NATIONAL PARKS *Magazine*

In the California coastal redwoods,
a new challenge to the conservation world

August 1969

FIFTIETH ANNIVERSARY NATIONAL PARKS ASSOCIATION

A World Conference on the Environment

THAT LIFE ON EARTH, ALL OF IT, AND CERTAINLY HUMAN life, may be entering upon a sickness unto death, unless resolute curative action be taken soon, is the burden of the recent report of the Secretary General of the United Nations on the projected environmental conference authorized by the General Assembly for 1972.

The decision of the Assembly last year to convoke the gathering came none too soon. The invitation by Sweden to hold the sessions in that country has coincided with a commendable decision by the Swedish Government to outlaw DDT. The report of the Secretary General, his advisory group, and his staff is a masterly statement of the peril in which we find ourselves and the first steps which must be taken.

Few of the facts which have been marshaled in the document are new, but seldom have they been compressed so briefly into a single statement.

Biocides are being poured into the earth's waters, mainly, but by no means without parallel, in the United States, and they may have the effect of reducing photosynthesis in marine algae by as much as 75%. This means a possibly catastrophic reduction in the production of oxygen for the replenishment of the atmosphere.

There has been a 10% increase in the proportion of carbon dioxide in the earth's atmosphere in the last 100 years, with a possible rise to 25% by the year 2000. Because this gas traps the heat of the sun by what is known as the greenhouse effect, temperatures can be expected to rise ineluctably, with possible disastrous effects on weather, and thus on crops.

Offsetting such events in some measure, but precariously, and bringing other dangers, is the increase of particulate matter in the atmosphere from urban-industrial processes, which may entail cooling sequences.

Contributing to the danger of reduced oxygen supply has been the destruction of the world's forests. Two-thirds of the world's forest lands are said to have been lost for the production of timber. Can this trend be reversed and the forests of the earth restored?

The soil situation is perilous. Well over a billion acres of arable land have already been lost through erosion and salination at a time when worldwide famine impends; such a statement speaks for itself in terms of human misery.

While the dangers of the biocides are stressed in the report, and the fundamental problem of overpopulation is touched upon, the mortal nature of the complex of issues which centers here may not have been sufficiently stressed. Many human societies are caught in an expansion of population at a rate faster than the capital growth which might otherwise provide the means of survival.

A short-circuit, bypassing industrialization in the developing countries in favor of accelerated agricultural production, might conceivably save the day temporarily until populations can be stabilized. But accelerated agricultural production depends on more mechanization, new crops, more pesticides, and more fertilizers. The use of both pesticides and fertilizers (phosphorus as a pollutant, nitrogen as a food poison) may have to be very severely curtailed if they are not to become the ultimate agents of death. This is a grim dilemma.

The ecological structure of life on earth, including man, has already been seriously impoverished by the extinction of more than 150 species of birds and other animals, and the impending loss of perhaps 1000 more. The resilience of the biosphere, its ability to adapt to new climatological and ecological shocks, is reduced every time any creature is lost; the organic underpinnings of life are weakened; for man, the esthetic and scientific losses in terms of beauty and knowledge are irreparable.

For perhaps the first time in a major public document the report notes that the developing and the developed countries are caught together in a trap called urbanization. This process does not create cities in a cultural, nor even in an efficient economic sense; it gathers conglomerates which are largely uninhabitable.

The environmental crisis is as broad as human society; the industrial countries cannot hope to escape it. Smothering by air pollution, poisoning by water pollution, psychic trauma by urban congestion, these enemies respect no boundaries.

Irresponsible acts like the disposal of radioactive wastes and the proposed dumping of nerve gases into oceans must cease. The agencies of the United Nations which wrestle with environmental problems in the future will necessarily have to engage in serious dialogue with the military operators in all countries; whether environmental pollution or nuclear war becomes the greater menace may be in question; in any event, the problems are closely related.

The financing of the proposed conference will be difficult. We trust that both private and public money will be forthcoming. The conference itself must face the issue of the long-range fiscal measures required for effective United Nations action. There will be strong arguments for shifting money from military to environmental activity. The challenge of environmental survival may offer a moral equivalent of war.

The problems, the conference, the possibility of worldwide action, present an alluring potential for the development of international law. Each time a new convention is proposed and accepted, or a new agency of the United Nations is created to deal with environmental issues, an addition will have been made to the network of worldwide institutions which moves in the direction of representative world government under law. —*A.W.S.*

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For many decades conservationists in this country and all over the world have hoped that the great coastal redwood forest of California, relic of a time when the genus Sequoia was spread far over the earth's surface, might be protected and managed for esthetic and economic values alike. This Association, for example, has long advocated establishment of both a national park, in the region of the finest redwoods, and a national forest to cover the balance of coast redwood habitat; the one for strict protection and the other for management of the species under ecological forestry principles. In 1968 a redwood park was authorized, but the absolute gain, so far as species protection and management are concerned, has not been notable. In this issue a highly qualified author looks at the new park and recommends some further steps.

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 39,000 members throughout the United States and abroad. It was established in 1919 by Stephen 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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LOOKING AHEAD IN CALIFORNIA'S COAST REDWOODS

"In addition to parks like Redwood we need to create and maintain redwood forests, even more difficult to do in our present . . . society"

By DEWEY ANDERSON

IN 1968, AFTER YEARS OF INTENSIVE EFFORT BY CONSERVAtionists, President Lyndon B. Johnson signed a bill to create our first national redwood park to preserve, in a natural state and for all time, a patch of virgin coastal redwoods for the wonder and deep inner satisfaction of all mankind. It is to be a park of some 58,000 acres in an area of 1.7 million redwood acres; for the famed trees grow in grove after grove along the California coast for more than 500 miles—from below Monterey in central California north into Oregon.

The great coast redwoods have withstood earthquake, storm, fire, and flood for thousands of years; but they could not withstand the demands of the white man when he came among them with ax and saw a mere hundred and fifty years ago. Nor can today's remaining privately-owned old-growth redwoods defend themselves against present high-profit inducements to modern corporation man equipped with power saws and bulldozers. Their survival depends on saving, as memorials to the ages and as rare gems for all-time human enjoyment, the best specimens in parks large enough so that we can appreciate their superb qualities as trees growing naturally in ancient familiar surroundings; truly as a link with the past.

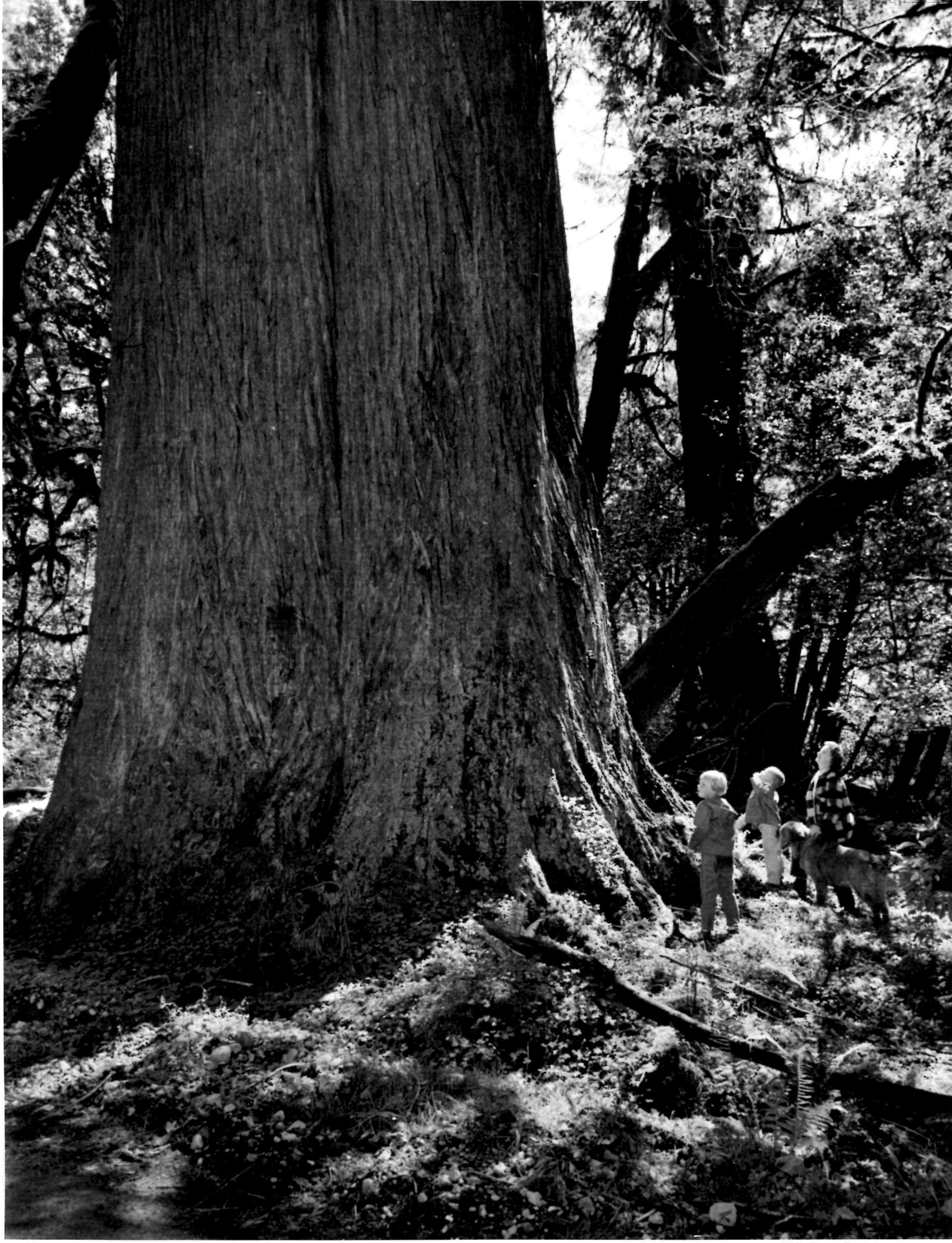
In addition to parks like Redwood we need to create and maintain redwood forests, even more difficult to do in our present complicated, commercially-minded society. We need to reclaim substantial acreages of the coastal area which once grew silent groves of redwoods with their associated timber species like Douglas fir, hemlock, spruce, lowland fir, and a suite of lesser trees and shrubs. Many semi-barren, overgrazed, cutover, badly-eroded and poorly-producing acreages along the northern California coast—from slightly north of San Francisco to the approaches of Eureka—could be combined in a new national forest of at least half a million acres. Such a forest would add greatly to the wealth of the nation. It would also relieve the pressure on the commercially operated redwood forests, which could ultimately insure continuous timber supplies without need for cutting all the irreplaceable old growth giants. Today 62.5%, or nearly two-thirds of all old-growth redwoods, are in the commercial forest, and they are going fast. Time is the major factor here, and failure to act within 25 years will see most such old-growth redwoods gone.

