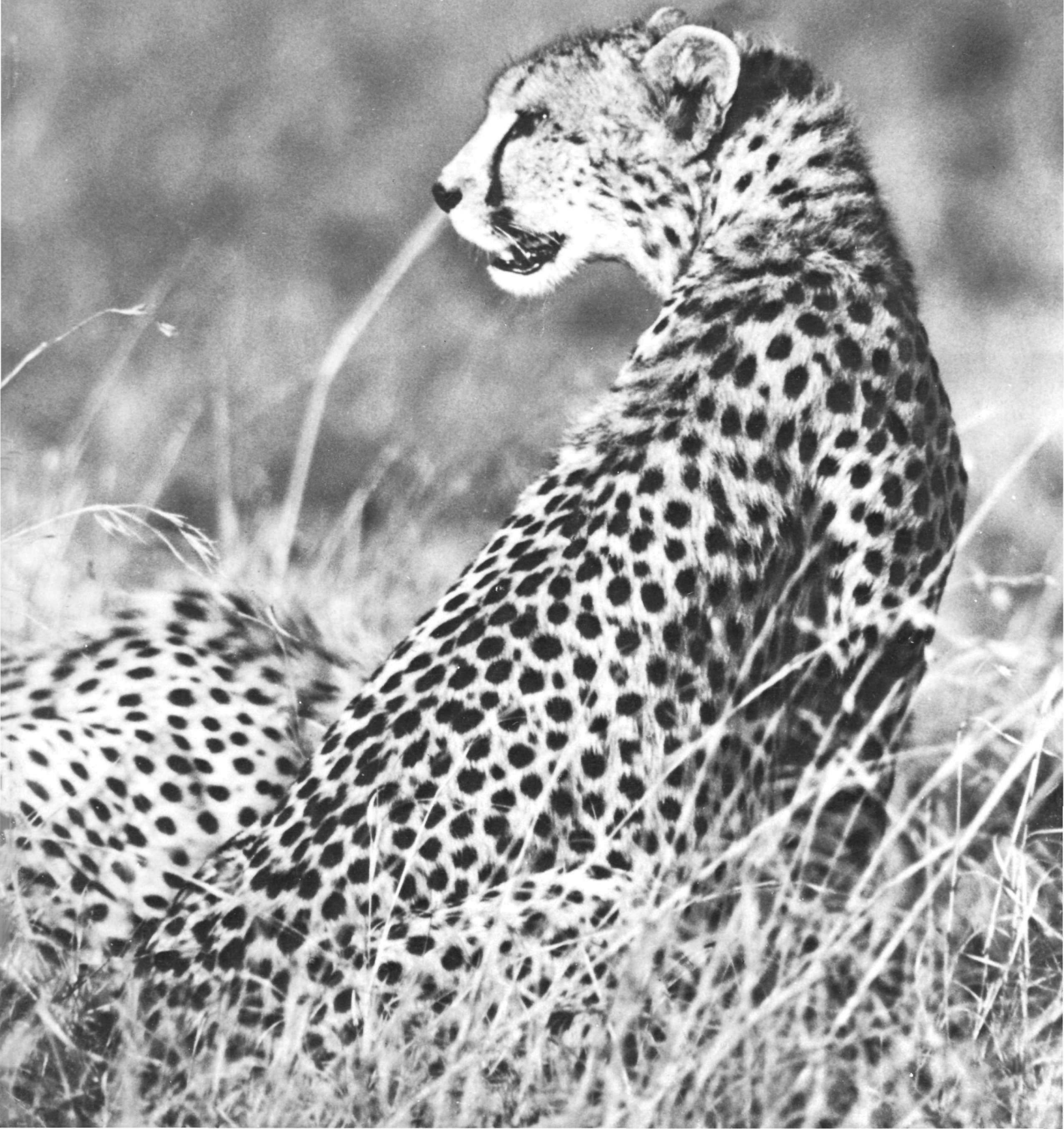
NATIONAL PARKS & Conservation Magazine

The Environmental Journal

June 1971



A Law for the Seas

SINCE WE COMMENTED some ten months ago on President Nixon's excellent proposal for a protective treaty for the oceans and seabeds, events have moved along rapidly and hopefully.

The United States deposited a draft treaty with the United Nations Seabeds Committee in August.

The General Assembly of the United Nations enlarged the authority of the Committee in December to comprise the establishment of an international regime for all the living resources of the seas, the marine environment, and the pollution of the seas.

The Assembly has convened a United Nations Conference on the Law of the Sea in 1973 at a time and place to be determined later to deal with the establishment of the proposed regime.

THE PROPOSAL submitted by the United States contemplates the establishment of an International Seabed Resource Authority with power to license the exploration and exploitation of the mineral deposits of the seabeds. The jurisdiction of the Authority would extend geographically to a common heritage zone consisting of the high seas beyond the 200 meter depth line. The contracting parties would limit their national sovereignty within the common heritage zone. Within a peripheral area of the common heritage zone comprising the continental margins, the coastal nations would act as trustees for exploration, development, and licensing purposes under controls exercised by the Authority.

The revenues from licenses are to be used for the benefit of all mankind, particularly the economic advancement of the developing states and for the scientific and technological purposes of the Authority.

The Authority may designate international marine parks and preserves, with the approval of the coastal nation if within the marginal area.

THE NATIONAL INTEREST of the United States, and its national security as well, are heavily dependent on the establishment of a world community within which significant limitations must be placed on national sovereignty.

The notion of sovereignty, of course, is essentially a legal fiction; no man, no group, no nation ever exercises sovereignty; power is always conditioned by surrounding personal and social circumstances.

If any man ever became a sovereign, he would be obliged immediately to seek associates and allies to help him cope with his problems, and sovereignty would vanish; this is also true of nations.

The first thing to be said about the proposed treaty on the Law of the Sea is that it takes a significant step toward the creation of a world community based on world law. If only because it does this, it should have the support of environmentalists and humanitarians around the world.

The renunciation of unlimited sovereignty in the common heritage zone by all contracting parties is desirable and essential and must be retained. By the same token, the full geographic scope of the zone must be retained; perhaps it should be enlarged to, say, the 50-meter isobath.

THE DRAFT concedes that, during the period of negotiations, development will take place under existing national agencies. Modern megatechnics, potentially highly destructive to the environment, is already moving, well equipped and well financed, into the seas. The draft proposes that all such present development be conditioned on ultimate control by the Authority when established. This might conceivably mean suspension or revocation of licenses issued by national agencies.

Disagreements have arisen within the United States about this provision; industrial interests are protesting that exploration and development will be stopped in its tracks. We surmise that nothing of the kind will occur; the prospective emoluments are far too great, and if the Authority reduces them somewhat, the losses will probably not be significant.

Moreover, a slowdown is desirable; resources of immense value are involved which could be destroyed by a head-long rush toward exploitation. The proposed conditions on the interim development of resources under national agencies are desirable and should be retained in the Treaty.

AS NOTED, the draft confers licensing power on the Authority. Licenses are to be conditioned on compliance with regulations for the protection of the resources and the environment. Violation of the conditions can result in revocation; this is as it

Continued on page 39

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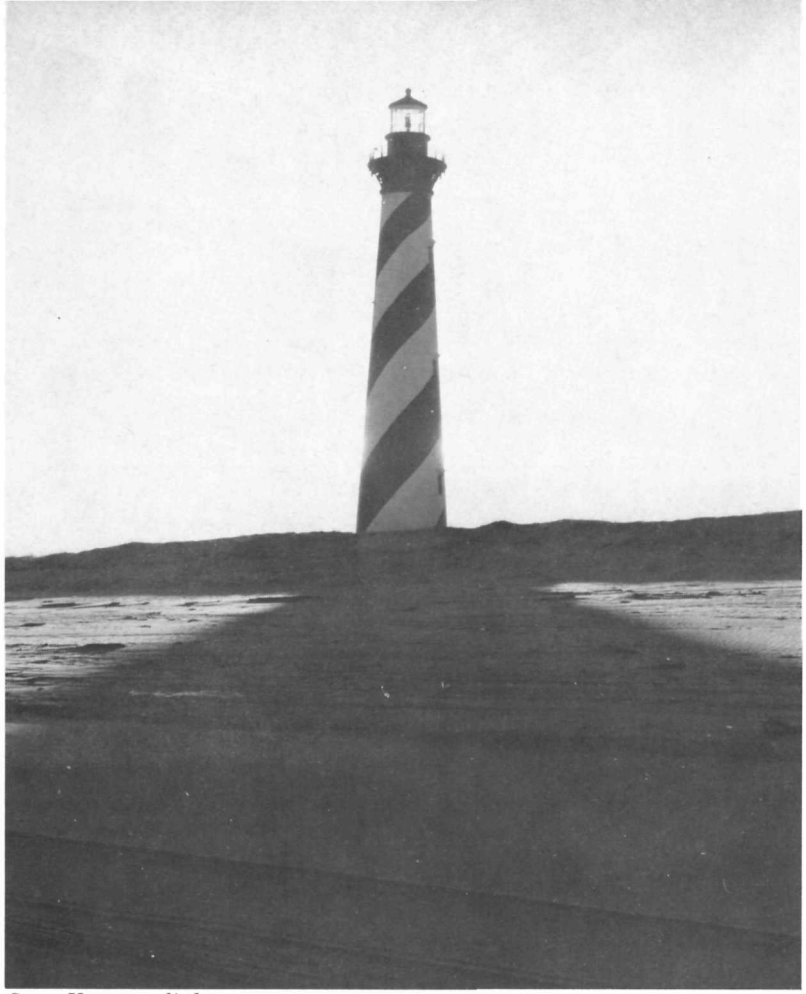
COVER *Cheetah by Fleming B. Fuller*

National Parks & Conservation Association, established in 1919 by Stephen Mather, the first Director of the National Park Service, is an independent, private, nonprofit, public-service organization, educational and scientific in character. Its responsibilities relate primarily to protecting the national parks and monuments of America, in which it endeavors to cooperate with the National Park Service while functioning as a constructive critic, and to protecting and restoring the whole environment. Life memberships are $500. Annual membership dues, including subscription to National Parks & Conservation Magazine, are: $100 sustaining, $50 supporting, $15 contributing, and $10 associate. Student memberships are $8. Single copies are $1. Contributions and bequests are needed to carry on our work. Dues in excess of $10 and contributions are deductible from federal taxable income, and gifts and bequests are deductible for federal gift and estate tax purposes. Mail membership dues, correspondence concerning subscriptions or changes of address, and postmaster notices or undeliverable copies to Association headquarters in Washington. When changing address, please allow six weeks' advance notice and include old address (send address label from latest issue) along with new address. Advertising rates and circulation data are available on request from the Advertising Manager in Washington.



Cape Hatteras light

Outer Banks Revisited

C. John Burk

In early August of 1968 my wife and I crossed the Wright Memorial Bridge over Currituck Sound and began what would be, in essence, a slow pilgrimage from the pavement's end at the village of Duck south along the Outer Banks to the boundary of the Cape Hatteras National Seashore at Ocracoke Inlet.

