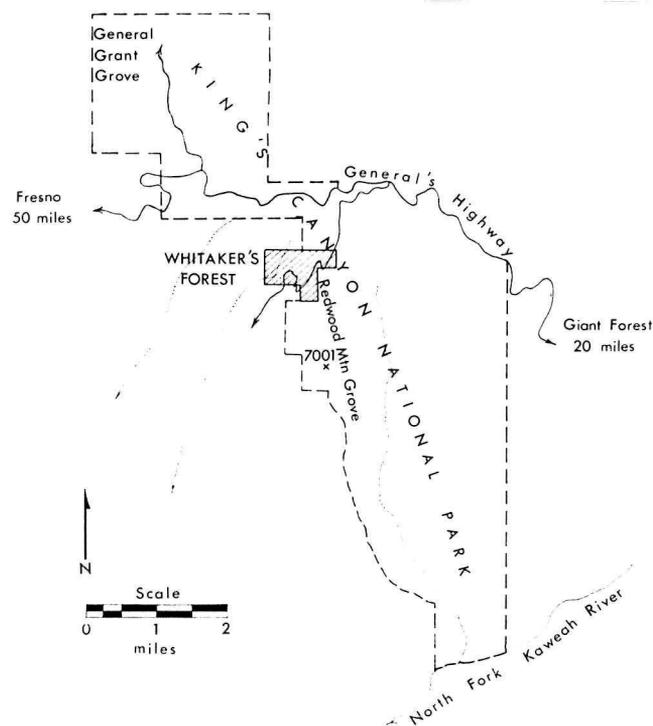
One of the particularly attractive arachnids of the park is the spiny-bodied spider, whose black body is splashed with red.



At low tide the mangrove roots are seen to be encrusted with tiny curling tubes, which are the homes of a marine worm.



Above, the result of understory manipulation to reduce wildfire hazards and to improve esthetic value of giant sequoia at the University of California's 320-acre Whitaker's Forest adjacent to King's Canyon National Park.



Fuel Conditions and Fire Hazard Reduction Costs in a Giant Sequoia Forest

H. H. Biswell, R. P. Gibbens and Hayle Buchanan

Photographs by R. P. Gibbens; map by James K. Agee

IN RECENT PERIODS as long as 100 years, California's groves of giant sequoia have been protected from destructive forces—including the fires which were once an integral part of their environment. There is today a growing concern that such protection, while of vital importance, is not of itself an adequate substitute for natural habitat conditions. Plant successions are changing conditions within the groves; the understory shade-tolerant trees, chiefly white fir, are increasing in number; and large amounts of debris are accumulating.

With the steady increase in fuel buildup, irreplaceable giants are faced with an ever-increasing threat to their existence because even modern fire-fighting equipment and technology are not totally effective in suppressing wildfires in such areas. The fire-scarred trunks of giant sequoias attest to their ability to survive repeated ground fires. However, the sequoia trees may not withstand crown fires which are sure to occur if a fire burns uphill through the heavy fuel accumulations and understory trees during the dry season. Protection from wildfire is vital, but it is apparent that steps must be taken to insure a fire of relatively low intensity, if one should occur.

Investigations of ways to reduce fuels and improve esthetic values in giant sequoia groves are under way on Whitaker's Forest, a 320-acre forest owned by the University of California. Whitaker's Forest lies on the western slope of Redwood Mountain in Tulare County and adjoins the magnificent Redwood Mountain grove of giant sequoias in King's Canyon National Park. Plant successions following logging of Whitaker's Forest in the 1870's have re-

sulted in the development of extreme fire hazards. Dense stands of incense cedar, Scouler willow, second-growth sequoia, and white fir became established following the logging, which removed most of the pines and about half of the original stand of giant sequoias.

In the dense second-growth stands, many of the incense cedars which became established following the logging disturbance of the 1870's have succumbed to competition and are now dead, but still standing. For example, on a photo plot of 33 x 33 feet there were 19 dead trees, the equivalent of 760 per acre. These dead trees help form a fuel bridge between the ground and the overhead canopy. Another fuel type which is characteristic of the second-growth stands is Scouler willow debris. This formerly abundant species grew in dense clones which have now been shaded out and killed. The slowly decaying stems form dense tangles of fuel. Much heavy debris from limbs and fallen trees of other species is found on the ground also. Such accumulations are especially prevalent where the relatively short-lived white fir stands are approaching maturity, or have succumbed to disease or insects.