Several years ago conservationists in many organizations and persistent individuals from many walks of life combined efforts to stop the rapid cutting of giant redwoods in areas considered to possess park potential, for the lumbermen had stepped up their operations to meet postwar demand and reap the rich profits of a hungry construction market backed by a government housing program. Sentiment rose, public opinion formed sufficiently to reach the White House, and a cry went out across the nation to silence the lumber industry's power saws in the monumental groves. Politics grew heated; but the public will prevailed, and the President proposed to Congress creation of the first national redwood park in our history.

What emerged as a three-and-a-half-page printed act—Public Law 89-545, approved October 2, 1968—is a far cry from what conservationists sought. It is full of faults. Instead of the nearly 100,000-acre park advocated by some, maximum allowable size is 58,000 acres. Vast areas of virgin redwoods of parklike character are outside its outer boundaries, and will be logged. As of now 55,669 acres are considered to be the Redwood National Park, made up of the following: state of California redwoods parks, 27,468 acres; major private ownerships, 22,453 acres; small private ownerships, 4,969 acres; federal forest 779 acres, for a total of 55,669 acres.

One notices immediately that almost half of the total acreage presumed to be in the Redwood National Park (49%) consists of three long-established and well-managed California state redwoods parks, Jedediah Smith, Del Norte Coast, and Prairie Creek. Congress assumed that California would donate the three parks to the federal

The recently authorized Redwood National Park, more than half of which would consist of already established and competently managed California redwoods parks, does nothing to protect many magnificent coast redwoods of the Forest Service's Northern Purchase Unit, and trees like that opposite will be lumbered unless further steps are taken. Sustained-yield lands of the Purchase Unit are presently scheduled for exchange with private holdings within the new park.



U.S. Forest Service

government. But the Governor of California spoke out against any such endeavor at the time, and nothing has happened since to indicate a change of view in Sacramento; in addition, the California legislature would have to act to grant ownership of these elements of the state park system to the federal government. So sensitive is this matter, which is integral to the establishment of a viable redwood national park, that at this writing, nine months after the act was signed, not even preliminary formal negotiations have commenced between state and federal governments.

Rumor has it that only if the federal government could offer some especially attractive inducements, in the form of federal lands or special favors, could the political climate change sufficiently over the next few years to effect the transfer of ownership on which the practical creation and economical management of the national park depends. And any such offerings would require a return to Congress for legislation, because the present law provides only for the outright donation of these California parks to the government.

Congress authorized a total of $92 million to make the purchases needed to create the park. To date $53 million has been appropriated for that purpose from the Land and Water Conservation Fund, and Congress is being asked by the Department of Interior for an additional $19 million, needed now. But the final price to be paid for the private holdings taken under the park act awaits boundary and timber-cruising reports being undertaken by private contract. These cruises are expected to be finished by early fall. Predictions vary widely as to the results; but if history repeats itself, it can be expected that the total asking price of the private owners will exceed the estimates originally made, and costly, time-consuming litigation may be expected.

Potential of the Forest Service's Purchase Unit for recreational purposes as well as sustained-yield timber harvest is extremely high, as the photograph shows. Locale is a quarter of a mile above the Service's Hunter Creek campsite on Hunter Creek. Forest cover here is a mixture of coast redwood and hardwood.

U.S. Forest Service

THE PRIVATE PROPERTIES to be taken for inclusion in the Redwood National Park present a rather weird scattergram on the map. In all, nine different pieces of land, each of substantial acreage, are involved, plus a number of small holdings totaling 150 acres or less. Four large lumber companies are directly affected, with considerable loss to them of standing timber. Arcata owns some 22,000 acres in the redwood region, of which half is to be taken. The other three companies are Miller-Rellim, 2260 acres; Simpson Timber, 5770 acres; and Georgia-Pacific, 3420 acres. None of the three will be mortally hurt by loss of these acreages.

A major sacrifice had to be made in order to get the redwood park bill through Congress over the combined opposition of those pleading "economy in government" and "no non-essential expenditures during the current Vietnam crisis," vigorously backstopped by the lumber industry and the boards of supervisors of the affected counties. For a third of a century the federal government has owned a forest of 14,567 acres, in which 12,047 acres support virgin growth where redwoods predominate. It was acquired mostly by purchase from private owners under the provisions of the 1911 Weeks Act, passed by Congress for the express purpose of increasing the federal forest holdings and establishing national forests to be operated under sustained yield and multiple use principles by the U.S. Forest Service. Here is a forest, already owned by the government, sitting in the midst of the areas to be incorporated into a national park. What better, if a national park were to be created, than to include this acreage in it? But that thought could not be entertained seriously; its presence tempted the lumber industry, and for several reasons.

First, if the law provided that this acreage be used for exchange for lands taken from private lumber companies, it would offset considerably what they were selling the government in stumpage. How much this amounts to in acreage is indicated by the fact that the government forest of 14,567 acres replaces all but 7,886 acres of the 22,453 acres which the government is buying from private owners.

Secondly, for many years private lumber companies have looked longingly at the fine timber stands in the national forest, whose annual cut is limited by sustained yield practices of the Forest Service, and whose forest floors, meadows, streams and mountaintops are available to recreation-minded people under multiple-use principles of management. Both these hindrances to unlimited logging could be removed or thwarted to some extent if the precedent could be established of requiring an exchange of land and stumpage whenever the government took private holdings for public purposes.

Thirdly, an economy-minded Congress and White House saw in the transfer of a valuable federally owned forest property a way to reduce considerably the total cash appropriation needed to establish the redwood park—it made the park more palatable politically.

So, despite the vigorous protests of the chief forester of the Service, and of many conservationists dedicated to the park's establishment, Congress gave in and placed at the disposal of the private lumbermen the 14,567 acres contained in the so-called Northern Purchase Unit. Thus went aglimmering the first unit of a national redwood forest.

As purchase and exchange of lands for the creation of the park take shape the Department of the Interior, which is now taking title to the Purchase Unit, is developing a plan by which the major companies will acquire shares of the government forest in some proportion to the stumpage and acreage they are selling the government.

Such are the outlines of the legislation, maneuvering, costs, preliminary plans and conditions to create an operating redwood national park. There is much more to be done before that acreage functions as a park.

Two contracts have been let by the Department of the Interior. For a survey of park boundaries, a contract was made with Bureau of Land Management. To cruise the timber within the area and in the Purchase Unit, another contract was made with a private company of timber cruisers. When reports are in hand in early fall, they will be reviewed by all interested parties.

A stumpage price was set as the wholesale price prevailing when the park act was approved in October of 1968. Land value was determined at a flat rate of $100 per acre. To cover the time between this date and the date when ownership title would pass, 6 percent accrues on the money finally agreed upon between government and private owners. Partial payments in the interim may be made against the final day of settlement, and a period of 10 years is allowable under the terms of the act to consummate sales and transfer titles. But, as of October 2, all lumbering ceased in the area to be acquired by the government.

As proof of action under way, the government gave wide publicity to a first down payment of $18,289,794.52, made to Arcata in April. Other such payments may be expected to follow. However, as the act provides, the final price will depend on the agreements reached concerning the acreage and stumpage cruising reports, and even this may result in litigation. The park, representing a net gain of less than 8,000 acres of redwoods saved from the chain saw, may be some time in the making.

If, ultimately, the new park does not include the three long-established California state redwoods parks, it will not be a large and unified display of redwoods or an economical and efficient park for the federal government to manage. It will be split up in many-sized separate units of uneven attractiveness. Because it is cut up with logging roads, landing platforms and assembly stations, and because all the features required for park visitors and managers are yet to be constructed, considerable money will have to be provided. Much time must elapse before the public will see the beauties of its fine vistas, stand in wonder at the foot of its great trees, and experience the thrill of viewing its forested slopes.

Dr. Anderson, recently retired as executive director of the Institute of Public Affairs in Washington, D.C., now operates a ranch near Doyle, in the California Sierra.

Without the three state parks the new park is eclipsed by the state parks themselves and becomes only another park in California. California's redwoods park system compasses 28 units totaling 108,000 acres, and contains more first-growth redwoods than the national park will possess—hardly a tribute to a great nation creating its first major park for the great trees.

Nor does the new park satisfy the conservationists who worked so long and selflessly for it. It does not preserve many truly magnificent redwoods soon to be logged. No amount of "park-making" under these circumstances can provide a truly great and satisfactory redwood preserve.

THE 1968 ACT EXEMPTED from exchange the government-owned redwood tract of 935 acres presently operated as the Redwood Experimental Forest, in the Forest Service's Northern Purchase Unit. Experiments in redwood forest management will continue under Forest Service auspices. The Service's research program, begun in 1959, has had meager funding and limited personnel, so that its findings are by no means adequate in answering important questions of logging, reforesting, disease control, timber management and recreational practices in a redwood area. Yet this is about the only objective experimentation of its kind on an adequate scale being conducted today. The private companies are primarily concerned with "payoff" programs in logging and lumbering.

When the redwood park act took the 14,567-acre federal redwood forest adjacent to the experiment station and put it up for logging by private companies, it destroyed the practice field of the experiment station. For the two were closely linked, affording an arena where the trial runs of the scientists could be put into practice under conditions normally prevailing in a working forest.

Although an attempt will be made to effect the working arrangements between the experimental unit and private companies, the situation is not propitious. Objectives differ, and immediate programs are sometimes irreconcilable. Nor is there substantial evidence that the private companies will conduct the research in management, maintenance and development of redwood-type areas that will insure present and oncoming generations the quantities and qualities of redwood lumber needed.