Nearly a decade earlier as part of my doctoral research at the University in Chapel Hill I had studied the flora of the Outer Banks, the chain of barrier bars and islands that extends from the Virginia state line south along the northern half of the North Carolina coast. Much of my work was done within the National Seashore, which, established in 1953, was still in its earlier phases of development. I had not spent much time on the Banks since the time of my thesis work, and I was eager to see what changes had occurred in their dynamic landscape.

Botanists have learned that the vegetation on our barrier islands occurs in a sequence of zones inward from the ocean beach: dune grasses, a tangle of shrubs and vines, a forest, and, at the sound's edge, saltmarsh. The forest is the most sensitive of these communities, threatened by shifting sands and the ever-present wind-borne salt spray. From Duck south to Jockey Ridge at Nags Head we found this rarest form of coastal vegetation—a magnificent stand of loblolly pines, sweet gum, hickory, sour gum, beech, and oak, increasingly menaced not only by natural forces but also by a proliferation of golf courses and real estate developments. It is sad that none of this particular forest is included in the National Seashore. Aside from its beauty it harbors such plants as live oak, Spanish moss, resurrection fern, and wild olive very near the northern limits of their ranges. Somehow the village of Duck has escaped the general "improvement" and seems much the same after 10 years' passage, the fishermen's homes more weather-worn, perhaps, the threatening dunes a little closer.

Beneath hot sun and a hazy sky, hordes of tourists swarmed over the great sand dunes at Nags Head. Except for a few new buildings and a number of extended roads, the view was much the same as it had been in 1959—the ocean, a strip of motels, summer cottages, gas stations, pizza palaces, drive-ins, and souvenir stands along the ocean beach; active sand dunes marching toward the remnant of Nags Head woods; and calm blue Currituck Sound. I took a Kodachrome slide in October 1959 that shows, at the northeast corner of the ridge where the dunes had overrun the forest, a few trees and clumps of shrubbery holding on at intervals along the water's edge. These stragglers had perished by summer 1968, save for one tree, its upper limbs gaunt and beaten by the elements, producing leaves now only on its lower branches. Along the roadside at the base of the large dunes, camphorweed, an aggressive herb with flowers like small chrysanthemums and coarse rank-smelling leaves, has become established since my studies. We had heard of great changes on the Banks, inlets opened and closed, roads washed out or buried under sand. We were as much impressed by the subtler minor

changes like the slow death of a single tree and the invasion of this weed that would, in part, replace it.

Near the Bodie Island Light, a nature trail had been built across a portion of the tidal marsh to a wooden platform overlooking several ponds. We visited the platform several times. On a cloudy day when short-lived Hurricane Dolly was brewing off Cape Hatteras, a flock of avocets sheltered, their backs to the wind, in the shallow water; skimmers, undisturbed by the gusts of wind, swooped and dived above us; black-necked stilts paraded about on incredibly long and skinny legs; and a shoal of common and snowy egrets fed with glossy ibises in the distance. I saw my first glossy ibis on the Outer Banks in 1961, and I had never seen an avocet or stilt before. On a brighter day in the marsh off the boardwalk we photographed sea hollyhocks (*Hibiscus*), some pink-flowered, others with white, red-centered blossoms, and the seashore mallow, *Kosteletzkya*. We wasted half a roll of film on a Louisiana heron that stalked dramatically but farther away than we wanted him to be. I recalled, only partly with nostalgia, the days I spent collecting saltworts, cord grass, and sea lavender in the Bodie Island marsh, doused with mosquito repellent and up to my thighs in muck. The life of the tidal marsh is incredibly rich and interesting, and this nature trail should do much to interpret it for students of the park. On all sides of the visitor center the Bodie Island salt marsh stretches out, still largely inaccessible.

The new bridge spanning Oregon Inlet is an amazing structure; one mourns the passing of the old free ferries, slow and apt to go aground, only because of the numbers of casual sightseers who now easily can drive south all the way to Hatteras. The long stretch of road from the ferry-slip on Peas Island south to Buxton Village used to be mostly deserted except for bursts of traffic racing at intervals either to or from the ferry. Now a steady stream of vehicles passes the Pea Island Wildlife Refuge (where, in April 1965, I had noted Canada geese observing the traffic with what seemed like touristic curiosity, stretching their long black necks for better views and turning their heads from side to side to watch the cars arrive with one side-glancing eye and depart past center with the other). Much of this road was destroyed in the great northeast storm of March 7, 1962, when gale force winds and extremely high new-moon tides created waves that, in some places, pushed the shoreline inward more than 200 feet. An estimated 1,500 of the 29,000 acres of the National Seashore Park were washed away, and a new inlet was cut between the villages of Avon and Buxton. Before this inlet was finally closed, a temporary bridge was built and later swept away by a second storm in December of that year. Parts of the new road, farther inland now, parallel abandoned pavement on the ocean side.

The villages along the road toward Hatteras light are striving for development, and the boundary between incipient civilization and the wilder seashore land is clearer than before.

Near the Hatteras light, another trail has been laid out

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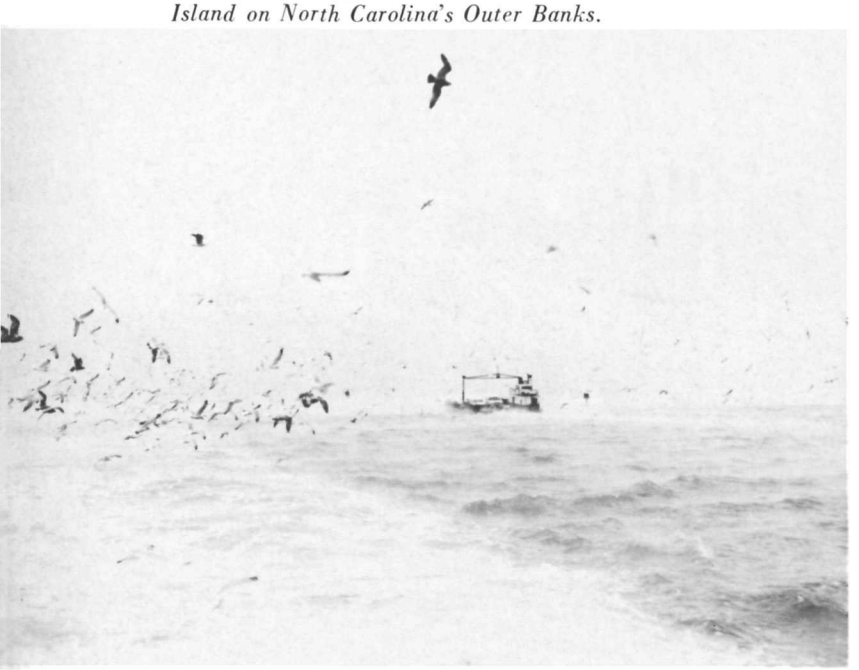
leading into a saw-grass marsh that is bracketed by low and densely vegetated dunes. A middle-aged couple started out along the trail ahead of us; within a few moments we heard an angry male voice exclaim, "They're all over the place in here. You can't walk through at a mile an hour." We first supposed that "they" were cottonmouth moccasins, of which we were warned by a sign at the entrance to the swamp, but soon great numbers of mosquitoes attacked us. We retreated, sympathizing with the woman ahead, who we hoped still would communicate with nature at her slower gait. We decided that we might return another day, wearing hats, long pants, and plenty of insect repellent.

Ferries make 2½-hour runs between Ocracoke and Cedar Island on North Carolina's Outer Banks.



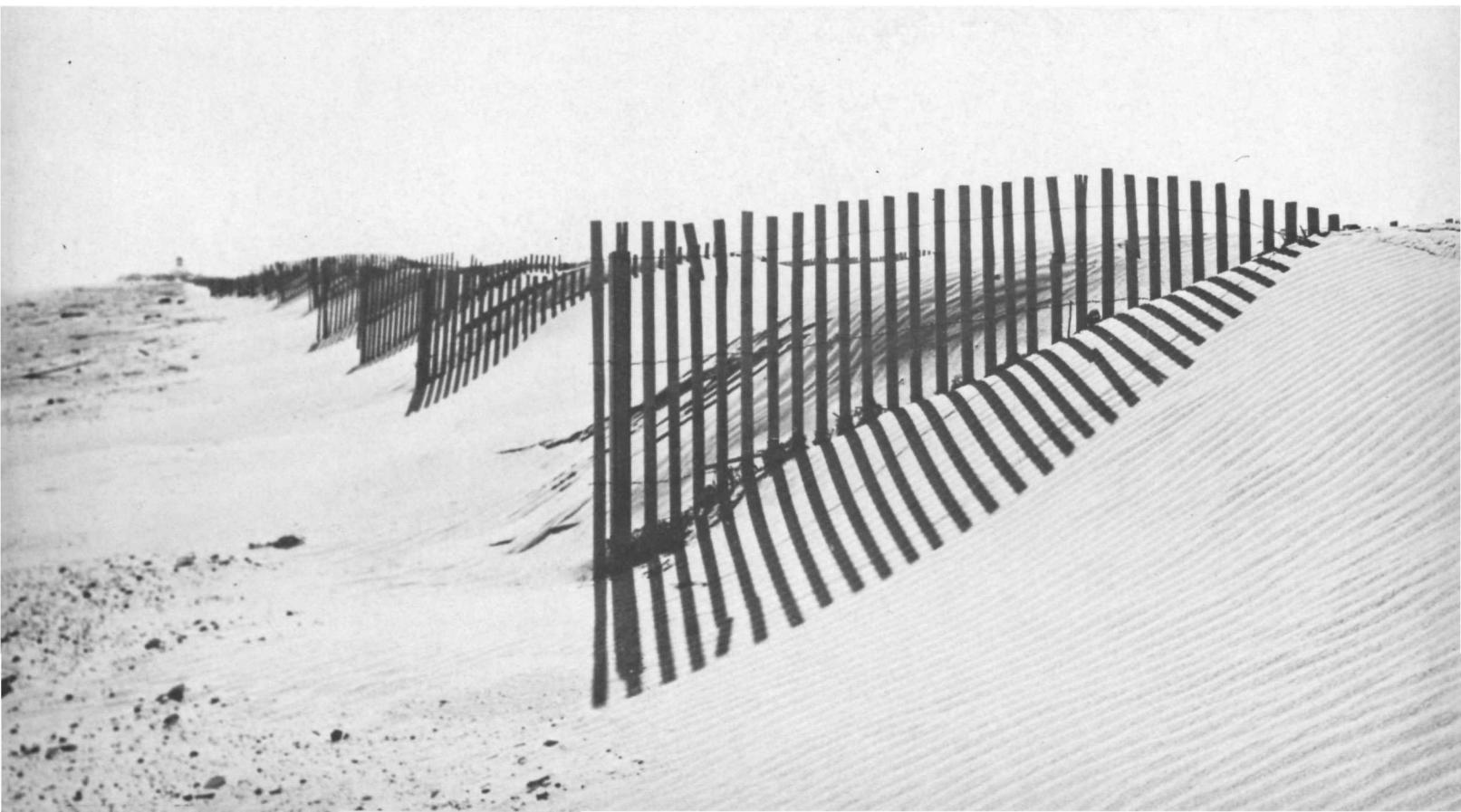
The villages of Hatteras and Buxton, where yuccas, oleanders, and several kinds of palms thrive in the dooryards of white frame houses set in tangled groves of cedar and live oak, retain a curious subtropical appearance. Our northernmost-occurring palm, the stemless palmetto, is common in Buxton Woods, and brown pelicans abound near the ferry slip at Hatteras village. We had admired the weather-stained, brown-shingled houses fronting the sea at Kittyhawk and Nags Head and now sensed the feeling of isolation still perceptible on Ocracoke, reflecting that the beauty of these little villages is of a peculiarly fragile sort and hoping that future developments will respect and preserve these qualities.