Understory trees are found in great numbers on Whitaker's Forest as well as in many other giant sequoia groves. These trees, principally the shade-tolerant white fir, have increased steadily in numbers since the inception of protection from fires. Now they frequently form a continuous mass of fuel from the ground to near the tops of the tallest trees. Where these trees have grown high in the understory, with heavy debris accumulation below, serious fire hazards exist. Bear clover and manzanita occur as understory to



H. H. Biswell is Professor and R. P. Gibbens was Assistant Specialist (now in the Plant Sciences Division, University of Wyoming), University of California, Berkeley. Hayle Buchanan of Weber State College, Ogden, Utah, was a College Teacher Participant on a National Science Foundation grant. Labor was performed by crews of the Miramonte Conservation Camp, Willard Haley, Superintendent. This article is reprinted from the February, 1968, issue of *California Agriculture* by courtesy of that publication.



Above: a tangle of debris from dead clones of Scouler willow creates high fire hazard. Dense understory of white fir shown in background also adds to likelihood of disastrous fire. Base of large second-growth giant sequoia appears at right, a white fir trunk at left.



At right: heavy fuels from white fir debris have accumulated near a mature giant sequoia. Decadent stands of white fir are found in many groves of Sequoia gigantea.



Below: views of a one-tenth acre test plot before (left) and after (right) clearing. Dense understory stand of white fir and incense cedar blocks view of mass of Scouler willow debris on ground in left-hand photo. Hazards were greatly reduced and vistas opened up by treatment, as seen in right-hand photo.



MATERIALS REMOVED, LABOR REQUIRED, AND CALCULATED COSTS OF MANIPULATION ON
FOUR TENTH-OF-AN-ACRE PLOTS IN SECOND-GROWTH GIANT SEQUOIA.

Material removed	Plot 1	Plot 2	Plot 3	Plot 4
Number of live trees cut.....	41	125	93	119
Number of dead standing trees cut.....	17	55	36	112
Total trees cut.....	58	180	129	231
Estimated weight of dead material (lbs).....	3,225	3,965	5,070	1,770
Estimated weight of live material (lbs).....	20	1,235	730	1,600
Total weight of material burned.....	3,245	5,200	5,800	3,370
Man-hours of labor				
Man-hours required to cut standing trees* (with chain saw).....	0.42	0.83	1.33	1.50
Man-hours required to buck up material (with chain saw).....	1.67	0.84	1.67	0.74
Man-hours to pile material on fires.....	1.30	1.96	1.43	1.45
Man-hours to tend fires and complete burning.....	0.37	0.97	0.45	0.47
Total man-hours.....	3.76	4.60	4.88	4.16
Number of fires built on plots.....	7	9	5	7
Calculated costs (Labor at \$2.38 per hour, chain saw at \$2.00/hr.)				
Labor to cut standing trees.....	\$1.00	\$1.98	\$3.16	\$3.57
Chain saw costs for standing trees.....	0.84	0.84	1.32	1.50
Total thinning costs.....	\$1.84	\$2.82	\$4.48	\$5.07
Labor for bucking up material.....	3.97	2.00	3.97	1.76
Chain saw costs for bucking up.....	1.68	0.84	1.68	0.74
Total bucking up costs.....	\$5.65	\$2.84	\$5.65	\$2.50
Labor for piling material.....	3.09	4.66	3.40	3.45
Labor for tending fires.....	0.88	2.31	1.07	1.12
Total costs (supervisory costs not included).....	\$11.46	\$12.63	\$14.60	\$12.14
Cost per ton of material removed.....	7.07	4.85	5.03	7.23

*A two-man crew on chain saw with the exception of cutting standing trees on plot 1 where only one man was needed.

pinus on drier sites on Whitaker's Forest. When these shrubs are draped with pine needles they form a very flammable fuel.

In 1964 a manipulation program was started on Whitaker's Forest with the cooperation of the California Division of Forestry and its Miramonte Conservation Camp. A "minimum" treatment has been applied to about 60 acres. This treatment consists of the removal of understory white fir and incense cedar trees between one and 11 feet tall, cutting of dead standing trees, and removal of heavy debris on the ground. The material is disposed of by burning in small piles below the canopy of larger trees in the fall and spring months when the danger of wildfire is minimal. Large amounts of material have been removed and the continuous vertical distribution of fuels broken up by this treatment. Because the treatment does not appreciably affect those trees in dominant- or subdominant-crown classes, the composition of the forest is not changed significantly for the present.