The experimental station has some evidence, not as yet conclusive, covering the relative values of various harvesting methods. Among these are:

Patch cuts, the clear-cutting of patches of, say, less than 20 acres as compared with the clear-cutting of large acreages practiced by private companies intent on getting the largest log scale at the lowest cost. In this process the big old-growth redwoods are being decimated.

Selective harvesting, to produce an uneven-aged forest supplying both young and old trees on the same ground.

It must be remembered that the redwood reproduces vigorously from old rootstock around the mother stump, as well as from seedlings. Other timber trees in the same growing area reproduce from seed, requiring that healthy seed trees be left growing in the logged area.

Shelterwood cuttings, aim to produce an even-aged stand of new trees in one, two or three cuttings.

These harvesting methods and their variations are being tried in the Experimental Forest, where effects of logging and growing practices on natural regeneration, wood utilization, costs, growth and vigor of new- and old-growth trees, role played by animals, erosion effects, water control, and slash removal are determined. The entire environment is studied in respect to the part each element plays in the forest cycle. Hampering, slowing down, or in some cases eliminating important features of the research effort of the Purchase Unit by removing acreage from participation in this work is penny wise and pound foolish.

Even at this late date, an all-out effort should be made by conservationists, both at home and abroad, and by scientists to require restoration of the Redwood Purchase Unit to the Forest Service. This would not delay the establishment of the national park, even though more money would be required; but it would prevent loss of this vital redwood forest and its research work, of great value to the entire redwood industry. Such an act of restoration would also reassert the principle that sound federal forest management precludes the selling of major parts of national forest lands for the single profit-making purpose of private logging companies.

Within its Northern Purchase Unit the Forest Service operates its Redwood Experimental Forest in which studies of redwood silviculture and ecology are conducted for the benefit of the Purchase Unit redwood stands and of private redwood holdings. Photograph shows an experiment in shelterwood cutting within the Experimental Forest, being studied for rate of stump-sprouting and general healing of the terrain after cutting. *U.S. Forest Service*

National and state policies are needed now to accomplish certain purposes which the efforts to create a national redwood park have brought out in bold relief. Among these are:

National policy and administrative directives requiring that outstanding specimen first-growth redwoods found in private forests shall not be cut and removed, but shall be protected and made available to the public.

National policy and administrative directives providing highway and roadway scenic shields and roadside stopping places for travelers on private as well as public roads in the redwood region.

Provision in the transfer of lands that already established or designated recreational areas shall remain for such purposes, and that the policies and practices of the private logging companies shall grant public access to their properties, to the streams coursing through them, and to waters adjacent to them for recreational purposes.

With passage of time the type of redwood offered for sale as lumber is changing. Old-growth trees are disappearing, to be replaced by young growth which is not the same in fibre character and uses. There are now less than 10 operating companies owning, harvesting and utilizing redwood timber. Their number will probably decrease with time, and the size of those remaining in business may increase as costs of operations and size of plants increase.

Volume of young growth redwood is rising—from an estimated 14.1 billion board feet in 1963 to an estimated 27.5 billion board feet by the year 2000. But the uses of redwood are multiplying and market demand is growing, so that the prospect indicates redwood as a premium product in our society as long as our Gross National Product grows and our population increases.

Even with the best of modern practices and the harvesting of trees on an 80-year growth cycle or less, demand for redwood lumber will continue to press hard on supply. The need for reforestation of the areas that once sustained redwoods along the northern California coast becomes imperative. Problems in this connection are many, and many of them require government attention. High on the list would be access to the large amount of low-cost money and long-term payout periods that only the government can provide. For many reasons we must turn to the federal government to establish and manage a new national redwood area forest of large enough dimensions to make available over the years additional millions of board feet of an important wood which our economy and style of living demand.

In creating a new national redwood forest, its more attractive parts, located in the picturesque canyons along the coast and in the valley floors of the higher elevations, should be earmarked and developed for park purposes. Thus, instead of ending our efforts with a single inadequate Redwood National Park, we could expect to meet, at least partially, the recreational, scientific and esthetic demands of a growing population by establishing several national redwood parks in the future. To do that will require serious planning, now. ■

THE POLAR BEAR

Hunting, disease, and reduced habitat have cast a shadow over the future of a mammal called "king of the Arctic"

By SHAWN CHRISTOPH

IN NOW-YELLOWING JOURNALS OF EARLY VISITS TO THE inhospitable Arctic, explorers as late as 1820 recorded that they saw many large white bears, "like sheep on a common," roaming over the ice floes. But less than a century and a half later two researchers estimated that there was only one polar bear for every 37 square Arctic miles.

The polar bear, long the king mammal of the Arctic, may soon be extinct. The ice it lives on has shrunk—though so far as we know now, through no fault of man—the seals it depends on for food are harvested for fur, and the bear itself has been put at a disadvantage by modern hunting methods.

This combination of factors has made the edge of births over deaths precarious. Scientists disagree on exact figures, but one reliable estimate—supplied by Dr. Vagn Flyger of the Natural Resources Institute at the University of Maryland—puts the world polar bear population between 15,000 and 20,000 and the yearly kill at 1,500—five to ten percent of the total! The bears have disappeared from some areas and have become scarce in others, such as on the coast of Greenland, where in 1808 the explorer William Scoresby reported seeing 100 bears.

The bear belongs to no one nation; it wanders around the international ice and makes sojourns into Alaska, Canada, Norway, Greenland, and the Soviet Union. In 1965 representatives from the five nations with territory bordering the pole—the United States, the Soviet Union, Denmark, Norway, and Canada—held the first international meeting on the mammal in Fairbanks, Alaska. They declared the bear an international resource and urged conservation.

The International Union for Conservation of Nature and Natural Resources in Morges, Switzerland, has placed the bear in its *Red Data Book,* the widely recognized official list of the world's rare and endangered species. The IUCN also sponsored a second meeting of scientists in Morges in 1968 to discuss how polar bear research and conservation were faring in the five nations.

In the United States the two most influential hunting groups, the Boone and Crockett Club and the National Rifle Association, no longer offer awards of recognition for shooting polar bears. The NRA took the bear off the trophy list because it believed it was "dangerously close to extinction." Cliff Morrow, director of the NRA Hunting and Conservation Section, gave as a second reason the use of light planes in Alaska which made it possible for hunters to chase bears over international waters where "national regulations could be ignored."

The Canadian zoologist, Dr. C. R. Harington, has chronicled the life of the bear. The blind, deaf bear cubs —usually a male and a female—are born in December in a den their mother has dug out of a snowbank. They stay there until March or April, when their mother leads them down to the sea ice. The little bears clown and box with each other as they tumble down the slope, but mother stalks deliberately toward a small air hole in the snow. Her massive paw descends on a seal in his den. By July the cubs like the taste of seal fat and blood better than their mother's oily milk. They learn to swim and hunt. After fattening up on seal meat and wild grasses, they again spend most of the winter in a snow den.

Their mother swims away the next August. The two bears are now 21 months old and weigh more than 400 pounds each but, unless they have learned well, may die of starvation or be killed by an older male bear.

Always a loner, the bear seeks out other bears only during the March to May mating season. The female can usually conceive only once every three years—one reason depleted populations revive slowly. When the embryo starts developing, around October, the female chooses a suitable hillside for a maternity den. Adult male bears may build winter dens as places of rest or refuge from extreme weather, but the bears do not hibernate.

Polar bears may reach old age in zoos; a bear in the Regent's Park zoo in London lived 40 years. They breed readily and become fat and playful. Life in the Arctic is rougher and shorter. Pelts taken from male bears show many scars, souvenirs of fights over females. Foot infections, arthritis, broken bones, and tooth decay plague older

bears. Hungry bears sometimes kill other bears, and wolves and large walruses take a small toll. But the bear is hardy. He survives in a world that the explorer Elisha Kent Kane described in 1856 as "a landscape such as Milton or Dante might imagine—inorganic, desolate, mysterious."

For centuries before the white man came to North America the bear was a subsistence item for the Eskimo. Intensive hunting by others began in the early seventeenth century, when whaling ships penetrated the Arctic. As the whaling industry failed, the seal trade replaced it; and this menace to the bear and its chief food supply continued into this century; in 1924, Norwegian seal hunters alone killed 714 bears.

There are other factors in the decline of the polar bear, such as the shrinkage of range over the last 100 years as the Arctic has become warmer. In recent years, too, more people and domestic animals have come to the southern Arctic, bringing with them their diseases.

As mentioned, no one knows exactly how many polar bears there are in the world today; estimates range from 5,000 to 20,000 in the wild, with at least 1,000 in zoos. Dr. Harington says that there are "well over 10,000" in the Arctic; but the Soviet scientist Dr. S. M. Uspenski believes that there are no more than 10,000, and possibly as few as 5,000. The reported worldwide kill is around 1,200; the unreported, probably not more than 300.

The two main sport-hunting areas are Alaska and Norway. From Alaska light planes fly out in pairs over the international ice to locate a bear. The plane carrying hunter and guide lands, and the second plane stays aloft to see if they have trouble landing. Too often the second plane herds the bear toward the hunter. In the Svalbard Islands off the Norwegian coast, the bears are hunted with set guns or from shipboard with rifles.

A dead bear is a valuable item in the world of pride and money. A polar bear skin, that perennial prop for photographing naked infants, sells for between $300 and $800. In Alaska, polar bear hunting has become a form of tourism that brings in about half a million dollars each year in revenues from licenses, food and lodging, guide fees, and other expenses. The U.S. Department of the Interior estimates that "each polar bear harvested in Alaska . . . contributes at least $1,500 to the economy of the State." Nevertheless, the IUCN believes that Alaska, Canada, and "perhaps" Norway have the most healthy bear communities. Since the 1930's, the bear stocks in the Soviet Union and Greenland have been depleted severely.

In 1956 the Soviet Union banned all shooting of polar bears in its territory. Addressing the 1965 meeting in Fairbanks, Senator Edward L. Bartlett of Alaska conceded that the Soviet Union was "the world's leader in the conservation and study of the polar bear." Set guns and trophy hunting are banned in Canada. Yet Eskimos, some with mechanized snowmobiles, accomplish a yearly kill of almost 500—the world's highest. Canada's Northwest Territories are experimenting with a quota system in Eskimo villages aimed at bringing the yearly total down to 386. In Greenland, the Eskimos—the only legal bear hunters—kill about 100 a year. No hunting is allowed from June 1 to October 31.