There still is no bridge to Ocracoke, and yet I sensed change more on that island than at any other place on the Outer Banks. My first visit there was in June 1959; the weather was cold and rainy, and we drove off the ferry onto a chain-link mat that stretched across several miles of open sand before the pavement started. At the first high hummock, that day, wild ponies had bolted across the road, and everywhere the vegetation showed the effects of their relentless grazing. Now, under a blazing August sun, we drove off the ferry onto pavement just beyond the ferry slip. The ponies, once wild, now browse within carefully fenced pastures; the sandflat is covered with vegetation; and almost everywhere on the island things seem stabler and more civilized. Geologists tell us that the Outer Banks are transient features of our seacoast, destined, in time, to be washed out by the rising sea; and undoubtedly there was wisdom in the decision to confine the Ocracoke ponies, because, had they continued to roam freely, they would have hastened the destruction of their island. I was glad, however, to have seen them free 10 years before.

Returning from Ocracoke to a stretch of beach below

Cape Hatteras, we watched a flock of shore birds feeding a few hundred feet from a guarded swimming area. As we approached, sanderlings and turnstones flew across the surf around us or dodged back above the high tide line. At Nags Head, where the water was colder and the waves less rough, we had watched these birds mingling on a beach with sunbathers, swimmers, dogs, fishermen, and surfboard enthusiasts (the latter also new to the Banks since my earlier visits). Perfectly adapted to man's presence, the sanderlings and turnstones fed within the crowd, a bit watchful, perhaps, but chiefly intent on their own business. At Hatteras, willets, spraddle-legged as ostriches, raced ahead when we drew near. Farthest ahead and most wary of all, nearly a dozen buff longbilled curlews maintained a careful interval. This species, like the avocets and black-necked stilts, was much reduced by overhunting but now, with protection, is making a comeback on the Banks.

The next day we swung north again, Pamlico Sound on our left this time and the ocean on our right. One October afternoon years before I had watched an osprey perched on a television antenna atop a shoddy pink cottage along that stretch of road. Even more now, the total aspect of the Outer Banks is exemplified by that incongruous image —wild, open, unspoiled stretches of wilderness juxtaposed against the trappings of a civilization that seems too often ugly and obtrusive. As we drove westward toward Roanoke Island and the mainland through the elaborate traffic intersections at Whalebone Junction, we realized, almost simultaneously, that the sea oats had ripened from pale green to golden brown during the period of our visit and that only with care and constant vigilance will the life of the Outer Banks be saved for a worthwhile future. ■



VLADIMIR A. BORISSOFF

Soviet System of Protected Natural Areas

WITHIN the Union of Soviet Socialist Republics today are several different kinds of protected lands that American conservationists might regard as equivalent to their own national park system. In fact, however, the Soviet system of protected natural areas differs from the American national park system and from similar protected areas in other countries in details of classification and degree of protection of units in the various categories.

The categories of natural area protection were established by laws on nature conservation adopted in all 15 Union Republics of the USSR. The Law of October 27, 1960, "On Nature Conservation in the RSFSR" (Russian Soviet Federated Socialist Republic—the largest political subdivision in the Soviet Union), proclaims the protection of: typical landscapes; rare or remarkable living creatures, fossils, or geological features when they furnish characteristic or unique examples of natural conditions in certain zones or physiographic regions; areas particularly suited as outdoor laboratories for studying undisturbed natural processes; or focal points for breeding and propagation of valuable animals.

The Law on Nature Conservation specifies two main categories of nature protection: State Nature Reserves, or *zapovedniks*, which are territories forever withdrawn from economic or commercial use for scientific, cultural, and educational purposes; and Natural Preserves, or *zakazniks*, where part of the natural resources may be used for economic purposes, but only for a limited time and only to the extent that such use does not harm protected objects. In addition, this law also determines the protected sites and natural monuments that are to be placed under the kind of protection afforded by *zapovedniks* or *zakazniks*. Natural objects such as an old tree or a rock of especial interest, as well as certain landscapes, may be proclaimed natural monuments.

Zakazniks may range in size from very extensive to very small. For example, a large *zakaznik* has been created on Wrangel Island for the protection and study of the polar bear in one of its main denning areas. This preserve is also a haven for a unique colony of the snow goose, for colonies of sea birds, and for herds of walrus. On the other hand, there is a geological preserve on Saaremaa Island in the Estonian SSR that has an area of only 11.86 acres; it was established to protect the vicinity in which a huge meteorite produced seven craters, largest of which has a diameter of 360 feet. There is a scenic natural monument of 2,517 acres

A. A. KISHCHINSKI

V. A. Ogniev

Left, *polar bear cubs in their snow den on the Wrangel Island State Zakaznik.*
Above, *spring flood in the Oka State Zapovednik in the heart of the European part of the RSFSR.*

V. A. Ognev

in the Byelorussian SSR. The Lithuanian SSR contains 91 *zakazniks* totaling over 320,000 acres, as well as over 600 natural monuments.

Among the hundreds of protected natural areas of the USSR, over 90 *zapovedniks*, with a total area of 17 million acres, are accorded their own particular rank. Their main purpose is to provide areas, protected against all kinds of human activities, where long-term investigations of natural processes may be carried on. In other words, they are primarily special interdisciplinary scientific institutions of nature conservation, with their own permanent scientific personnel, budgets, equipment, and publications. It is easy to understand that the existence of such institutions would be impossible without large areas of undisturbed natural ecosystems.

The law issued by the Supreme Soviet of the USSR on December 13, 1968, titled "Principles of the Land Legislation of the Union of SSR and of Union Republics," recognized this basic requirement: "Any activity impairing natural complexes of *zapovedniks* or threatening the protected natural objects of special value for science or culture is prohibited both on the territory of *zapovedniks* and within the limits of buffer zones created around *zapovedniks*."

Since the first decrees of the Soviet government concerning nature reserves, it has been emphasized that a *zapovednik* is a "national treasure dedicated exclusively for accomplishment of scientific and technical missions in the country." (The quotation is from the decree signed by V. I. Lenin on May 14, 1920.) The subsequent building of a network of *zapovedniks* took this thesis into consideration.

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Top, *the giant beetle* Callipogon relictus *of the Soviet Far East, which obtains a length of up to 4 inches, is absent in Japan and China; but three related species are found in Mexico and South America, which suggests a possible proof of a former link with Neotropical fauna. (Sudzukhe State Zapovednik.)* Center, *the Kzyl-Agach State Zapovednik, Azerbaidzhan SSR, is a region of huge concentrations of wildfowl. The steppe part of the reserve harbors the most important population of the Little Bustard—a rare species.* Bottom, *stork nest in the Berezinski State Zapovednik in the Byelorussian SSR.*

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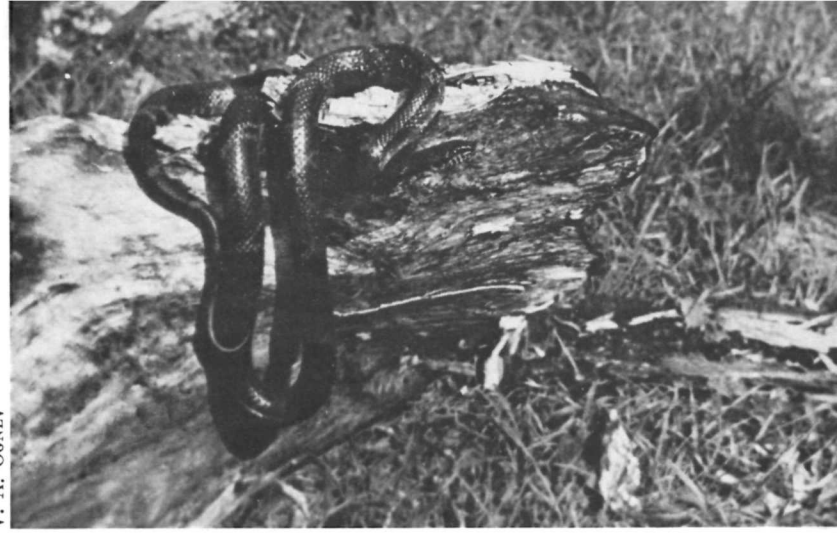
At first, scientific investigation in the *zapovedniks* was carried on by expeditions from the Academy of Sciences and from universities. An act in 1930, however, stated that, in order to fulfill their tasks, the *zapovedniks* should be either organized as independent research institutions or attached to existing scientific institutions. Legislation in 1934 was even more specific in its language: "All *zapovedniks* are scientific institutions."

The formative period of this system of institutions ended in the late 1930s. By then, most research was being conducted by the staffs of the *zapovedniks* themselves rather than by expeditions; and to this end, scientific boards and so-called Interdisciplinary Stations of Natural Sciences were created in the reserves. Permanent scientific personnel, specialized to perform stationary outdoor research, began to form. By the late 1930s, also, the first publications summarizing scientific results obtained in *zapovedniks* had appeared. In 1938 a series of *Scientific and Methodological Notes of the Committee on Zapovedniks* commenced publication in Moscow for the purpose of consolidating the work of the *zapovedniks*.

It should be pointed out that not all *zapovedniks* are situated in remote, inaccessible, or undeveloped regions. On the contrary, often they have been established to protect rather large and nearly undisturbed tracts that are surrounded by intensively used lands, and Soviet conservationists are proud of some of their successes in this respect. For example, they were able to save several plots of virgin steppe in the Ukraine and in the Chernozem Center of the RSFSR.

However, the establishment of *zapovedniks* in highly developed areas has presented some serious problems in preserving original ecosystems and features. *Zapovedniks* of the virgin steppe furnish some good examples of these problems. Over the ages, large herds of wild ungulates were natural components of the steppe ecosystem, and they grazed the vast grassland. But the herds were gradually eliminated, and the steppe ecosystem was threatened because the entire vegetation pattern changes when one of its natural components is missing. For more than a hundred years several of the tracts were preserved, biologically speaking, by the animals of horsebreeding estates on the steppe; these animals grazed the grasses and thus filled the ecological niche vacated by wild ungulates. However, during the twentieth century, the horse was forced out of the economic picture. Once again the last vestiges of virgin steppe were endangered. Does this mean that it is impossible to perpetuate portions of the steppe as it originally existed? No, it is, indeed, possible to save representative tracts, but only with substantial artificial assistance. For this purpose it is necessary to mow the steppe grasses at 3- or 4-year intervals. Thus, through special management practices in these reserves, ecosystems are kept on a relatively natural basis.