In the second phase of the manipulation (yet to be done) it is planned to remove some of the intermediate sized incense cedars and white fir (which seeded in following the logging of the 1870's) growing within about six feet of sequoias. This will not be a thinning to promote growth of incense cedars and firs; rather, the purpose will be to reduce competition to—and open up views of—the sequoias and to further reduce fire hazards.

At a later date prescribed burning will be tested in the different types of fuels on the forest floor. These treatments are designed to result in more pines in the forest and fewer incense cedars, and to restore plant patterns and successions that prevailed in the primitive condition before the

white man intervened. Increasing the reproduction of giant sequoia is not a special objective of the manipulation on this forest, although some may result from the disturbances. The forest is well stocked with second-growth redwood, far more than are necessary to replace those which were logged off.

To determine the man-hours of labor required to perform the minimum treatment, four tenth-of-an-acre plots were marked off for manipulation. Plots were selected where debris, dead trees, or understory trees were fairly representative of maximum conditions encountered. A careful record was made of the time required to perform each step in the manipulation operation. Weight of material to be burned was estimated, after a period of training with scales.

The results obtained are presented in the table above. Assuming a labor cost of \$2.38 per hour and chain-saw cost of \$2.00 per hour, the calculated cost ranged from \$114 to \$146 per acre. This does not include costs of supervision, etc. These figures approach the maximum cost since few areas would have more material to dispose of. The average amount of fuel removed from the four plots was 44,040 pounds per acre. The average number of trees cut per acre was: living, 945; dead, 550.

While the cost of treatment appears high, it should be borne in mind that the manipulation removed 80 years' accumulation of debris and lowered the fire hazard conditions for many years to come. Also, there has been an improvement in esthetic values. No monetary value can be placed on giant sequoias because they are a priceless heritage to be preserved at almost any cost. ■

News and Commentary

Is There Ownership in Wildlife?

During recent months numerous measures have been introduced into Congress to make state ownership of wildlife on all lands within a state, including federal lands, public policy, with certain exceptions as in cases where states have ceded exclusive jurisdiction to the United States. Such a public policy would place primary authority over wildlife in the units of the national park system, the national forests and wildlife refuges, and other federally administered lands in the hands of the various state fish and game commissions. The state agencies have been saying that they already have this authority, but want it confirmed by Congress.

In mid-June the Senate Committee on Commerce held public hearings in Washington on two such bills, S. 2951 and S. 3212, and upon invitation the National Parks Association presented its views on the matter. Dr. Walter S. Boardman, the Association's consultant in conservation, made the presentation in behalf of NPA's President Anthony Wayne Smith.

The statement pointed out in part that the National Park Service Act of 1916 charges the Service with protection and management of the parks and monuments to conserve the scenery, natural and historical objects, and *the wildlife* therein; that the Act leaves no managerial authority in the hands of state governments. This being so, argument on the question of proprietary rights over wildlife in the parks or where such rights may be vested becomes an exercise in futility. Beyond this, it was stated, it might be wise for Congress to enact legislation confirming

the proprietary and managerial rights of the federal government in wildlife on federal lands. At the present time it is entirely possible that any proprietary interest whatsoever in wildlife is a fiction, not supported by either constitutional or statutory law nor by judicial decisions; if this is so, the problem is not who owns the wildlife but which agencies of the government have authority to manage it.

"We feel sure that the Commerce Committees will wish to make a very thorough investigation of the actual state of constitutional and statutory law and related judicial decisions before taking hasty action on a measure which arose out of controversy and is being pressed by agencies which have a special ax to grind," the Association said.

Citizens Conference Requests New Dam Hearings

The Citizens Permanent Conference on the Potomac River Basin has recently petitioned the Secretary of the Army and the Chief of Engineers for new hearings on six major dams the Corps want to build in that basin. The petition was prompted by a "proposed report" recommending construction of the six dams to the governments of the four states of the basin and the District of Columbia, plus federal agencies. As many of our readers know, the Conference had hoped that the Corps' oversight in failing to hold public hearings on these proposals would be rectified by a hearing held in March of this year.