The Norwegian bear is protected on King Karl's Land and adjacent waters but can be hunted anywhere else throughout the year. Foreigners may use any method to shoot one bear per year, but they may not take mothers or cubs. About 300 bears are killed each year, most of them by professional hunters with set guns.

In Alaska two changes in the last 25 years—the lessening dependence of the Eskimos on game and the development of more efficient hunting methods—have completely changed the pattern of hunting. The regulations are increasingly strict. No mothers or cubs may be taken, and there is a summer closed season. The state tries to limit the annual harvest, which has averaged 300 in recent years, by controlling the number of guide licenses issued. Each guide may take out only six hunters a year.

Alaskan law says that airplanes may not be used to molest or herd polar bears in the state's territorial waters and that each trophy hunter may bring back only one bear into the state every four years. In fact, however, any hunter who shot his bear over international water and then returned home without going through Alaska could easily avoid the regulations. To close these loopholes, the bear needs an international treaty as well as local management. The scientists who met in Fairbanks in 1965 strongly recommended that polar bear harvests be kept conservative and that mothers and cubs receive absolute protection.

An international "Polar Bear Group" was formed in 1968 under the IUCN. Chaired by Dr. Uspenski, it is charged with collecting information on polar bears but, frustratingly, has no regulatory powers.

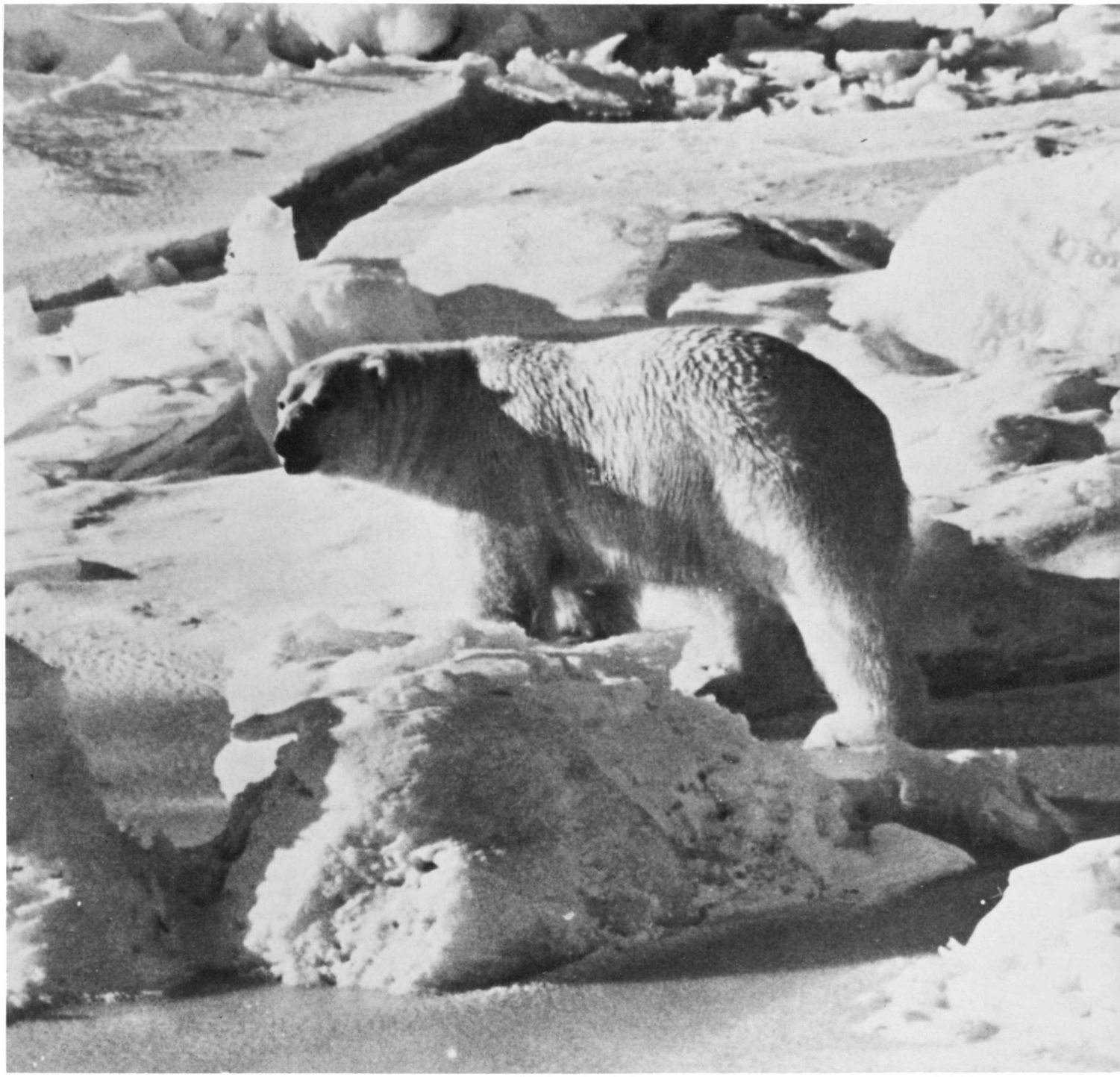
Research has speeded up since the 1965 meeting. Present studies have three main goals: to get a reasonable estimate of the number of bears in the world, to study their migration patterns, and to learn how they withstand arctic conditions.

Since the spring of 1967 the United States Fish and Wildlife Service, the Alaska Department of Game and Fish, the Canadian Wildlife Service, and the Norsk Polar Institut have been capturing and marking polar bears throughout the Arctic. Usually the scientists "shoot" the bears with a syringe gun containing an immobilizing drug. When the bear is again mobile, it has tags in its ears, a tattoo on the lower lip, and fur dye on the hindquarters.

Now Dr. Flyger, one of the scientists who worked out this technique for polar bears, plans to track bears by satellite. He and his colleagues will attach collars with small transmitters to 50 bears. The National Aeronautics and Space Agency has agreed to follow them with the Nimbus satellite, which will be able to chart their movements every two hours for half a day over the six-month life of the satellite.

When the facts are all in, the scientists will be able to make their case. Meanwhile, the polar bear is trapped in an ice block of procedural inertia. Persons who value the bear see the ease with which it is hunted. They notice that it has disappeared from many areas. They fear that it is dying out, but until better ways of surveying bears—such as planes with heat sensing devices—are devised, they will not have the hard figures to prove it.

Can the big white mammal wait that long? ■



U.S. Coast Guard photograph, courtesy Bureau of Sport Fisheries and Wildlife

Among the many species of bears the polar bear, Thalarctos maritimus, *is one of the largest, full-grown males commonly being 7 to 8 feet long, and up to 5 feet tall at the shoulder, and weighing on average around 900 pounds, with weights up to 1,600 pounds having been recorded. The mammal is documented in the* Red Data Book *of the International Union for Conservation of Nature as rare and endangered, although there is much yet to be learned about its present position and future prospects. As an inhabitant of the arctic lands of several nations, the polar bear and its survival become an international question; to date, the Soviet Union has shown the greatest interest in protection for the mammal, having adopted strict anti-hunting legislation as long ago as 1956.*

Photograph by Litton Industries

Photograph by Charles Ott

Man has abandoned the familiarity of life in small communities for the smog-shrouded spires of his cities. Most animals, as this hoary marmot, stick to a home range in which dangers and supply sources are well known. Familiarity breeds a measure of security. In the city little is familiar, and security is tenuous, depending on the whim of those bringing in supplies and on the fortuitous avoidance of numerous unknown dangers. Now the immediate survival of the cities themselves is threatened by an exponential increase in administrative complexity precipitated by the population explosion.

TOO MANY STRANGERS

By DURWARD L. ALLEN

The population boom breeds a greater explosion in the complexity of human relationships

THE WILD CREATURES OF THIS EARTH HAVE SURVIVED because each performs a useful function in a reasonably stable ecosystem. Any living thing that is too successful destroys the sources of its livelihood and disappears with the community on which it depends. Man's vast power play in using, if not inhabiting, nearly every environment on this planet could be self-defeating if he does not have the insight to impose his own controls and to work for that necessary stability in his ecosystem.

Over the past quarter-century, an increasing body of scientific leadership has been concerned with the accelerating increase of world population. Major advances in the last two decades in the control of infant mortality and epidemic disease and some relief of food shortages have reduced death rates in many tropical countries by about half. Humanity as a whole is on a logarithmic population curve. The 3.5 billion people now inhabiting this globe are on the way to doubling by the end of the century. Unless strenuous counter measures are taken, in the United States our 200 million citizens will increase to more than 300 million in the same period.

It is reasonably certain that worldwide there will be a billion more people to support in another decade. Already more than half the world's people are underfed, and many are starving outright. There is literally nothing to spare for that upcoming billion. Food production technology has made important recent gains, and food scientists are making every effort to rescue mankind from major disaster; yet there are few who expect such efforts to overtake the eruption of human numbers. There is a growing consensus that the chance of avoiding demographic reckoning in the so-called developing countries is small. Within 20 years hundreds of millions will face starvation and death.

Although some sociologists and economists will not agree, I postulate that the problems of human welfare are biological, behavioral, and economic—a spectrum in that order. There are no interfaces where one leaves off and another begins. The whole gamut of conditions and variables is something new in the way of an ecological complex. Understanding and solutions require not only the detailed knowledge of specialists but also the broad appraisal of the generalist, who has extended his interests enough to communicate with a variety of specialists. The time is not far ahead when generalists will have to be appointed to high government commissions and committees.

It may be that we do not fully grasp what is happening to us and that a reexamination of our primordial heritage will be worthwhile. Long before the human line became human there were millions of years of evolution in which the ancestral stock occupied its functional niche in the ecosystems in which it was found. We pay penalties when the primitive inner man is outraged too far. There could well be clues to human rights and wrongs in the social and habitat adaptations of common animals.