Zapovedniks may be established to allow studies of the changes in natural conditions brought about by human activities. In the spring of 1941, the huge reservoir of the Rybinsk dam began to fill; it presently covers an area of about 1,800 square miles, with a length of up to 75 miles and a maximum width of 37 miles. In 1945 the Darwin State Zapovednik was established on a tract of about 280,000 acres on the northwestern shores of the reservoir.



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Above, Elaphe schrencki *is the second largest of the innocuous snakes of the USSR. (Sikhote-Alin State Zapovednik.)* Below, *the Boyetz ("Warrior") Rock Natural Monument on the Vishera River in the Ural Mountains.*

M. I. Obukhov

V. A. Ogney

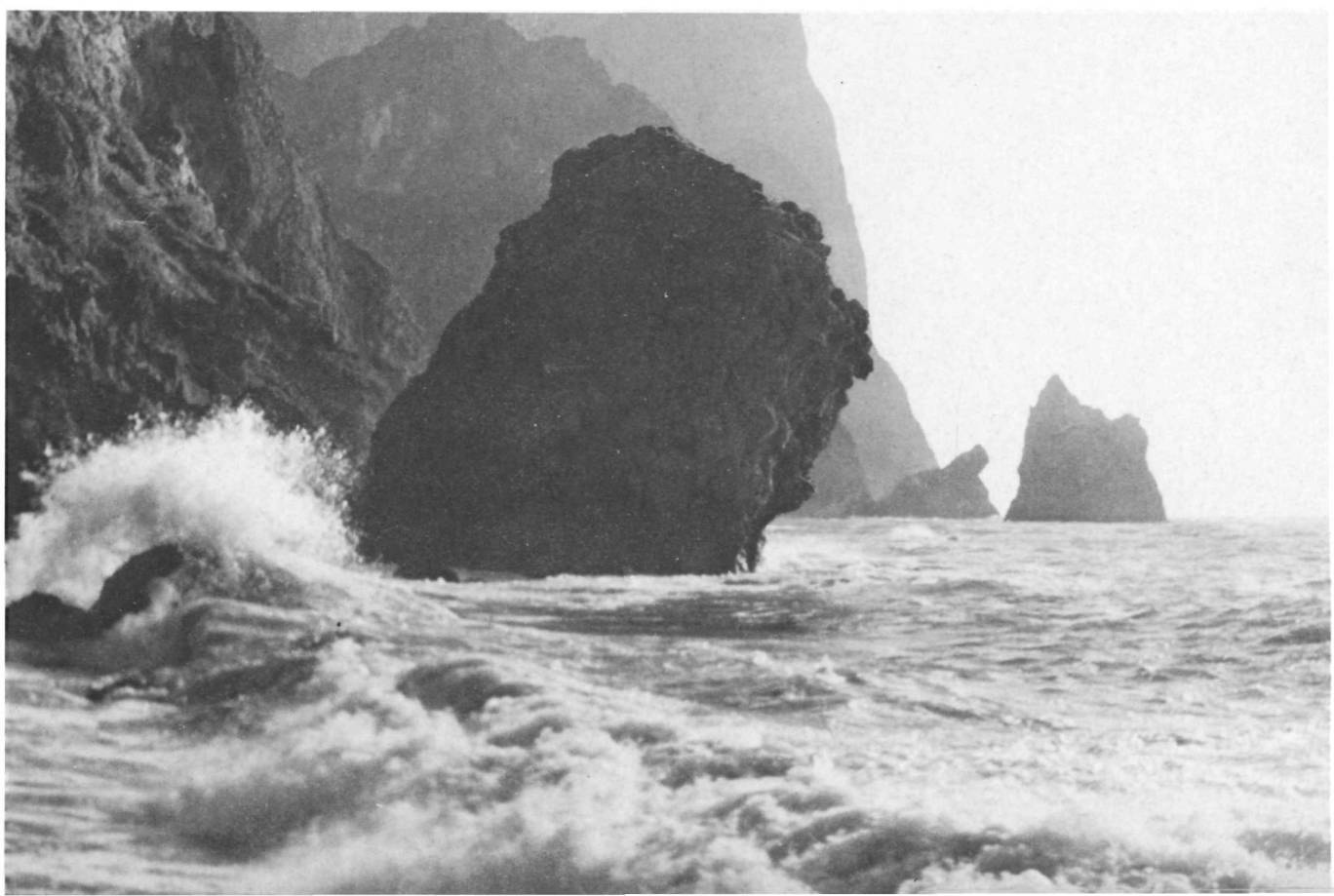
Above, *the Sudzukhe State Zapovednik overlooks the Sea of Japan.* Below, *the Karadag Natural Monument, a creation of ancient volcanic activity in the Crimea, Ukrainian SSR. Lava, breccias, and tuffs form a rugged coast of incomparable beauty on the Black Sea.* Opposite, *tourists backpacking in the region of the Ramit State Zapovednik, Tadzhik SSR.*

About 120,000 acres of the *zapovednik* lie within the drawdown zone periodically uncovered by the reservoir water. Study of the changes in hydrology, vegetation, soil cover, and wildlife has furnished valuable information from which forecasts may be drawn in estimating changes in natural systems when new and larger artificial seas are created in the future. The results of this study have been published in many papers totaling more than 4,000 printed pages.

(It may be mentioned here that 35 *zapovedniks* in the USSR edit their own *Acta* and that the total of published papers of *zapovedniks* had exceeded 50,000 printed pages by 1969. In some cases there are common *Acta* for several reserves. An example of this is the one volume published in 1968 for all four of the Estonian State Zapovedniks and the two volumes published for those of the Azerbaidzhan.)

Educational efforts in the *zapovedniks* are aimed at youths and adults alike. To provide better acquaintance with protected nature, *zapovedniks* organize nature museums, small zoos, and guided excursions. University students perform their curriculum practice in such areas, and schoolchildren—especially members of young biologists' circles—observe nature and learn to study it. However, self-guided excursions, tourism, and recreational uses of *zapovedniks* bring protests from Soviet scientists and conservationists, and this problem deserves special discussion.

In summertime, more than 2 million Moscow dwellers leave the city every weekend. The total number of nonorganized tourists in the Soviet Union presently has reached the figure of 30 million; in addition, 20 million more take part in organized travel and excursions. The Trade Unions' Central Board on Tourism predicts an increase in the near



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future to a total of 80 million. Sociological research in the Soviet Union shows that more than 60 percent of city dwellers now spend their vacations traveling and that 75 percent of people questioned prefer some kind of outdoor recreation.

The terrain of the areas of most important population concentrations in the USSR has a generally low topographic relief, a rather monotonous vegetative cover, and, finally, rather unstable weather during the summer, which is relatively short. The desire of many Russians to lengthen summer seems natural, and it also explains the overcrowding of the Black Sea shores of the Caucasus and Crimea. (The resort town of Gagra, for example, has 25,000 residents; but during the year, mainly in summer, more than half a million people spend their vacations there.) Fortunately, not all 50 million traveling vacationists rush to the southern seashores. The recreational wishes of two age groups of the population studied—16 to 24 years, and 30 to 39 years—are shared about equally by seas, inland waters, and forests.

Article 10 of the Law on Nature Conservation in the RSFSR specifies that, in the recreational areas, spa regions, protected zones for the spas, and protective green spaces adjoining urban areas, "the whole natural condition contributing to the health value of the site should be protected." The law authorizes area executives to establish, along remarkable tourist trails and in the most-visited recreational areas, specially protected zones managed as *zakazniks*.

Thus, the system of State *zapovedniks*—representing examples of wilderness preserved for scientific purposes—is independent of other areas that are open to recreational uses, and vice versa. Soviet *zapovedniks* cannot, in principle, be identified with the American national parks, which are open to large public visitation.

The various units of the system of *zapovedniks* are diverse in size and character. Their areas vary from the 86 acres of the Vaika State Zapovednik in Estonia to the 2.4 million acres of the Kronotsky State Zapovednik in the Far East. Of course, a nature reserve situated on a sea island is better insulated against direct or indirect human influence than one in the vicinity of an industrial center. Easy accessibility of a nature reserve to tourists creates additional difficulties for its protection. However, the large size of some reserves may allow the demarcation of a certain portion for one-day recreation—with no overnight accommodations, as a rule. For example, in the Stolby State Zapovednik, 3,200 of the entire 116,584 acres of the reserve are designated as an "area for excursions and tourism"; more than 100,000 people visit the reserve annually.

Some other *zapovedniks* receive a large visitation also. Annual visitation in the Caucazsky *zapovednik* totals 250,000; in the Teberda, 150,000. If a protected area is too small and the threat of recreational use is great, it may simply be fenced and the public not admitted. This is the case at the Pitsunda State Zapovednik in Georgia, a 370-acre grove of the rare *Pinus pithyusa*, which over the years became surrounded by a popular Black Sea resort.

No units in the Soviet Union are called "national parks," but rather similar areas do exist. (The term "national" park is unacceptable in this country of more than 100 nationalities. That is why the term "State nature [or natural] park" has seemed preferable.) An example of such an area is the Baksan Valley, near the highest summit of the Caucasus—Elbrus Mountain, at 18,481 feet—some 60 miles south of Pyatigorsk as the bird flies. For many years the valley has delighted thousands of tourists, mountain climbers, and skiers. The bottom of the valley is

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A rushing stream delights visitors to the beautiful Baksan Valley, North Caucasus, which is popular with tourists, mountain climbers, and skiers.

6,000 feet above sea level, and the slopes are snow covered until the beginning of summer. The sun is warm even in winter; and in summer, when the wind drives away the heavy clouds, the perennial snowy hat of Elbrus is revealed, to dazzle the enchanted visitor. During the past 10 or 15 years many hotels, lodges, ski tows and lifts, marked trails, and so on have made their appearance here. The valuable mineral springs and splendid forests of the Baksan Valley area are protected by the Law on Nature Conservation and other acts.

Conservation efforts in the Southern Crimea and on the Black Sea shore of the Caucasus have resulted in the establishment of protected areas that are similar in some respects to the national parks of many countries. The maritime zones of these regions—shores and beaches—are given over to intensive recreational use; but farther from the sea, and in the mountains, the natural ecosystem is protected by *zapovedniks* that are partly open for guided excursions. Besides these *zapovedniks* there are many *zakazniks* and natural monuments in the region. In the Crimea the total area of one *zapovednik* and nearly 90 *zakazniks* and natural monuments exceeds 120,000 acres.