According to the petition, however, the notice of the hearing was not only received late but contained misleading information about the projects. Consequently, citizens concerned have not had

an adequate opportunity to comment, on either the costs or the necessity for the projects, it charges. The new "proposed report," the petition states, ignores citizens' objections at the March hearing and gives no information about alternatives to the dam system, apparently disregarding important technical studies showing that ample water available in the fresh water estuary of the Potomac could supply the emergency needs of the Metropolitan Area until the year 2010. The petition charges that in proceeding, the Corps is violating both federal law and the Army's own administrative regulations.

The petition goes on to demand that full and specific information be furnished for new hearings about homes, businesses and communities that would be displaced. It also demands a full breakdown of costs and the various benefits expected.

Steam and Electricity in the Pollution War

A steam-powered bus and an electric car have made news in the battle against pollution this spring.

Calvin E. and Charles J. Williams, a brother team of inventors which has made a successful test run with a steam-powered 7½-ton bus, were joined by Richard S. Morse of the Massachusetts Institute of Technology, Representative Richard L. Ottinger and others in recommending that the government stimulate research and development in steam cars. Morse said that a study done for the Department of Housing and Urban Development showed steam power especially promising for heavy vehicles such as buses that do a great deal of starting and stopping, because steam allows rapid, smooth acceleration with relatively low horsepower. The engines are quiet and low in pollution.

The experimental electric car, by Gen-

The Big Bad Wolf (continued from page 2)

sponsibilities for raising and educating the young, that its continued survival is of importance to man, we need factual knowledge, widely disseminated."⁴

The contemporary human problem in its broadest aspects is to create fresh social norms to underpin the new worldwide culture which must emerge within and yet against the current of that massive disintegration of old cultures which marks our epoch.

The formulation of such norms, as explicit as thought and language can make them, in the short time available, is urgent business for artists, scientists, philosophers, and statesmen.

Among these norms, we venture to suggest, must be

revised standards expressing changed attitudes toward the other forms of life with which man shares such deep phylogenetic roots.

The wolf is a good test animal for this work. He needs to be protected, if only because human beings have a vested interest in him: for observation, for photography, for companionship,⁵ and for scientific research, including investigations having a vital bearing on crucial patterns of human conduct.⁶

The Alaska Conservation Society, and those Canadians who have spoken out against the Sturgeon Falls escapade, are to be commended on their insight and their courage and on the good work they have been doing for all of us.

—A. W. S.

⁵ See *Arctic Wild*, by Lois Crisler, Harper, 1956.

⁶ Such as those reported on by Konrad Lorenz; *On Aggression*, Harcourt, 1966.

⁴ Article cited, note 1.

eral Motors, is powered by a bank of 14 conventional lead-acid batteries which are recharged by a Stirling heat engine while the car is running. The Stirling burner, which runs on diesel fuel, burns its fuel almost completely. Power from the batteries should enable the car to travel on a level road at 30 m.p.h., with a cruising range of 150 to 200 miles. At its top speed of 55 m.p.h., its range would be limited to about 30 to 40 miles. The experimental car is said to be virtually pollution-free—but at this stage the two power systems take up all the trunk and engine space.

Two BOR Publications

Continuing with a short list of recent Interior Department publications of special interest to conservationists, we present these: *Federal Assistance in Outdoor Recreation* (35¢), a revision of an earlier Bureau of Outdoor Recreation booklet describing departmental and agency programs available to States, their political subdivisions, organizations and individuals. These programs include financial, technical and educational aid. *Private Assistance in Outdoor Recreation* (30¢), also compiled by BOR, is a new edition of a directory of private organizations providing technical and educational aid to individuals and public groups in this field. The booklet is designed to help landowners, organizations and private investors interested in developing outdoor

recreation areas and facilities to meet the ever-increasing public demand. These two publications may be secured from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402.

A Conference on Noise

A National Conference on Noise as a Public Health Hazard, held in Washington, D.C., in June, brought scientists and other top authorities on noise pollution together with conservation, military and industrial representatives. This Association was represented at the meeting by its Consultant in Conservation, Dr. Walter S. Boardman.

Dr. Boardman reports that it was clear from most of the papers presented and the discussions that the growing intrusions of unwanted sounds can have serious consequences for human beings. One session was devoted primarily to the sonic boom.

Dr. Wilbur H. Ferry, of the Center for the Study of Democratic Institutions, called for a "drastic but reasonable curtailment of noise." He based his appeal upon the de-civilizing aspects of unwanted sound and urged conservation-oriented groups to continue to fight against all the ways in which one person invades the privacy of another with raucous sound.