A few of these characteristics are so nearly universal that they are worth reviewing. In temperate latitudes, the young of most species are born in spring and summer, and they develop to a subadult stage in late summer and fall. These adolescents commonly wander widely in a so-called fall shuffle, evidently seeking a place to live where they will not be in competition with their parents. The farther such individuals move in strange country, the higher is their mortality rate. They are at every kind of disadvantage, including the need to invade desirable space already occupied by their own kind.

When the wanderer finds a location where food, cover, the level of competition, and other factors are in useful combination, it settles down into a home range. This is a unit of habitat where the animal becomes familiar with

the terrain, develops its routes of travel, knows the location of every necessity, and is best able to escape from enemies. Seasonally, at least, it does not leave the security of its home range. Here it has relationships of tolerance with other individuals of the same species whose ranges overlap. A high-quality home range is a small one, where daily needs can be fulfilled with a minimum of movement. Both economic security and behavioral ease are found by the animal in its own familiar surroundings. Residents tend to display antagonistic behavior toward strangers.

LET US NOW CONSIDER a human analogy, the resident of a small town in rural America, perhaps in the more simple times of 40 years ago. The person in question has a high degree of self-sufficiency. He has a garden and a cellar stocked with food. He has a well, his own outdoor plumbing, and his supply of fuel for heat and lighting. He disposes of his own trash and garbage.

His home range is small. He commonly gets to his work or wherever else he needs to go by walking. He has recognition relationships with most of the people of his community. Here he has feelings of security and comfort. There is, he says, no place like home. The high degree of independence of this individual becomes particularly evident under "emergency" conditions. He can ride out a winter blizzard with composure, and most of the dislocations that affect him can be met with his own efforts. He needs a minimum of public service.

What of a dweller in one of our large cities? Passing over the social and economic enclaves that produce something akin to small-town conditions, let us select an individual who probably is more representative. Wherever he lives, he is dependent on a wide range of public services. His food, water, fuel, and power are brought to him, and his wastes of every kind are taken away. His work is likely to be many miles removed. To fulfill a specialized function in his community, he must meet a rigid transportation schedule in getting to the place of employment and returning home daily. Likely enough, he passes through territory that is largely unexplored and unfamiliar, and he has continual contacts with individuals with whom he is unacquainted. He has lurking anxieties in dealing with a wide range of unpredictable situations. He may develop the social callouses and aggressive behavior frequently observed in the residents of large cities. In a measure, the city dweller has lost his identity in a social melange that is diffuse and uncertain—a continual fall shuffle.

This individual is dependent for many things. He is vulnerable to every kind of public emergency. A drought or power failure, a strike or riot, a heavy snow that ties up traffic, can immobilize him and jeopardize his security. In this aggregation of largely strange humanity, he finds many of his activities organized and regulated. In turn, he needs protection from his fellow men; in concentrations of people it is evident that aberrant and antisocial behavior must be dealt with, and there are health hazards to be guarded against. It exemplifies the unusual adaptability of the human being that so many can tolerate these essentially unnatural conditions as well as they do.

Inasmuch as all higher animals are socialized in some degree, a measure of association between individuals is beneficial. It follows that with the increase of numbers an optimum density is reached in terms of behavioral needs and available habitat resources. At population concentrations higher than this optimum we see the development of excessive competition for space and other necessities and the consequent breakdown of normal social relationships.

The pressure of dwindling supplies and warped behavior patterns that builds up can be described by the term "stress." Eco-social stress is an elusive phenomenon—difficult to define, analyze, and quantify. For such reasons, scientists have largely avoided this baffling universe of inquiry in their investigations of population mechanics and animal relationships, although the physiology of stress is somewhat better understood.

To help understand the nature of high-density stress in human society, we may look at some of the findings of Alfred Korzybski several decades ago in the field of general semantics. Korzybski explored the increase in complexity of functional relationships or problems as individuals are added to a managerial system. He noted that the addition of individuals or functions in a relatively simple organization gives rise to an exponential increase in the number of relationships and resultant difficulties. At the root of the problem, said Korzybski, lies the fundamental difference in the rate of growth between arithmetical and geometrical progression. The neglect to differentiate between the growth of arithmetical and of geometrical progressions led him to despair that those who govern could find the wisdom and means to meet their proliferating managerial tasks satisfactorily.

IN SIMILAR FASHION the growth of populations and of nations produces a vast organizational complexity that expands out of proportion to the build-up of population. If, for example, our present world of 3.5 billion doubles by the year 2000, it might be supposed that the problems of government and social affairs would be twice as great. This would indeed be sufficient unto the day, but such a concept probably falls far short of reality. If we assume that the complexity of relations among one billion people is represented by an index of one, then the figure for three billion would potentially be 18 and for six billion 222!

The build-up of stress undoubtedly takes place correspondingly. The phenomenon has not been measured or even dealt with theoretically. It is the resolution of many density-dependent tensions, competitions, stimulations, and interactions. It is a plexus of curves that rise exponentially with every increase in population. The computer is ideally fitted to reveal how these many variables synergize, but programming anything but a simple model using highly "psychic" estimates is beyond present technology in the field.

Americans are accustomed to thinking of mass production as a means of attaining efficiency and lowering the cost per unit. This clearly does not apply to human beings. As people multiply and concentrate, they require more protection and service of every kind, which are correspondingly more costly.

This raises significant questions about our present population level. Is this great and burgeoning complexity related to our always increasing costs of government, our deficits,

our inadequacies in dealing with social problems—especially the rising rates of mental and pyschosomatic disease and crime? Does it help to explain why municipalities and state governments find it progressively more difficult to collect enough taxes to carry out their commitments to education and other multiplying functions? Adding more land to the tax base does not solve any problems when at the same time it adds enough people to create an exponentially increased demand for public expenditures which more than uses up the new tax income.

Note also that the labor force is growing with the population—at a time of increasing industrial automation. We are committed to a policy of full employment, and surplus labor must be added to private and governmental payrolls. This policy contributes to the tax burden and the cost of goods and degrades the effects of technology as a means of raising living standards.

If population growth beyond an optimum begets problems that increase more rapidly than human numbers, it might be assumed that this only bespeaks the immaturity of our social and economic science—that in due time man and his computers will handle the problem and produce a high living standard despite the difficulties. To an extent, this undoubtedly is true. But whether management skills can overtake a problem that is growing geometrically, and especially whether it can be done in a degree and in time to be a relief to this generation and those immediately ahead, is highly questionable.

It is evident that many of the high-density problems of humanity result from our increasing predilection for urban life. Some 70 percent of the American people now live in cities of more than 50,000, and the proportion is increasing. This fact is relevant also to the usual approach to helping the underdeveloped two-thirds of the world. It is a common economic view that rural populations of these countries must be gathered into cities and their land given over to large-scale mechanized agriculture. It is assumed that industrialization in our image will bring them the blessings of modernity.

Even assuming a drastic Malthusian reduction of population in the next 20 years, as seems inevitable, one wonders whether governments of the countries in question can achieve the sophistication that could make such a change of life possible for their remaining citizens. To an important degree, we ourselves have fallen short in dealing with the challenge of complexity. The President's Council on Recreation and Natural Beauty last year remarked: "No major urban center in the world has yet demonstrated satisfactory ways to accommodate growth. In many areas expanding population is outrunning the readily available supply of food, water, and other basic resources and threatens to aggravate beyond solution the staggering problems of the new urban society."

The concept that industrialization can be the salvation of overpopulated and impoverished countries seems also to neglect the fact that our own system is based on an abundance of native and imported wealth. The inhabitants of North America—only 7 percent of humanity—are using about half the world's yield of basic resources. Sociologist Philip M. Hauser has stated that at our standard of living the total products of the world would support about half a billion people. This seems a dim outlook for the 3.5 billion now alive and those yet to come.

At a cost to themselves and humanity, Americans have shown little understanding or respect for the cultures of other peoples. It might become us—and help us to avoid responsibility for further great errors in dealing with the developing nations—to proceed slowly in overhauling their social and economic systems.

THERE APPEARS TO BE unmistakable evidence that the world at large has passed the optimum level of population. It has been widely assumed that this does not apply to the United States, but the foregoing considerations seem to indicate that we should be diminishing our problems at the source rather than always trying to outrun them. The population problem has no technological solution. Perhaps the most evident sign of our overabundance is the wholesale degradation of the environment by human works. The technological explosion has been accompanied by a corresponding reworking of the face of the land. The widespread pollution of water and air and the despoliation of natural beauty need no documentation. The solid wastes to be disposed of now aggregate 4.5 pounds per person per day. Thermal modification of natural waters as a result of power production is doubling in 10 years. There is ample evidence that in North America we have exceeded the capacity of the biosphere to degrade and assimilate our wastes.

Not only should we be making strenuous efforts to avoid further population increases, but real and rapid progress toward better standards of life in America probably must await the attaining of a negative birth rate.

Nowhere in the state of nature do we find animals prospering so well, surviving in such large numbers, living so long, and reproducing so abundantly as when a population is expanding to fill a vacant environmental niche. Of course, this is what has happened in North America during the past 300 years. The white man has displaced the Indian and has taken over his resources for use at a "higher" cultural level that can support many more people. It is perhaps understandable that modern Americans have been seized by an expansionist euphoria that attributes collective weal to the growth process itself, rather than to the availability of resources on which growth can take place. The "expanding economy" idea has passed from the stage of useful realism to one of economic dogma.

Two of the easy approaches to success in business and industry have become routine. First, we have assumed the right to pollute air, water, and land or to mutilate the scenery as a valid part of the profit-taking process. Second, because we have always had it this way, it is assumed that every enterprise has the right to expand through continuous increases in customers—which takes place through additions to the population. The view that this process goes on indefinitely and that it holds the key to the American dream is behind the huge promotion now under way to attract new industry and build population in practically every community that can support more people through private or public development.

One who reads the transactions of the Western Resources Conferences will learn that as of 1960 there were $22 bil-

Photograph courtesy U.N. Food and Agriculture Organization

Famine in China. The world seems to be used to hunger in Asia. With a billion more humans due in a decade and no likelihood of enough food for even the present population, the phenomenon is likely to become more universal and even more tragic.

lion worth of water development projects for 17 states in the files of the Bureau of Reclamation—plans that engineers considered feasible. These projects are planned for construction by the year 2000. It is assumed that every river system must come under complete control, with the total water supply utilized to establish new agriculture, new industry, and more people (estimated at 25 million) in all the undeveloped open space that can be found. There are enthusiastic promoters of this program in Congress and, needless to say, in the local electorates involved. Plans for more economic development for other sections of the country are going forward accordingly.