Nowadays projects on establishment of nature parks are being elaborated by several institutions. In the Soviet Union there is no private property in land or natural resources. (It is fairly common for a person to stop in any forest he or she likes—and this without asking whether it is a recreational area or not. In doing so, of course, one must avoid starting a fire or doing illegal cutting.) Thus, the question of land ownership does not arise when proposals for preservation are discussed. In working out the details of proposed nature parks, special attention is directed to determining the human carrying capacity of the area and to establishing regulations for visitation based on this carrying capacity.

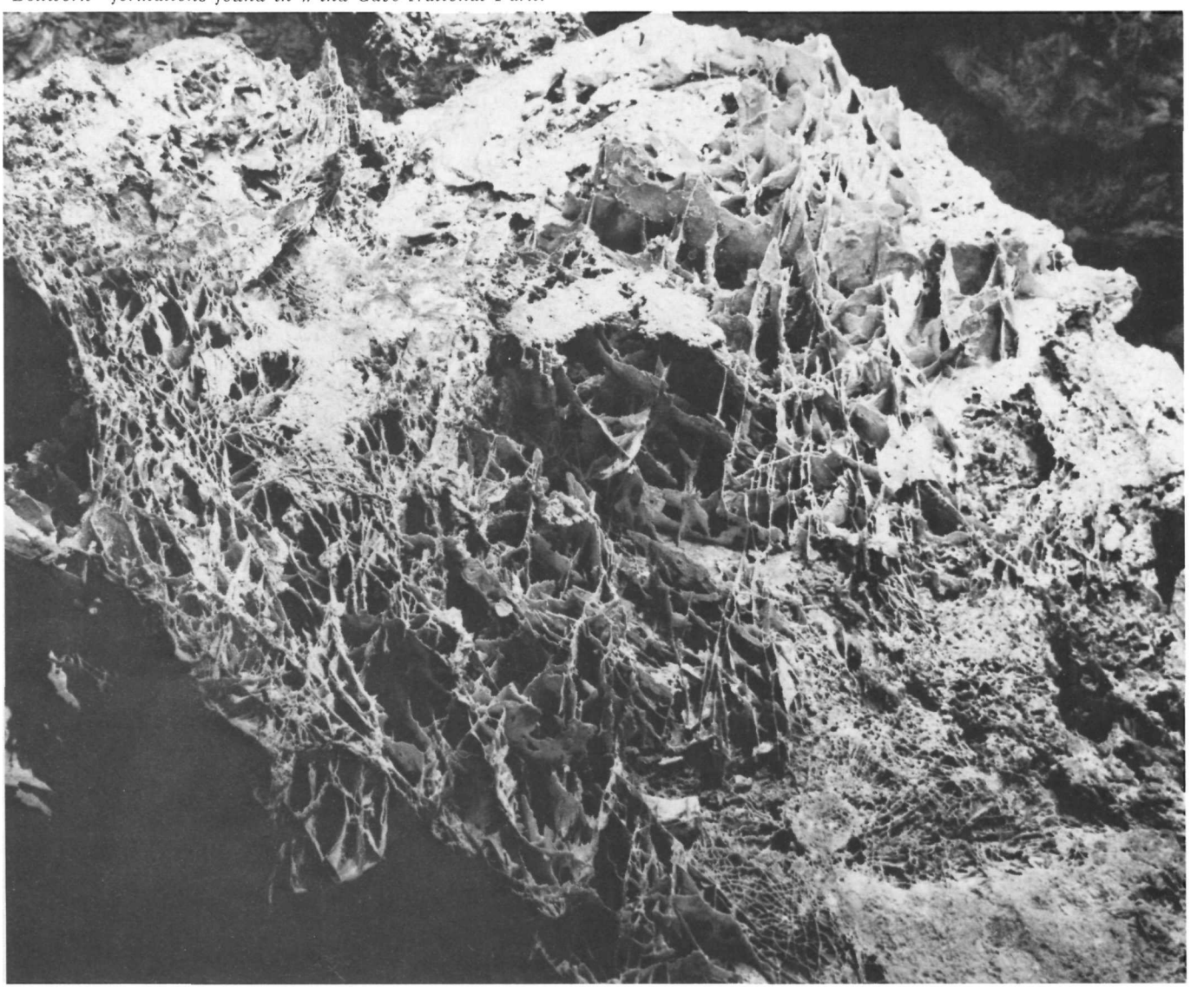
In summary, in the Soviet Union there are various categories of protected natural areas. Most numerous are the various natural monuments. Largest in acreage is the system of animal, scenic, and other specialized *zakazniks*, of which there are several thousand throughout the USSR. The most popular recreational areas are protected by law, and State nature parks are being planned with a combination of conservation interests and recreational facilities in mind. Still, the most valuable units are the *zapovedniks*, which represent and protect all the main physiographic regions of the vastest country in the world. Their specialized scientific personnel carry out long-term studies of the protected areas and compare them with nonprotected, intensively used areas to help scientists delve into the laws of nature and to elaborate man's knowledge of the fundamentals of preserving the natural environment. ■

Vladimir Alexandrovitch Borissoff is the secretary general of the Central Laboratory on Nature Conservation, USSR Ministry of Agriculture, in Moscow.

R. Bruce Rodgers
Robert C. Ernst

WIND CAVE NATIONAL PARK

"Boxwork" formations found in Wind Cave National Park.



PHOTOGRAPH BY J. BOUCHER

NATIONAL PARK SERVICE

A Wind Cave visitor examines the natural opening to the cave.

In 1881 a part-time cow thief named Tom Bingham accomplished an unusual feat. He discovered a national park. While hunting for deer in the rolling grasslands in the southern Black Hills of South Dakota, Tom came across a small hole—about the size of a washtub—in a layer of exposed limestone. Such solution pockets are not unusual in the gullies and dry washes of the area, but this one had a cold, steady wind blowing from it. Tom was mildly fascinated and reported the phenomenon to friends in the nearby town of Hot Springs. Thus began the colorful history of "The Wonderful Wind Cave," as it was known in the early commercial leaflets.

For a number of years the cave suffered from commercial exploitation, with wagonloads of formations being removed and sold. The unique features of the cave came to the attention of the federal government during a court battle to determine ownership, and in 1903 it became our seventh national park.

The first cave to enjoy such a distinction, Wind Cave was set aside primarily because of a unique formation called "boxwork" that lines many of its rooms and passageways. It can not compete with the animal life, huge rooms, or flowstone formations of Carlsbad Caverns or Mammoth Cave, but the thin crystalline blades of boxwork so common in Wind Cave are found few other places in the world, and nowhere so extensively. This formation, along with 44 square miles of some of the last virgin mixed-grass prairie in the country, provides yet another unique national park experience.

The interpretive program at Wind Cave National Park for years has been centered around the traditional cave tour. There is about 1½ miles of paved, well-lighted trail in the cave, with the visitor having the choice of a 45-minute or a 1½-hour tour. In the last few years, however, the park has greatly broadened its scope of interpretive

NATIONAL PARK SERVICE

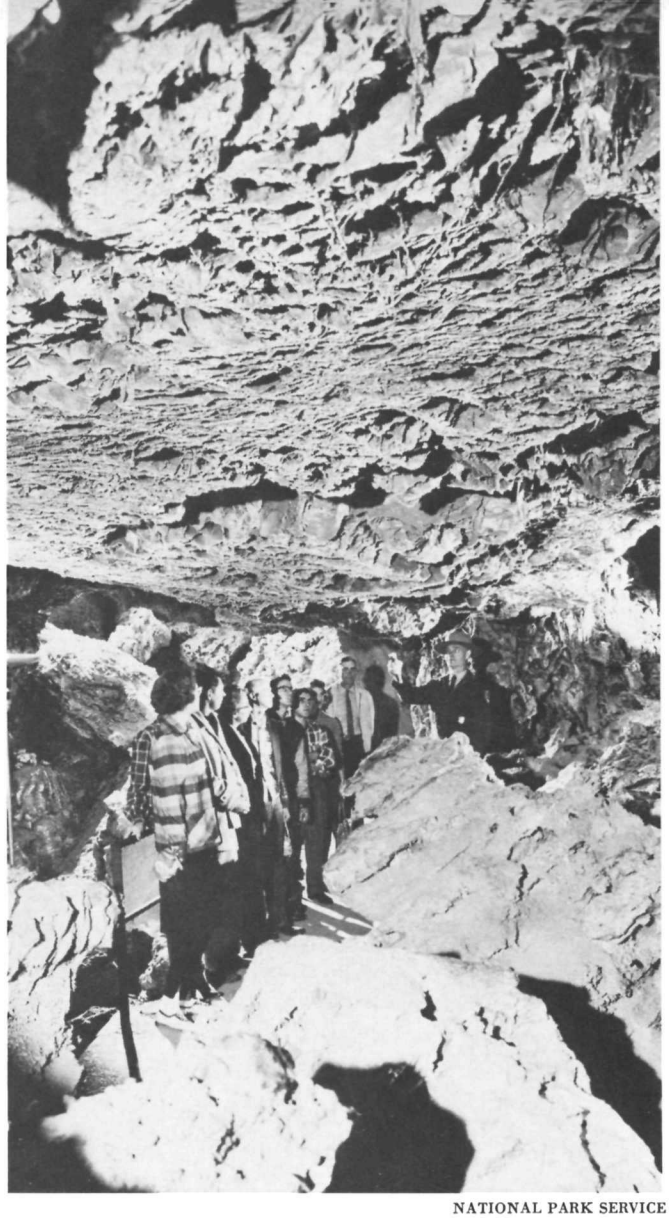
activities. Besides the traditional campfire programs, the interpretive staff conducts nature hikes and wildlife caravans, thus emphasizing the fascinating surface features of the park. In the cave, daily candlelight tours are conducted through a developed but unlit section, with the only light provided by candles carried by each visitor. This experience imparts an idea of what all cave tours were like not long ago, and the flickering candles produce an unusual effect that cannot be duplicated by artificial lighting.

An even more interesting program—in fact, one of the most unusual in the Park Service—was developed 2 years ago at Wind Cave. The most common questions asked by visitors on a traditional cave tour concern not the portion of the cave they see, but the far more extensive area they have been told is beyond the limits of the trail network. It was decided that efforts should be made to channel this visitor curiosity into a constructive addition to the interpretive program. A series of tours was planned that would enable a limited number of hardy visitors to be introduced to the activity of spelunking or "cave crawling." These first spelunking tours were conducted by seasonal naturalists with extensive off-trail experience in the cave. The reaction of the first participants was so enthusiastic that the tour was permanently added to the interpretive program. Many dozens of hours were spent by a handful of spelunker-naturalists in the evenings and on their days off, marking tour routes and becoming completely familiar with them.

A refined program is now available to the park visitor and is designed for those with little or no spelunking experience. For safety reasons, each tour is limited to 10 visitors, the minimum age being 14 years. Most necessary equipment is provided by the park, including hard hats, electric lights designed to clamp on the hats, rubber knee pads, and a ranger-naturalist-spelunker who knows where he is going. All participants must supply their own old clothes, sturdy shoes, and energy. Each guide has a favorite route; but the team of novice spelunkers may pass through areas known as the Spiral Stairs Traverse, the Upper Specimen Route, Wind River Chamber, the Muddle Room, or Snowman's Heaven—all areas that visitors staying on the trails never get near.