To this conference report we add notes from the animal and legal worlds. *The Minneapolis Tribune* reports that Zack

Taylor, a mink farmer at Frazee, Minnesota, was recently awarded \$37,490 in damages resulting from an Air Force sonic boom in 1965. The farmer said his minks "exploded" simultaneously from their nest boxes and crashed against the ends of their cages with all four feet, then became quiet. Later, he found dead kittens in the boxes and cages, some partially devoured, and concluded that the frenzied mothers had eaten many of their young. In 1966 his herd produced less than half the expected number of kittens.

In New York, the Court of Appeals has recently held that the State must pay a property owner damages for the noise of passing traffic when the State takes part of his land to build a highway. The majority opinion, by Judge Kenneth B. Keating and supported by a concurring opinion written by Chief Judge Stanley Fuld, upheld a \$37,000 award to Ira and Dorothy Dennison, whose land in a remote wooded area on Lake George was partially taken for the road. The initial Court of Claims award was based also on loss of privacy, seclusion and view from the Dennisons' home; but the only issue on appeal was the traffic noise.

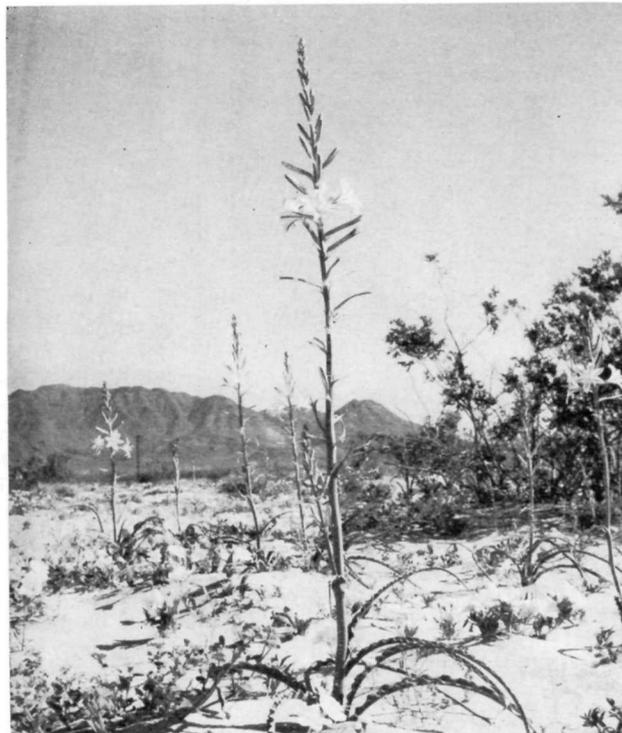
A New National Monument

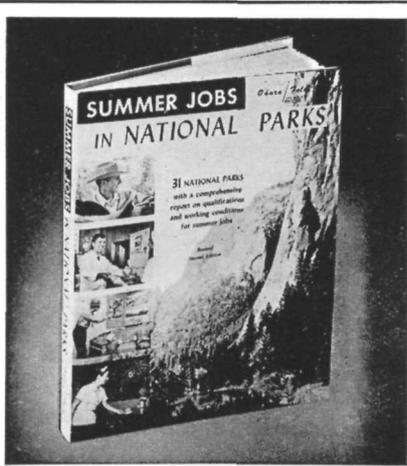
On June 30, the 27-acre island of St. Croix near Calais, on the northern coast of Maine, was formally dedicated as a national monument after having been au-
(Continued on page 22)

Bureau of Land Management Preserve Established to Protect Desert Lily

One of the highly commendable programs of the Bureau of Land Management is that which is resulting in a growing system of specially designated areas for protection of rare or endangered species of plants and animals on the public lands. During the past spring 960 acres of public lands near Desert Center in southern California's Riverside County were dedicated as the Chuckwalla Valley Desert Lily and Wildflower Preserve, primarily for the protection of *Hesperocallis undulata*, the desert lily, which is considered endangered. BLM has fenced the preserve to exclude grazing and auto traffic, and the site is entered by way of a climbing stile rather than by gateway—a circumstance which, considering the nature of the unit, seems to merit extra congratulations to the BLM planners. At the dedication ceremony Mr. Jack Wilson, manager of BLM's Riverside District, welcomed the attending group for the Bureau; Mrs. Tasker L. Edmiston, widely known southern California conservationist, acted as mistress of ceremonies and introducer, and Dr. Mildred E. Mathias, professor of botany at the University of California at Los Angeles, was the principal speaker.