I do not imply that all such enterprises are not in the public interest, but to make these far-reaching resource decisions, our representatives in Congress must have access to every kind of information and point of view. They are frequently reminded that they represent the construction industry which moves the earth and pours the concrete. But they likewise represent the mass of silent taxpayers who unwittingly support the great works with their baffling cost-benefit ratios. The Congressman must be the reliance of the people at large who need the freedom of open space and the renewal they can draw from scenic beauty and outdoor recreation—people who have little concept of what is happening.

The people know only that we are dedicated to "progress." Where the progress leads or what kind of world is being contrived they are never told. Has someone decided for them that we are to have no hinterland? Are there to be smokestacks in every wilderness, a smog over every countryside, the threat of extinction over every flowing stream? Must inevitably a jostling horde tramp over every wilderness acre?

It needs to be understood clearly that human numbers do not grow in thin air. They are a response to the broadening of the resource base and the opening of vacant or sparsely occupied areas through developments that support new communities. This is one way in which population can be manipulated—increased by creating more centers of build-up or reduced by deliberately preserving open spaces for less intensive uses. It seems evident that we have no public incentive to increase population, yet our planning has been consistently in that direction.

THE 1968 REPORT of Congressman Emilio Q. Daddario and his Subcommittee on Science, Research, and Development observed that "the population explosion is fundamental to the requirement for environmental management. Population must come under control and be stabilized at some number which civilization can agree upon. Otherwise, the best use of natural resources will be inadequate and the apocalyptic forces of disease and famine will dominate the earth."

Dr. Durward Allen is professor of wildlife ecology in the Department of Forestry and Conservation at Purdue University. This article is adapted from a paper presented at the 34th North American Wildlife and Natural Resources Conference held in March in Washington, D.C.

Stability and an agreed-upon population level are indeed worthy objectives in realistic planning for the future. This cannot be a cookbook approach with flat rules and precise standards. Conditions in both space and time are too uncertain and variable. But in ecological perspective it is possible to appraise trends and influences. For now, a curb on birth rate by every acceptable means and a major reduction of the government-sponsored environmental onslaught are two requisites of the greatest urgency. It is heartening to see signs that these are getting attention in Congress.

Many have pointed out that we are inextricably entangled in affairs of the world, and that the amplified scale of human misfortune is our doing—through acts of beneficence to nations who could not control their birth rates, especially without the knowledge of birth control methods we were unwilling to share. We are deeply involved at present in food shipments to the needy, and technology is being exported at an increasing rate.

Fortunately, there is growing appreciation that population limitation is both essential and inevitable in this nation and elsewhere. The United Nations has finally become active in the field, and some progress at last has been made in our own Congress and in the executive branch of the government.

It is still a fact of life, however, that our leadership is not in depth. It is leadership of informed and concerned individuals, diluted by the attitudes of the many elected representatives who, with a political ear to the ground, choose to ignore the tramp of approaching millions. As this situation changes, we may expect to see greater appropriations for bio-medical and social studies of population control. There must be demographic aid to other nations on the scale demanded by the crisis. Integral with these efforts must be solution of the problems of environmental degradation that are the progeny of overpopulation.

We have come to a threshold in world and national affairs where there is immediate need to apply sophisticated, up-to-date thinking if we are to mitigate, rather than augment, the growing miseries of mankind. Around the earth, however, much that needs to be done is still blocked by a massif of ignorance.

Nevertheless, the wars of history have made greater personal demands on men of many countries than what must be asked of the world's people in the years ahead. Solution of the population issue does not brutalize the masses and inflict hardship on the innocent, as would war, but instead calls only for reason backed by all the skills social science can muster. In our own nation public acceptance of new ideas in this area is of enormous urgency; tangible resources rather than just talk need to be applied in bringing it about. Many of our old traditions, assumptions, and slogans need a searching review with open-minded willingness to innovate.

Most of us are all too aware of the unrest of the new generation of our citizenry. I make no case for those who march and protest with no real effort at problem solving. But we probably can ascribe some of their social malaise to the frustrating complexity of the world in which they find themselves—a world in which there is no reassuring guidance toward recognizable goals, no convincing reasons to assume that the individual has a defensible purpose in existing.

There is, to be sure, an establishment devoted to high-sounding maxims that are supposed to be worthy and venerable but which confuse rather than simplify our human problems. In the sum-total of their ecological malpractice, the elders are heading humanity toward the damnation of the lemmings. If young people do not see this at once, it is because no one has given them any rational concept of man's relationship to the earth or any basic ethos of human respectability. In our overgrown institutions of higher education the husbandry of intellects is monitored by humanists who are not biologists and biologists who are not humanists. The student learns the "how" of doing great things but the "why" of nothing.

In this time of television, moon exploration, and the imminent availability of nearly unlimited sources of energy, it is obvious that accomplishments in engineering and its supporting sciences are awe-inspiring testimony to the capacity of the human mind. Attending all our technical triumphs, however, is a growing realization that we have a critical area of weakness. While we know how to do fantastic things, we frequently do not know when or where—or indeed why—to do them.

THE PROBLEM TRANSFERS ITSELF from physical science in the development and use of hardware to another sphere in which we are less competent, that of the biology and ecology of man.

The nature and proportions of this problem bespeak the complexity of the systems of nature. Even though the physical characteristics of matter and energy are intertwined in the question, they are far less involved than the limitless intricacies of the world of living things. Biological systems include all the variables of physical science plus the endless elaborations of more than two billion years of organic evolution. To the structure and physiology of the living organism are added the organization of ecosystems and the behavioral adaptations that are essential to survival.

In these dimensions were the origins of man. Now his culture has taken it upon itself to reorient man's own speciation and vastly modify the habitat in which he developed. If, with the tools now at his disposal, he blunders unaware into the throes of overpopulation and environmental ruin, he could in a tick of the geological clock be carried away to oblivion.

Pessimism always has a hollow ring. But where so much is at stake, there is more safety in planning for the worst than always hoping for the best. The truth is that today's greatest problems will not be solved. We are too late, and we failed for lack of foresight. Only tomorrow's problems can be solved—and only if we of today agree to be responsible for tomorrow. ■

U.S. Forest Service: Clint Davis

Many conservationists would like to see the Middle Snake River afforded national protection for its great outdoor recreational opportunities and its scenery and geological story. Already heavily dammed in its upper and lower parts, the Snake is currently being viewed for further development at the High Mountain Sheep site near its junction with the Salmon River. An example of recreation country in the vicinity of the Snake is the Seven Devils region of the Nez Percé National Forest, below.

U.S. Forest Service: Frank Tinker

A HELLS CANYON–SNAKE NATIONAL RIVER?

By Cyril M. Slansky

BEHIND EVERY NATIONAL PARK, NATIONAL MONUMENT, or wilderness area is a story of conception, organization, struggle for recognition, and authorization. One area of tremendous scenic and recreational value which is in the middle of such a course of development is the Hells Canyon region of a great American river, the Snake; but at the moment, the outcome of the struggle to keep the canyon natural is in the balance.

Located on the boundary between Idaho and Oregon, Hells Canyon is formed by the Snake as it cuts its way through thousands of feet of Columbia River basalt. Middle Snake River, as it is more accurately known, cuts a canyon 6,550 feet deep, which rightfully claims the title of the deepest gorge in North America. Not only the canyon but the surrounding timbered rim lands constitute a vast *de facto* wilderness of rivers, lakes, and rugged mountains. The region—shown by the map on page 20, can be reached by but few roads and also by jet boat up the Snake River from Lewiston, Idaho, and Clarkston, Washington.

Upstream and actually extending part way into Hells Canyon is a series of three reservoirs that transfer the turbulent Snake into a 100-mile-long millpond capable of developing 1.1 million kilowatts of electricity through a 602-foot head. These reservoirs are formed by the Brownlee, Oxbow, and Hells Canyon dams, whose history is not a part of this story.

Below Hells Canyon dam the Snake drops nearly 590 feet in 59 miles before reaching its confluence with the

Salmon, the fabled "River of No Return." The Snake drops gently in its remaining 188 miles to the Columbia River. In the 139 miles below Lewiston the Snake is to be completely dammed, as will be the Columbia River. These dams are used for hydroelectric power, irrigation, flood control, and navigation.

The Middle Snake above the Salmon offers potential for producing about 4 million kilowatts of peaking hydroelectric power and has been the object of competing power-producing interests for many years. The controversy between the Pacific Northwest Power Company (PNPC) and the Washington Public Power Supply System (WPPSS) for a dam on the Middle Snake culminated in a Supreme Court decision in 1967 that stated that not all the issues relevant to the public interest had been considered. Those issues not considered were future power demands and supply in the area, alternate sources of power, the public interest in preserving reaches of wild river and wilderness areas, the preservation of anadromous fish for commercial and recreational purposes, and the protection of wildlife. This decision—a landmark in the development of preservation—recognized that other uses of a river might be to the public's interest in addition to its use for the production of cheap electricity. For the first time the Federal Power Commission was required to review requests for licenses to build hydroelectric dams on the basis of many more criteria than formerly.

The first license application under the new ruling was a joint application by the PNPC and WPPSS; they requested permission to build the High Mountain Sheep dam, a mile above the confluence of the Salmon River, and a re-regulatory dam at China Gardens 17 miles downstream. Hearings on this application were held by the FPC in 1968. (Other potential damsites in the same stretch of river are the Appaloosa, Low Mountain Sheep, and Pleasant Valley.) At the hearings, testimony was presented on the effects of a dam on the esthetics, recreation, wildlife, anadromous fish, and archeology of the river.

Late in 1968, before the discussion of alternate sources of power could be completed, the power companies petitioned for a six-month delay in the FPC hearings in order that the power companies could attempt to get permission to build a dam by Congressional action. The proposed procedure would be that the power companies would prepay the Department of Interior for 50 years of electricity, thus allowing construction of the dam. In this way the dam would require only Congressional approval (not FPC approval) because it would be a federal project. Concurrently, Idaho's Senators Frank Church and Len Jordan and Congressman Orval Hansen submitted a bill in Senate and House placing a moratorium on all dam-building activities on the Middle Snake for 10 years, hoping that in this time many of the unsolved problems resulting from building a dam will be studied and solved and a better decision made possible for the future of the river.