During the 1970 season 283 visitors from the United States and Canada sought their own answers to the question, "Where does that hole go?" by participating in a spelunking tour at Wind Cave. Additional information and advance registration forms can be obtained from the Superintendent of Wind Cave National Park, Hot Springs, South Dakota.

If you're a fairly hardy soul and want a really unique experience, visit "The Wonderful Wind Cave" for a first-hand introduction to the subterranean world. ■



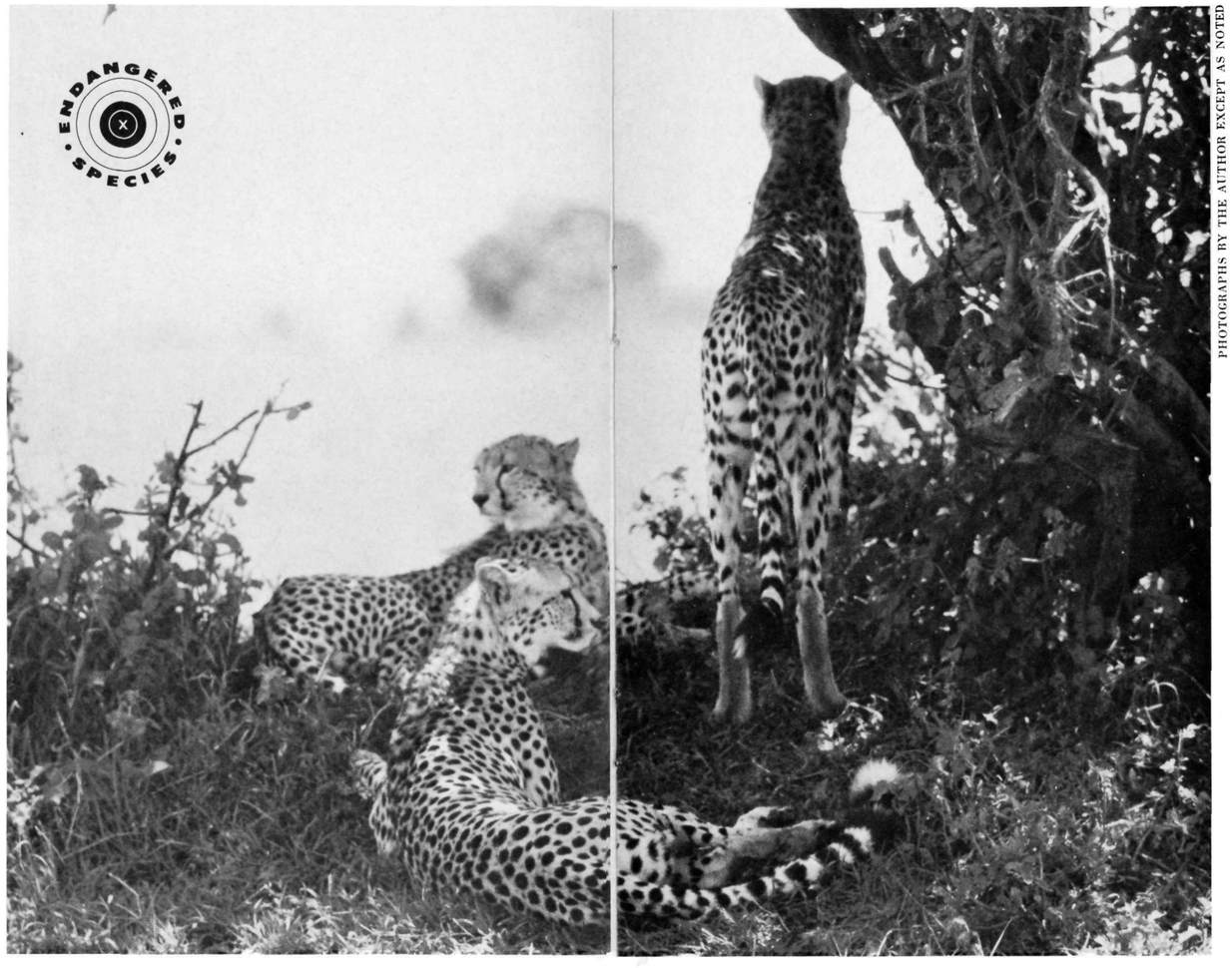
NATIONAL PARK SERVICE

R. Bruce Rodgers and Robert C. Ernst are seasonal ranger-naturalists at Wind Cave National Park and are involved with the Subterranean Tours.

Left, a ranger examines the characteristic "boxwork" found in Wind Cave. Above right, visitors pause along the route of the traditional cave tour. The boxwork was formed when rainwater seeped down from the surface through decaying vegetation, absorbing carbon dioxide, which made the water acid and capable of dissolving limestone (calcium carbonate). This carbon-dioxide-bearing water took some of the limestone into solution; then, evaporation of the water caused the calcium carbonate to be deposited in the cracks and crevices as calcite (the crystal form of calcium carbonate). Later the more soluble limestone dissolved, leaving the formation of calcite "fins" we call boxwork.

CHEETAH

Randall L. Eaton



PHOTOGRAPHS BY THE AUTHOR EXCEPT AS NOTED

THE CHEETAH, FASTEST OF THE WORLD'S land animals, is racing toward extinction. One or another of man's desires have harassed many species into oblivion, but the cheetah is getting what seems to be special extermination treatment. It is being trapped for its value alive, shot for the value of its fur, poisoned because it supposedly kills livestock, occasionally hunted for "sport," made homeless through the loss of its habitat, and starved through the loss of its prey's habitat. It would be difficult to think of another reason for persecuting these lithesome spotted cats. Certainly they do not threaten man's safety; they have never been known to attack man unless cornered, a situation in which *any* animal fights back.

Among the African big cats the cheetah is approaching extinction the fastest. In 1965 the East Africa Wild Life Society conducted a cheetah survey. The report estimated that only about 2,000 cheetahs still remained in all of East Africa, one of the animal's strongholds, and their numbers seemed to be declining. Despite their long association with man, relatively little is known of the ecology and behavior of this elegant feline. I felt it important to acquire knowledge that could prove helpful in preserving the species, so I went to East Africa to study the cheetah in the wild. I wanted to determine the reasons for the cheetah's decline and the steps that should be taken to ensure its survival.

The cheetah once was widely distributed throughout most of Africa except in the arid desert and heavy rain forests. It was also common in the Middle East and southern Asia. It is now nearly extinct in Asia and the Middle East, and it is rare in much of south and north Africa. There may still be remnant populations in West Africa in the area around Kano, Nigeria; in north-central Africa in the vicinity of Fort Lami; and around the southern borders of Lake Chad. The Sudan probably has a respectable number in Bahr El Ghazel Province. Farther east, cheetahs have disappeared from areas of former abundance in Ethiopia and are believed greatly reduced in Somalia. Tom Foose of the University of Chicago recently returned from a general reconnaissance of Angola. He spent nearly three months in the wildlife preserves of Angola and other countries in southern Africa without seeing a single cheetah! He told me that one warden in Angola remembered seeing only two cheetahs in a decade whereas at one time they were much more common. The only remaining cheetah stronghold outside East Africa is South West Africa, but this is also the major recent source of live cheetah exportation, and population trends are not being monitored.

In many languages the cheetah goes under names that translate as "the hunting leopard." With the exception of the dog, the cheetah shares the longest association of hunting with man; and, like dogs, cheetahs are easily tamed and handled. The early Egyptians used cheetahs for coursing game. They took each new generation from the wild, as cheetahs did not breed in captivity. The constant removal of potentially reproductive animals from populations, along with natural mortality, probably contributed to an early decline of the cheetah in northern Africa. Thousands of cheetahs in Asia were captured and used by the Mongol rulers on their deer-hunting expeditions, according to Marco Polo. The use of hunting cheetahs became a pastime that proved tasteful to European rulers and those of Asia Minor as well. From the courts of the Turkish sultan to the hunting lodges of the German emperor at Vienna, cheetahs were tamed for hunting everywhere after the sixteenth century. The sport of hunting with cheetahs in India reached such proportions that when cheetahs were near extinction early in this century, the supply was maintained with African-caught cheetahs. A demand in Asia for hunting cheetahs still exists.

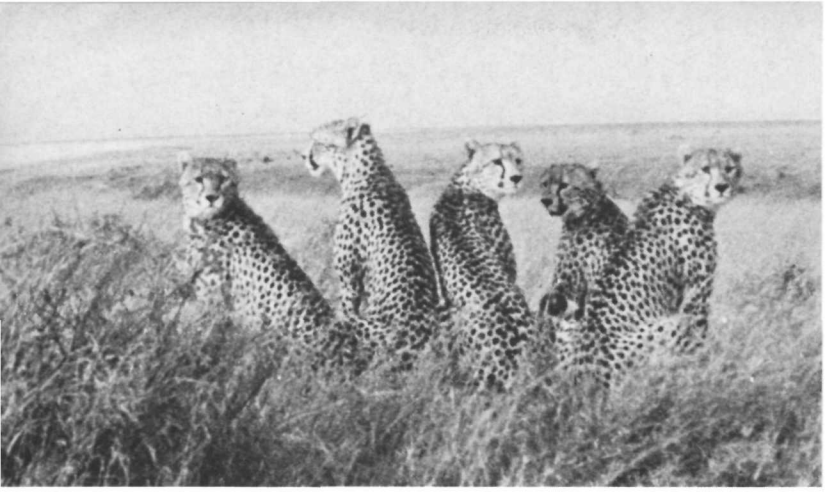
In modern times, man's inroads on cheetahs have taken several forms:

- There is a continuing demand for live cheetahs to be trained for hunting or to be displayed in zoos. More recently, cheetahs have become status pets in the United States and other affluent countries. These cheetahs still come from the wild, as captive cheetah breeding has hardly begun.
- Agricultural development has conflicted with cheetahs wherever they still survive. Their own habitat has been altered, and their prey species have been displaced, undercutting their food supply. In addition, proximity to livestock has led to charges, most of them exaggerated, that cheetahs have been raiding the herds, and cheetahs have therefore been trapped and killed.
- Cheetah fur, like that of most other spotted cats, commands good prices. Though it is against the law in East Africa to kill cheetahs for fur, it is done.