The desert lily, which has become an endangered plant species, blooms in the Bureau of Land Management's new Desert Lily Preserve.



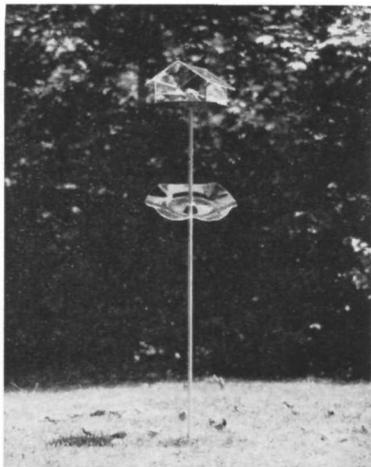


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thorized as such by Congress nearly 20 years ago. Establishment had to await the final transfer of land, and the island since then had to be carried on the Park Service's inventory as an "authorized area for which lands have not been acquired."

Tiny St. Croix was selected in 1604 as the site of the first European settlement on the Atlantic Coast north of Florida by the French explorers Sieur De Monts and Samuel De Champlain. The settlement antedated the Jamestown landing by four years and the Plymouth landing by 16 years, and the island later played an important role in the establishment of the United States-Canada boundary.

Counting Colima Noses

Acting Superintendent of Big Bend National Park Roy Allen says that the second annual census of Colima warblers in the park has recently been completed, with 130 of the birds being tallied during the May 6 to 14 period on the forested slopes of Big Bend's Chisos Mountains. This was 38 more warblers than were counted last year in a program which was originated by the park's chief naturalist, Roland H. Wauer. (A detailed account of the first census was written for this Magazine by Mr. Wauer, appearing in the November, 1967, issue.)

UNESCO Biosphere Conference

An Intergovernmental Conference on the Scientific Basis for Rational Use and Conservation of the Resources of the Biosphere will meet in Paris September 4 to 13. Objective of the meeting is to ascertain how science can enable man to both use and conserve the earth's biological resources. UNESCO is sponsoring the conference, with cooperation of the Food and Agriculture Organization, World Health Organization, International Union for the Conservation of Nature, and International Biological Programme.

The Jersey Pine Barrens

Many conservationists along the Eastern Seaboard, and doubtless others elsewhere in the country, have been deeply interested in recent years over the possibility of a national preserve of as yet unclear designation—monument has been heard by the writer most frequently—within the Pine Barrens of central and southern New Jersey. There is a widely held feeling that at least a representative portion of the Barrens ought to be protected as an unusual faunal and floral "island" still for the most part undeveloped by man though within the immediate vicinity of many millions of people.

General interest in this protective possibility on the part of conservationists, scientists and the National Park Service

has resulted in a recent publication titled *Pine Barrens of New Jersey: A Study of Significance*. The study was carried out by Dr. Jack McCormick of the Academy of Natural Sciences of Philadelphia and was prepared for the National Park Service by the Academy under terms of a 1966 contract. Dr. McCormick is Curator and Chairman of the Academy's Department of Ecology and Land Management.

As prescribed by the Service, Dr. McCormick's mission has been to select from a general study area of 365,000 Pine Barrens acres "an ecosystem, circumscribed by definable boundaries, which includes representatives of all significant features . . ." From this general proposition has emerged an area of 160,000



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acres—the Wading River Ecosystem complex—which Dr. McCormick recommends as nationally significant. Space on these pages will not permit a detailed discussion of the investigator's findings on the fauna and flora of the Barrens and the Wading River complex; for the present it is sufficient to note that the region is a most fascinating and unusual one from the standpoint of natural history; to a lesser extent, perhaps, from that of its human history.

The urgency for protection of a representative Pine Barrens ecological system is perhaps not as pressing as it has been in the case of some other units of the park system, notably some of the recently established national seashores, whose terrain was being actively invaded or viewed by the developers. There is an important qualification which must be added to this statement, however. The Barrens have more and more frequently been mentioned as the site of an immense jetport for New York City and its satellite cities; as projected, the port and its facilities would cover something like 33,000 acres within the Wading River watershed. Dr. McCormick has noted in his study report that "additional land would be used to house and supply a population of about 250,000 people." A development of this magnitude would obviously end the value of a large portion of the Barrens as a public reserve.