Finally, a group of preservationists under the leadership of the Hells Canyon Preservation Council, which has been opposing any construction of a dam in the Middle Snake, has proposed a Hells Canyon–Snake National River idea for the region.

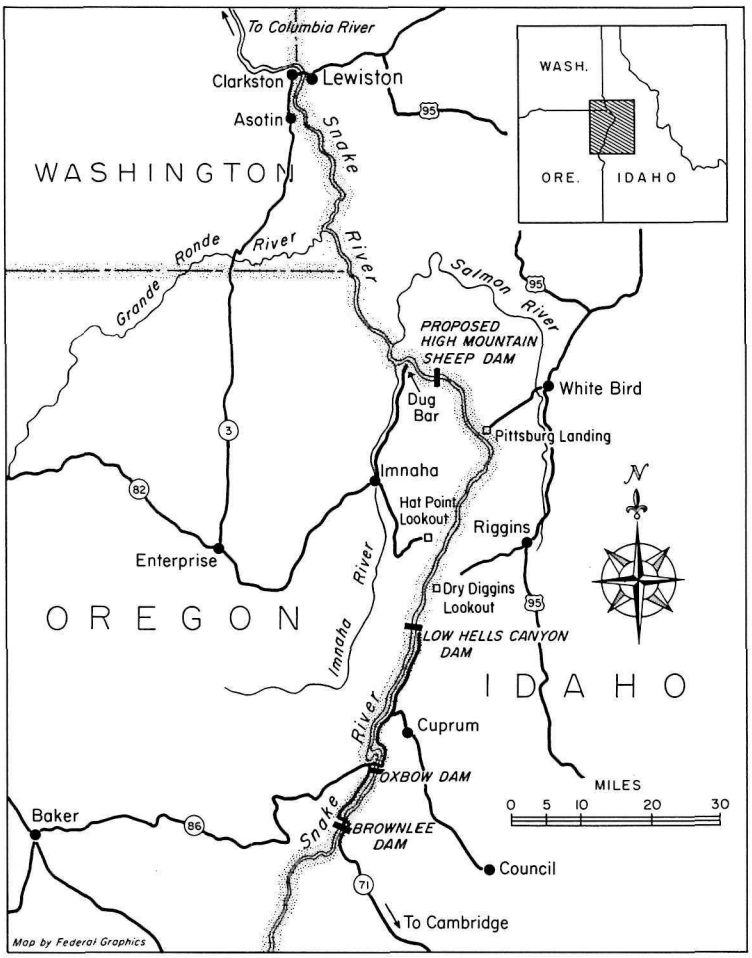
The proposed Hells Canyon–Snake National River idea provides for three administrative units: the Seven Devils Unit, comprising 256,000 acres in Idaho; the Imnaha Unit of 335,000 acres in Oregon, and the Snake River Unit of 30,000 acres along the Snake and Salmon as a one-quarter-mile easement from Asotin, Washington, to the other two units and to Riggins, Idaho. The entire area would be administered by the Department of Agriculture for recreational purposes. There would be no dams on the Snake, Imnaha, or Salmon Rivers within the area. However, hunting and fishing would be encouraged. Improvement of two roads into the canyon is provided—from White Bird, Idaho, to Pittsburg Landing and from Imnaha, Oregon, to Dug Bar.

WHAT DOES THE REGION CONTAIN that makes it such a valuable recreation area? It possesses a complex collection of esthetic and recreation values. First, it is isolated. Its rugged terrain has made Hells Canyon difficult to approach, and inasmuch as it is primarily wilderness, its wonders have been lightly publicized. It is hoped that Hells Canyon will not meet the fate of Glen Canyon farther south. (Brock Evans has aptly named it "The Glen Canyon of the Northwest.") The wilderness of Hells Canyon is unique. Trails along the river diverge at various side-canyons to rise more than 6,000 feet to the high plateau bordering the canyon. Hat Point on the Oregon side is 5,500 feet above the river, and Dry Diggins Lookout in Idaho rises a striking 6,550 feet above the river over a horizontal distance of two miles. All this country is ideal backpacking country. A beautiful trail circles the Seven Devils Mountains and provides a wilderness experience of its own. The peaks have such names as He Devil, She Devil, Satan's Throne, and Tower of Babel, and one entrance to this sinister-sounding country is called Heaven's Gate!

Hells Canyon has a fish and wildlife population ideal for recreational enjoyment. Salmon use the Snake River to gain access to spawning grounds up the Salmon and Imnaha rivers. Rainbow trout, steelhead, and chinook salmon occur throughout Hells Canyon. The white sturgeon has made this free-flowing stretch of the Snake its last stronghold in the northwest. Only in the deep holes of the rapidly moving Snake and in the aereated rapids can the sturgeon feed and spawn. Similar stretches in the rest of the Snake and the Columbia have been altered to such an extent that the sturgeon is no longer found in those sections. Giant eight- and nine-foot fish are still caught in Hells Canyon, although the legal size for keeping is from three to six feet. The high mountain lakes in the Seven Devils Wild Area bordering the canyon on the Idaho side teem with a variety of trout.

Elk and deer abound in the 60-mile stretch between Hells Canyon Dam and the Salmon River. The Department of

Dr. Slansky, a scientist on the staff of the Idaho Nuclear Corporation, is active in wilderness preservation in Idaho. He is a member of the board of directors of the Hells Canyon Preservation Council and the Greater Sawtooth Preservation Council, and has been Idaho vice-president of the Federation of Western Outdoor Clubs for many years.



the Interior has estimated 28,600 deer and 5,400 elk in the area. These animals range the high country in the summer but migrate to the lower portion of the canyon in winter. The meadows along the Snake are used intensively by wildlife when heavy storms on the rim pile the snow many feet deep. It is a striking feature of Hells Canyon winter weather to see little or no snow in the lower 500 feet of the canyon. In fact, the mildness of the deep canyon leads one to speculate on its use as an off-season recreation area of unusual interest to wildlife fanciers. Other animals in significant numbers include the black bear, otter, mink, marten, coyote, cougar, bobcat, and raccoon. The river is nesting area for geese and ducks; and the ridges hold many blue grouse, Franklin's grouse, ruffed grouse, and quail. The chukar partridge has been introduced and now is the most abundant game bird.

Hells Canyon contains a formidable wild river. How few wild rivers are left in our country! How exciting is a float trip down a wild river, or a jet-boat trip up such a river! True, the three dams immediately upstream do regulate the flow of water in Hells Canyon. But the river still runs free over rough rapids, along sandy beaches, and through deep holes, always polishing walls and boulders. The grassy meadows along the river furnish winter range for many animals. This stretch of the Middle Snake is the last wild portion of the Snake-Columbia River system in the northwest.

The Middle Snake contains a number of historical and archeological sites; but only two out of a total of about 160 known archeological sites have been excavated. The success at the Marmes site on the Palouse River in Washington in locating early man in the northwest might well extend along the Snake River into Hells Canyon, for the canyon would have produced food and shelter during winter for the prehistoric people who inhabited the west more than 10,000 years ago. Chief Joseph of the Nez Percé Indians was familiar with Hells Canyon and led the remnants of his retreating army and their families across the river during high water in the spring of 1877 without losing a person—a tremendous achievement.

IT IS APPARENT that by developing the hydroelectric capacity of the remaining free-flowing stretch of the Middle Snake many of the esthetic, scientific, and recreational values of the area will be seriously affected. At the request of the Federal Power Commission the Department of Agriculture has analyzed the impact of a dam at the High Mountain Sheep site. In a letter from former Secretary Orville L. Freeman to the FPC dated November 8, 1968, the Secretary recommended, "In view of the value of the canyon for its own sake, as well as the recreation, wildlife, commercial fishery and sports fishery values, a dam at the High Mountain Sheep location is incompatible with natural resource values and should not be built." He went on to say, ". . . it is the view of this Department that no dam construction in the canyon be undertaken or licensed unless a need for this increment of power and its proper place in the time schedule for northwest power development are clearly established." The latter statement referred to the Appaloosa, Pleasant Valley, and Low Mountain Sheep as well as the High Mountain Sheep sites.

An increased feeling for the esthetic, recreational, and scientific values of Hells Canyon is developing as more people visit the area. The numbers of those taking river trips into the canyon have increased greatly, as is true also on the Colorado River in the Grand Canyon. Hells Canyon has a wide range of climate; the rim can have a foot of new snow during the middle of August, and temperatures in July can top 115° F. on the river.

Access by road is not the best. Roads to the canyon rim can be snowbound until late June and are not considered all-weather. The only oiled road is the construction road built by the Idaho Power Company and used by it in building Hells Canyon Dam. This road winds down the Snake from Brownlee and Oxbow dams and is reached from either Cambridge, Idaho, or Baker, Oregon. Six years ago the U.S. Forest Service designated 130,000 acres along the river as the Hells Canyon–Seven Devils Scenic Area. The Service claims that this land represents one of America's great outdoor recreation possibilities for the future. Conservationists of both the region and of the nation at large are convinced that the Service is correct and that High Mountain Sheep dam should not be built. ■

IMPORTANT NOTICE

Despite efforts by several national Administrations to deal with inflation, that monetary phenomenon has exhibited a glacierlike advance in the past several years—an advance measured by knowledgeable persons at some 5 percent a year. Inflation plays no favorites among either individuals or organizations; nor does it, among organizations, distinguish between nonprofit groups dedicated to the public service, like this Association, and corporations and businesses that must profit or perish.

Thus the Association must announce a dues increase, to be effective as of September 1 of this year, along with a somewhat revised category of memberships, as follows: associate members, $8.00 per year; contributing members, $12.00 per year; supporting members, $40.00 per year; sustaining members, $80.00 per year; and life members, $500.00.

At the same time, however, commencing with the September issue, four more pages will be added to *National Parks Magazine*, which will thus continue its measured growth and its ability to bring Association members, in word and picture, a larger view of conservation's vital role in our modern world.