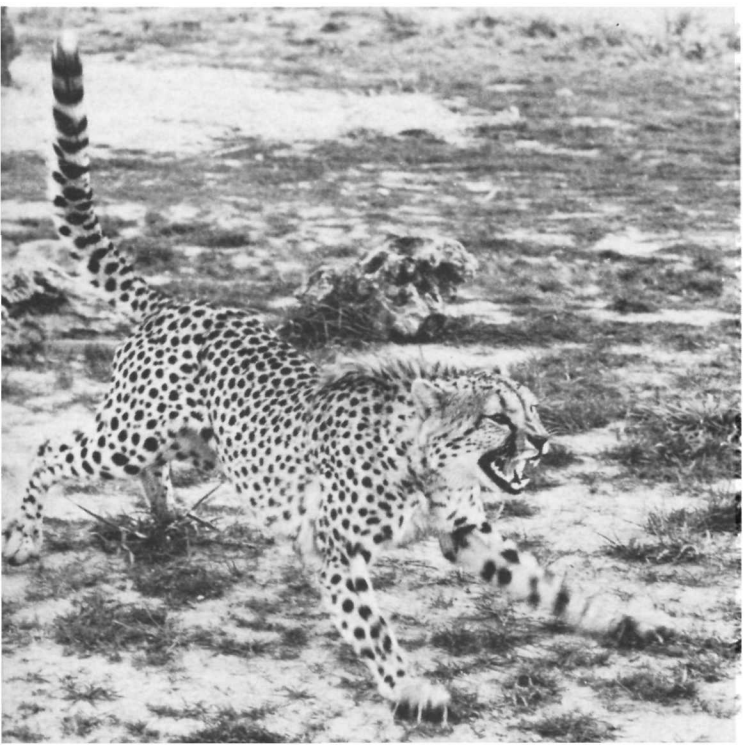
The demand for wild-caught adult cheetahs is damaging to populations in several ways. For every cheetah trapped, tamed, and trained successfully, several die in the process. If cheetahs were good breeders in captivity, as are lions, for example, then they would be much more abundant today. But cheetahs are *not* good breeders in captivity; men have been taking them out of the wild for thousands of years and consequently have maintained a continuing drain on wild numbers. Even in the wild, breeding can be difficult. Cheetahs, unlike lions and wolves, lack "baby-sitters." The cheetah female raises her young by herself, not in a group of adults that help care for the cubs. If a female lion is killed or removed, her cubs may still survive in the care of the pride. A cheetah's cubs will die. In one case that I observed, a female cheetah in Nairobi National Park suddenly disappeared. Her cubs, half-grown and not yet able to kill on their own, waited several hours for their mother to return. When she did not, the cubs panicked, running this way and that. They were not yet skilled in capturing prey and so could not survive.

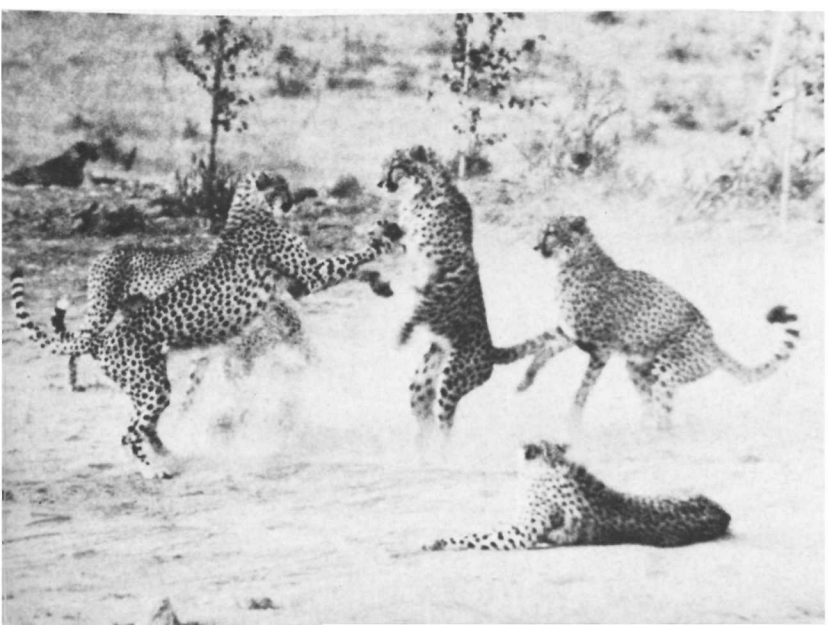
All young cheetahs exported abroad come from the wild. South West Africa and East Africa are the only remaining parts of the cheetah's once great range in which a supply is available to animal dealers. Poachers in Kenya told me that live cheetahs are worth great sums of money in Ethiopia, which, according to them, is the center for exporting black-market cheetahs to other countries. Somalia is equally if not more important in the illegal spotted cat trade.

More recently a demand has been put on younger cheetahs for pets. One has but to visit southern Florida or California to see or hear of so-and-so's cheetah. While I was in Palm Beach recently, I talked with a local veterinarian who told me of the frequent purchases of cheetahs there. He said that many of them die shortly after arriving in this country. His more wealthy clientele simply have



Young cheetahs stay with their mother until almost full-grown, above. Threat behavior, below, and fighting over females, bottom, are phenomena now rarely observable in the wild; there are too few cheetahs left for many social interactions to take place. (These are captive cheetahs.)





them replaced. Cheetahs are available in this country from animal dealers for $1,500 to $2,000. In southern California there are many privately owned cheetahs. They are a status symbol, much like owning a leopard or cheetah coat is.

The World Pet Society is made up of many cheetah owners. Though they profess to be striving to breed cheetahs in captivity, most of them are not willing to allow their pets to mate. The group sought my advice on how to increase breeding success, but I found that many of the members were hesitant in placing their cheetahs together in fear that they might injure each other. They seemed to be worried not so much about the health of the cheetahs as about possibly decreased attractiveness due to wounds or scars! For persons who own cheetahs to be more concerned with their individual pet's appearance than with the survival of the species is incredible.

One of the Palm Beach veterinarian's wealthier clients, who had lost two cubs, became interested in supporting research to enable the breeding of cheetahs in captivity. This would help satisfy the demand of zoos and private citizens for live cheetahs and so slow down the trapping of wild cheetahs. More recently the Donner Foundation generously contributed to the cheetah-breeding program of the San Diego Zoo.

It was not until 1967 in Rome that a cheetah gave birth to cubs in captivity that did not have to be hand raised, although cheetahs have given birth in zoos several times. In the unnatural zoo environment mothers often ignore or kill their cubs, but even when they are hand raised many die. It is desirable to have the mother raise her own cubs. The cubs acquire natural immunities to disease through the mother's milk. Furthermore, the cubs grow up socialized to cheetahs and not to men. Thus when they are sexually mature they are much more likely to mate and properly raise, rather than reject, their own cubs.

Although there is still a large demand for live cheetahs in zoos and wildlife parks, the picture looks ever brighter in this regard. Lion Country Safari, a private wildlife park with sites in California and Florida, is attempting to breed cheetahs on a large scale. The San Diego Zoo also has launched a cheetah-breeding program. Both projects are only a few months old, but already San Diego has had success with the birth of a litter, and the Lion Country cheetahs are mating frequently. In time such efforts as these should prove successful.

The advent of more intensive agriculture in East Africa not only has prevented normal animal migrations and movements, necessary for maintaining habitat conditions, but also has cost predators their prey. The cheetah in India might have survived had it not been for the loss of grazing land for the blackbuck, the cheetah's major prey.

In South Africa, the decrease of prey with the advent of European development and farming techniques probably contributed as much to the decline of predatory species as did killing the predators themselves. As cheetahs are highly specialized for certain species of prey in East Africa, a decrease in these species is leading to a decline in cheetahs. The cheetah's status is comparable to that of the wolf in North America, which not only was shot, poisoned, and trapped, but whose prey populations also were decimated.

The cheetah is considered vermin in many areas of East Africa for its supposedly great threat to sheep, goats, and small calves. However, I observed several cheetahs that regularly hunted on Somali sheep lands, and they showed not the slightest interest in the sheep. The herdsmen told me that they never had trouble with *enduma* (Swahili for cheetah) though they saw cheetahs daily on their ground. An occasional cheetah may damage livestock, as sometimes occurs with an unusual wolf or coyote; but it is certainly not a common occurrence.

Kenya's laws allow, however, that if a cheetah is killed for damaging livestock, it can be sold for its fur. A visitor to Nairobi will notice that the tourist shops are full of cheetah furs—whole, or on wristwatch bands, hatbands, handbags, and so on. These furs come from cheetahs that supposedly attacked domestic animals. No steps are taken to establish whether stock losses actually occurred, but the amount seems much exaggerated.

One animal dealer catches cheetahs in South West Africa and has supplied a great number to individuals and zoos in this country. His operation is successful because of a loophole clause in the laws protecting the cheetah. This clause states that any cheetah deprecating stock can be killed or live-trapped. The dealer in question has a broad network of connections with local farmers. When they enter a complaint, he live-traps the animal then sells it abroad. The farmer prefers having the cats taken alive because the dealer pays him more than he could get for shooting the cheetah and selling its skin. The sad thing is, of course, that most of the cheetahs are *not* damaging livestock.

A further man-cheetah "agricultural" conflict is brewing. Equatorial Africa has the richest mammalian fauna in the world. Bourlière, the French mammalogist, noted that "nowhere else in the world are there to be found so many species of wild ungulates, many of which have extremely large populations." Because of this great array of both individuals and species of wildlife, this area has great esthetic value.

In order to preserve the wildlife of Africa in the face of rapid population growth, many biologists have advocated the use of surpluses of natural animal populations for food rather than attempting to replace the wild animals with domestic livestock. It is claimed that more protein may be obtained per acre by cropping the wild fauna than by attempting to raise domesticated cattle.

How will the predators conflict with this so-called "game ranching"? This question is vital to the continued survival of the large predators. The use of wild protein sources may result in a demand for killing large predators. Man will be cropping the wild herds, thereby replacing the natural role of large predators in the community. When men take a predominantly economic concern for meat-producing wildlife, they will regard predators as vermin. Game ranching, if it becomes widespread, may do wonders for preserving the hoofed game, but may be devastating to the predators. Tourists may be the predators' saviors. Visits by tourists will provide additional income to large game ranchers. The ranchers would do a much greater business if predators were present for observation and photography. The special fascination of the carnivores would offset loss of income from predation on hoofed game.

The cheetah survey recorded a mere eight cheetahs known to be poached in East Africa, but certainty poaching is taking a far greater toll. Though it is illegal anywhere in East Africa to kill cheetahs for fur, the demand in the United States and elsewhere for women's garments led to the illegal killing of cheetahs for the black-market fur industry. The new Endangered Species Protection Act does *not* protect the cheetah, but the recent moratorium on spotted cat furs by the International Fur Traders Federation is encouraging and long overdue. This should help considerably to ease poacher pressure on cheetahs.

Poachers told me that cheetah furs brought them 50 American dollars in Kenya and that they killed from one to six animals each time they went into northern Kenya after them. The most damaging poachers are European or Asian, as they use firearms and vehicles to run down and kill cheetahs. Because the cheetah inhabits the more open areas, poaching by natives using traps, snares, or primitive weapons is not substantial.

Cheetahs once were hunted in India as game animals. In Africa they have been shot for sport; for example, Teddy Roosevelt related that Kermit killed seven cheetahs in one day—a record. Several safari hunting firms included cheetahs in their bag, and they were taken by most game hunters in South Africa in the latter part of the nineteenth century.

The cheetah survey reported only 16 cheetahs shot in East Africa. However, this figure is much too low. It does not, for instance, include those shot by farmers.