Perhaps this brief account of *Pine Barrens of New Jersey* might be concluded with a quotation from Dr. McCormick's letter of transmittal to the Park Service:

"The unique characteristics of the Pine Barrens environment are mirrored by unique features of its biota. Many plants and animals common here are rare elsewhere, and several occur only in a few other restricted areas hundreds of miles away . . ."

Is Park Service Policy Changing?

A Review

ADMINISTRATIVE POLICIES FOR NATURAL AREAS OF THE NATIONAL PARK SYSTEM. By the National Park Service. Superintendent of Documents, Washington, D.C. 63-page booklet. September, 1967. 30¢.

PUBLIC USE OF THE NATIONAL PARK SYSTEM, 1872-2000. By Ronald F. Lee, with a foreword by George B. Hartzog, Jr. National Park Service, Washington, D.C. 93-page booklet. January, 1968.

These two booklets show the National Park Service struggling to keep the parks unimpaired while providing for enjoy-

ment by the people. They reveal past, present and future complexities, show persistence and resourcefulness in seeking solutions, and indicate movement toward rationing of park visits.

The first document details instructions to agency personnel at national parks and monuments "of scientific significance," meaning most of the system. Stressing "quality of park use," it denies "that national parks may accommodate all varieties of recreational use"—or any use "in unlimited volume." It prescribes this test: "Is the activity inspired by, and does its reward derive from, the national character and features of the park?"

The chapter on master-planning calls for considering "the total environment in which the park exists. Of particular significance are the plans for and the availability of other park and recreational facilities within the region at the federal, state and local levels, as well as those of the private sector . . . The Master Plan Team first analyzes the entire region in which the park is located . . ."

The wilderness chapter declares the agency has preserved (and in places restored) wilderness during its entire history and will not lower the standards of preservation on lands "not designated legislatively as 'wilderness.'" In that view, wilderness designation in the national parks is not particularly to strengthen protection, which is seen as continuing firm under basic park law, but primarily to label areas best suited for "primitive and unconfined . . . recreation."

The Lee booklet sees national park history as divided into these major periods: 1872-1908, saving Western wonders from exploitation by timber, mining, grazing and similar interests; 1908-1917, establishing the National Park Service; 1917-1929, actively promoting public use; 1929-1941, enlarging and developing the system; 1941-1956, surviving two wars; 1956-1966, catching up and going ahead through Mission 66; and, 1966 on, coping with "mounting public use" as "the central issue in managing the system."

Lee reveals an agency estimate of 347,000,000 park visits by 1976, "representing a ten-fold increase over 1950," and declares that a "travel year of one billion visits, or three times 1976 travel by 2000, no longer seems fantastic." He reviews "measures aimed at dispersing visitors outside the system" but concludes that, while they may be helpful, "they cannot solve the basic problem of mounting travel because, for most people, there is no substitute for a visit to a national park."

Lee then examines agency experience

in regulating public use through limiting developments and land uses within parks, controlling private vehicles, trying new methods of public transportation, and, finally, "by direct controls over the volume, duration, and character of visits to important features and heavily used facilities." He concludes that "if park travel mounts as expected, many more direct controls over the number and duration of visits to key features, and perhaps to entire parks, will have to be developed . . ."

He further concludes that park management requires "surer knowledge of the evolving character" of park users. He sees urgent need for studies "conducted by behavioral scientists, aided by ecologists, historical preservationists," and appropriate elements within the agency.

Lee writes as special assistant to Director Hartzog, and his discussions (especially as bolstered by the actual administrative policies for natural areas) appear to serve notice that agency emphasis is shifting sharply away from quantity in park visitation, which has long been the criterion of success, toward maintaining and enhancing the quality of the park experience. While the components are not new, the priority pattern may be.

—Darwin Lambert

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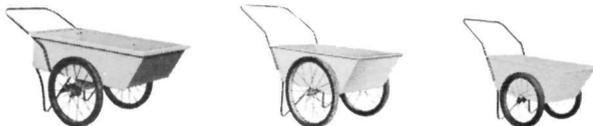
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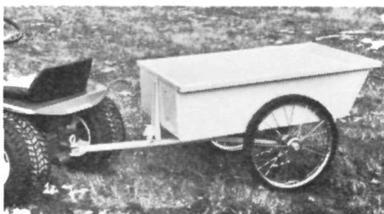
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