News and Commentary

NPA Recommendations on Alaskan Development

In early August the National Parks Association called on President Nixon to institute policies to protect against serious environmental damage in Alaska as a result of extensive oil development and of excessive logging operations.

In a letter to the President, Anthony Wayne Smith, president of this Association, said that "the environment and resources of Alaska are in grave danger as a result of the headlong rush to develop the oil resources of the North Slope in Alaska and the overcutting of the National Forests." Smith made the following recommendations to the President as Chairman of the Environmental Quality Council:

Withholding of a permit for an oil pipeline from Prudhoe Bay to Valdez until protection can be assured of the tundra and the permafrost on the North Slope and a determination can be made of the feasibility of water transportation through the northwest.

Withholding a permit for right-of-way for road construction through the area until a sound decision can be made on the pipeline.

A thorough review of logging operations in the National Forests, which appear to be excessive, and of the wildlife situation in Alaska as it is and may be affected by oil development, logging operations, and uncontrolled hunting.

President Smith's recommendations were made following a two-weeks tour of Alaska, where he found that as a result of faulty and inept engineering and planning large sections of a 400-mile Alaskan highway had turned into water-logged canals and resulted in serious damage to the tundra cover along the route.

Swem Named Director of National Capital Region

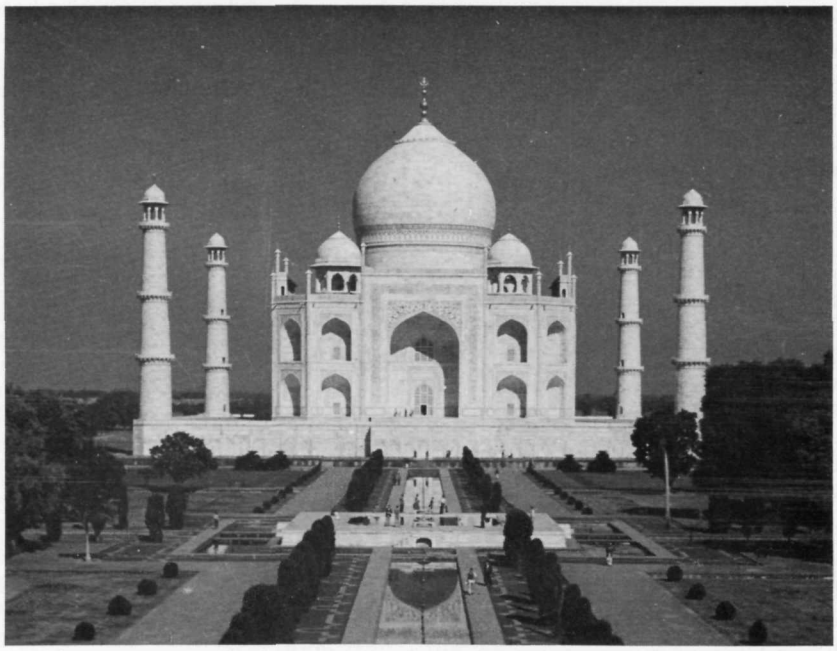
Park Service Director George B. Hartzog has recently appointed Theodor R. (Ted) Swem, for some time past an assistant director of the Service in charge of cooperative activities, as director of the National Capital Region, which contains more than 700 park units ranging all the way from handkerchief-sized plots in the District of Columbia to big preserves like the Prince William Forest Park in Virginia, some miles south of the nation's capital. Swem succeeds Nash Castro, who has become general manager of the Palisades Interstate Park Commission in New York and New Jersey.

NPA Protests Helicopters in Grand Canyon Park

Apparently the newest way to visit the Grand Canyon without actually standing up or getting any fresh air is by helicopter. In a letter to National Parks Director George B. Hartzog, Jr., President Smith noted that helicopters are being used for sightseeing excursions over the canyon in Grand Canyon National Park.

"There are just a few places on this continent where people can escape the noise of the jets, the commercial planes, and the helicopters, not to mention the street and highway traffic. Among them

(Continued on page 22)



Information Service of India — The Taj Mahal in Agra, India

Coming Events in NPA's World Travel Program

EAST AFRICA

November 5 to 26

A cross-section of park and conservation work at 11 locations in Kenya, Tanzania and Uganda. Observation of world-famed African mammals and birds in their natural habitat (lion, giraffe, elephant, hippopotamus, rhinoceros, crocodiles, and many more) and of the tribal life around it. Nairobi, Tsavo, Malindi and Mombasa (Indian Ocean), African Wildlife Leadership College (Mt. Kilimanjaro), Lake Manyara, Ngorongoro Crater, Serengeti, Masai Mara Game Reserve, Great Rift Valley, Lake Naivasha, Entebbe (Lake Victoria), Murchison Falls (Nile), Fort Portal (Mountains of the Moon), Queen Elizabeth Park (Lake Edward). Leader, Martha Talbot.

Tour price, including round-trip air fare from New York, $1585. Membership limited to 30.

AROUND THE WORLD—IUCN MEETING

November 8 to December 6

Round-the-world tour in conjunction with the 10th General Assembly and 11th Technical Meeting of the International Union for Conservation of Nature in New Delhi, where one may attend or take optional excursion to Nepal. Nature and man's handiwork in Japan, Hong Kong, Cambodia, India and Iran—pearl fishing at Ise-Shima Park, the sculpture of Angkor, architecture of Isfahan, the 2500-year-old ruins of Persepolis. Leader, A. W. Smith of NPA.

Tour price, including round-the-world air fare from New York, $1890. Membership limited to 30.

Address all inquiries to

NATIONAL PARKS ASSOCIATION

1701 Eighteenth Street N.W. Washington, D.C. 20009

are the national parks," Smith said in the letter. "The silence in the national parks ought to be respected as part of the experience people seek when they go there."

Foot or horse, he said, still are the appropriate means of visiting the canyon. He noted that former Interior Secretary Stewart Udall vigorously attacked the problems of sonic boom and other noise pollution, and suggested that the Park Service and the Interior Department "ought to stick to that effort and intensify the resistance to noise."

"No doubt there will be an uproar from the concessioners or whoever has charge of this business if these operations are discontinued, but nonetheless we, as one group having no predatory axe to grind, feel quite strongly that you ought to call a halt to this kind of thing."

Natural Landmark Additions

Four additions to the National Park Service's national natural landmark program have been approved in recent weeks by Secretary of the Interior Walter J. Hickel after their recommendation by the national parks advisory board. These are the Grants Lava Flow in central New Mexico, where volcanism of very recent geologic age has left a lava field replete with lava tubes and pressure ridges as well as *kipukas* of isolated plants and animals dear to the hearts of scientists; the Pygmy Forest Reserve within Jackson State Forest on the Mendocino County coast of California, a forest anomaly of the kind described in the May 1968 issue of this Magazine under title of "California's Pygmy Forest"; the Baker University Wetlands in Douglas County, Kansas, a prime tract of virgin wetland prairie of the greatest interest to botanists and ecologists; and Sugar Loaf Mountain, symmetrical range of ancient quartzite that rises abruptly from

the rolling terrain of the Maryland piedmont some miles south of Frederick.

Purpose of the Park Service's highly meritorious natural landmark system is to afford national recognition to the protective efforts of American individuals and organizations owning outstanding natural phenomena which are not necessarily of national park system scale or character, and to lend assistance in questions of protection and management. There are now 143 units in the growing system.

NPA's Travel Program in Alaska

Point Barrow on the Arctic coast was farthest north for the Alaskan Expedition of NPA's World Travel Program ending early in August. Beyond Barrow the travelers saw pack ice reaching to the horizon beneath hazy midnight twilight, out toward the polar ice, and the polar bears, seal, and fox that inhabit it all the way to the Pole itself. They talked with the citizens of the timeless Eskimo fishing and hunting culture, which is disintegrating in contact with modernism. Before that they had traveled by boat through Glacier Bay National Monument, by air to Sitka National Monument, by boat again through the fiord-like scenery of the inland waterway to Skagway, take-off point for the '98 Gold Rush into the Yukon, by narrow-gauge railway across mountain peaks to Whitehorse, by air to Fairbanks. After Barrow they journeyed by the Alaska Railway to Mt. McKinley National Park, where they saw and photographed grizzlies with cubs, likewise moose, caribou, and the big mountain itself in fine visibility. Thence they continued by rail to Anchorage and by air to remote Katmai National Monument and the world-famed thermal Valley of 10,000 Smokes, and across spectacular mountains to Kenai Moose Range.

Throughout the journey they met with conservationists and public officials in an effort to learn about the forestry, wildlife, wilderness, and resources management problems of the 49th state. The leasing of huge oilfields by Alaska to a combine of oil companies has been accompanied by pressures on the Department of the Interior to grant a right-of-way for a gigantic pipeline from the coast across the tundra and the Brooks Range, south to Fairbanks and to Valdez on the southern coast. But the permanently frozen ground called "permafrost" that underlies the tundra melts into a morass of water when equipment is driven over it; whether it may be possible to construct the pipeline and related roads without a disastrous disruption of ecologies and environment throughout a vast region is an open question; the Association has called upon President Nixon to defer granting a right-of-way until after public hearings for scientific comment. We plan to review the Alaskan resources problem editorially in our September issue; a comprehensive environmental program for Alaska, and a coalition of conservationists in support of a good program, are greatly needed if ruin is not to descend on the Alaskan arctic.

Seventeen persons, mainly NPA members, took part in the tour, eager for both enjoyment and understanding, accompanied by NPA President Smith and Club Tours Vice-President Anne Hurley. Two other tours are scheduled for this fall, one to the big-game parks of East Africa and one around the world, with a stop-over at the meetings of the International Union for the Conservation of Nature at New Delhi, India. (See advertisement on page 22.)

African lions take it easy under a thorn tree in the Serengeti. Relaxation is not the commonest commodity among civilized men, perhaps because man, fighting his way through a vast confused welter of his fellows, cannot comprehend all the forces that bear on him and cannot be reassured by the knowledge that he is master of his own fate. Population is exploding, but the complexity of human relationships, of government, of the management of our very offal, is exploding even faster and already is at the point of crisis in most of our large cities. The emotional cost of this secondary population crisis, of course, is huge.