Cheetahs are outlawed as game in most African countries today. Furthermore, they are not now considered as desirable trophies by most hunters. Therefore it is doubtful

Cheetahs are born with dark coats and a mantle of long, grey fur that is lost at about three months of age.

LOUISE BUCKNELL

that sport hunting remains an important mortality factor. However, I was appalled on several occasions when speaking with big-game hunters in Africa and America to hear these sportsmen say that they had shot cheetahs illegally while on safari.

Man's only hope for holding on to an esthetically precious part of his environment is to stress the value of *all* wildlife. As in North America, South Africa's once great wildlife legacy now exists only in a few national parks and preserves. The same condition seems likely for East Africa. However, in an unstable political and economic environment, the continuation and wise management of wildlife even in national parks is tenuous. Parks such as Serengeti in Tanzania and Nairobi National Park in Kenya that require small area extensions to make them closed ecosystems—areas that can support wildlife the year round—are fighting losing battles. This is so even though tourist visitation continues to increase annually.

An encouraging contribution to the long-term survival of *all* wildlife is the increasing tourism by Europeans and Americans, for example in East Africa. The fastest growing income in Kenya is in the Ministry of Tourism and Wildlife, second only to agriculture. Although dollar signs cannot be placed on esthetic values, the economic importance of wildlife in East Africa, hopefully, will ensure its survival there.

Several underdeveloped African countries have failed to recognize the value of their wildlife. Though temporarily experiencing short-term success through overexploitation, they are headed for long-term failure. Somalia, Mozambique, and Angola, to mention a few, have witnessed serious declines in populations of many wildlife species that are attractive to tourists. Though a few game preserves and national parks exist on paper, they are poorly funded and inadequately managed. Walking along a road in the Angolan sanctuary for the greater sable antelope—a magnificient but endangered species—Tom Foose found eight leopard traps within a distance of only five miles! Preserves and national parks can be managed properly and more than pay their own operational expenses.

The International Union for the Conservation of Nature and Natural Resources (IUCN) recently has established a Cat Specialist Group in their Survival Service Commission. The group held its first meeting at the International Symposium on Ecology, Behavior, and Conservation of the World's Cats in March 1971. Lion Country Safari, National Parks and Conservation Association, and the World Wildlife Fund sponsored the Symposium. The meeting was the first worldwide step toward conserving the cheetah and other felines. The unanimous resolution of the attending scientists and 40 conservation groups was to urge the federal government to "back up the efforts of state governments in banning the importation and sale of skins and products from the wild cats of any country of the world."

The IUCN has given top priority to the cheetah and leopard in Africa, and soon questionnaires will be sent out for a broad survey of the situation. As a followup to the questionnaire survey, I will conduct field studies to determine the status and population trends of cheetahs in several areas. Eventually it is hoped that a continent-wide field survey of the cheetah can be made. The IUCN and the World Wildlife Fund, both in Morges, Switzerland, depend on donations from private individuals and organizations to carry out these and other needed surveys of endangered wildlife species. The sooner the funds required to conduct field surveys materialize, the sooner steps can be instituted to preserve threatened cats. Oddly enough the cheetah and leopard studies are being sponsored by the International Fur Traders Federation!

Several other things need to be done immediately if we are to stop the decline of cheetahs, to ensure their continued survival, and, hopefully, to see them reintroduced in their former ranges:

- Encourage the practice of successful breeding of the many presently captive cheetahs. This would provide a source of cats for zoos and private individuals. Eventually it would permit the restocking of cheetahs where they are now extinct or may become so.
- Discourage illegal killing and sale of cheetah fur under the guise of stock damage by encouraging the African nations to employ government trappers on a complaint basis for removing and relocating any cheetahs that are really causing damage. Or an effective system of compensating farmers and graziers losing livestock might be established.
- Encourage African governments to extend national parks to make them closed ecosystems so as to prevent prey and their predators from leaving the parks and becoming susceptible to poaching.
- Encourage African governments to provide enough funds to protect all wildlife from poaching within preserves and national parks.
- Encourage women all over the world to stop buying products made from spotted cats.
- Encourage other nations to declare a moratorium on spotted cat furs.
- Encourage the U.S. Department of Interior to adopt the resolution of the first International Symposium on Ecology, Behavior, and Conservation of the World's Cats.

The largest single threat to all wildlife, not only cheetahs, is the expanding human population. As people require more land for living space and food, less land will remain to support wildlife. Even if man can survive under more densely populated conditions, the quality of his life will deteriorate as wild animals disappear. Wild places and creatures are important to man. They show us that there is more to life and the universe than our own selfish concerns. ■

Randall L. Eaton has been involved in wildlife research and conservation since high school. He has received training in biology, animal behavior, and wildlife conservation and presently is a doctoral candidate in ethology at Purdue University. For his master's degree he carried out a field study of cheetahs in East Africa. His doctoral thesis is on lion and cheetah social behavior. He organized the International Symposium on Ecology, Behavior, and Conservation of the World's Cats sponsored by NPCA and the World Wildlife Fund, and he is editing the proceedings for publication later this year.

personal testimony on the STANDARD OF LIVING

darwin lambert

My wife and I consciously have had the American standard of living on trial in our lives for 7 years. We have been accumulating evidence through observation, intermittent research, and experimental living, all of which progressively has affected our attitudes and behavior. Quite suddenly now—with increasingly frequent statements by alert ecologists and governmental leaders—a preliminary hearing on the standard has opened in the court of time and earth, and we feel called upon to consider whether our personal evidence might be useful to the public.

I first felt uncomfortable with affluence while traveling for the U.S. Foreign Economic Administration in the mid-1940s. I had consumed a seven-course dinner at Great Eastern Hotel in Calcutta, after which I enjoyed 7 hours of the sleep of the young innocent. Then, walking before breakfast to stimulate my jaded appetite, I caught crews trucking away hundreds of human beings who had died of starvation during the night! I never lost the feeling of shock, but on that visit I watched India's sacred cows helping themselves to fruits and vegetables in the open-front shops and was able to reason that people permitting such a drain on already short food supplies were not prime objects of my concern.

In China I was impressed with the singing-chanting cheerfulness of load-coolies walking or jogging 14 hours a day with as much as 180 pounds of freight on their backs, powered by a diet that would not suffice to lift a U.S. citizen from his easy chair. I felt guilty in being able to hire similar coolies for $6 a month to carry water from the river largely to be wasted down the drain, or to engage a highly skilled chef for a little as $10 a month. But I accepted the disparity with but minor misgivings, cushioned in smugness that stifled my inborn sense of a common humanity. After all, we of the United States had worked hard and wisely and earned our wealth and power—had we not?

In the 1950s I became aware of the Paley Report, in which the President's Materials Policy Commission pointed out the limits of our planet's productive capacity. After studying reserves, production, and spiraling consumption, the commission forecast critical shortages of nonrenewable resources, ultimately also of agricultural land and diverse items usually considered renewable. Lead, zinc, and tin might reach crippling scarcity as early as 1980; copper, around the year 2000. If the whole noncommunist world reached even the 1950 U.S. rate of consumption, the demand would be impossible to meet. The Paley point was largely forgotten, even by the few who had really seen it, as more immediate problems stole the stage. I began to find, in fact, that a good American had no business believing such tommyrot in the first place.

A later authoritative study, incorporated in a 1963 book called *Resources in America's Future*, by Hans Landsberg, Leonard Fischman, and Joseph L. Fisher of Resources for the Future, warned that "cumulative demand for iron and steel through the end of the century exceeds currently identified domestic reserves of iron ore in this country by some 40 percent." World reserves were found to be adequate only through the year 2000.

Though it became fashionable to suppress or misinterpret such data, I certainly was not alone in being shaken. Secretary of the Interior Stewart L. Udall began assailing the nation's stubborn belief in the "myth of scientific supremacy," which glibly promised technological miracles to pull us out of any and all troubles into which we might stumble. It was true, of course, that improved techniques had increased the efficiency of production and that further advances would be made. But the very real, though as yet incompletely measured, limits of our planet's productivity could not be circumvented.

It seemed that only psychotic paralysis in the face of reality could enable responsible citizens to ignore the warnings. Yet we the affluent somehow went on soothing our consciences and stealing from the grandchildren of our own families as well as from the millions of the contemporary U.S. poor and from billions abroad. Even after perceiving the limits of our own abundance, we went on scraping the planet to keep our ravenous production machine supplied. In so doing we were depleting resources (rich copper in Chile and Peru, for example) that might, if left intact, help "developing" nations to launch prosperous industrial cycles of their own, which they could hardly do without high-grade ores. Perhaps in our motivating depths we had known little beyond the fight for wealth (an extension of the struggle for food, clothing, and shelter)—so, even when the fight was not needed, we continued it as a mad game or rat race.

My wife and I were in our forties with children becoming independent. Our economic and social situation was congenial, blending urban, suburban, and small-town elements. It might have seemed that we "had it made," yet our part in the game—representing the behavior and the

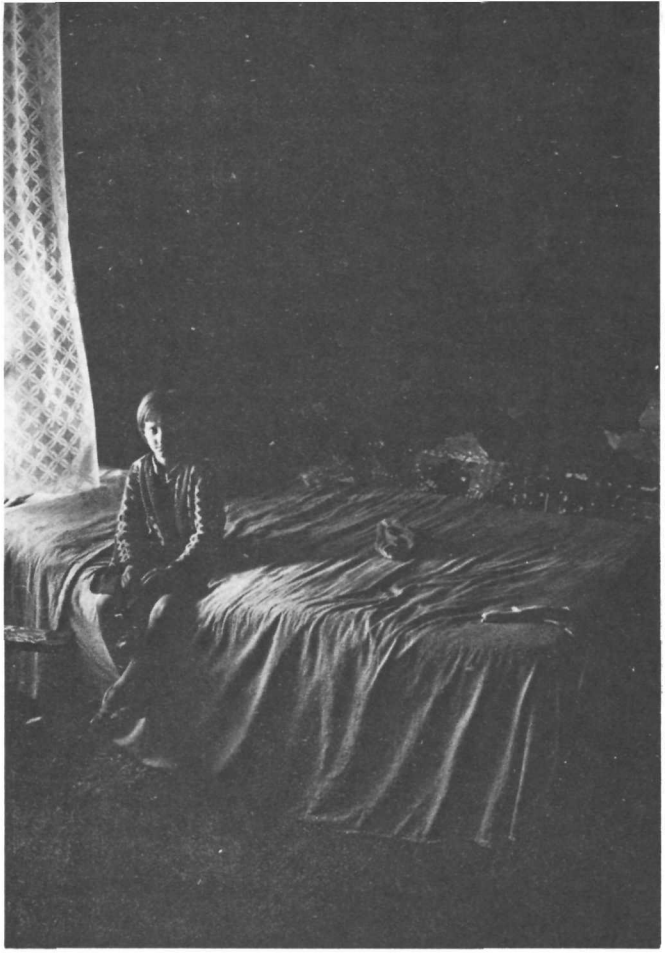


PHOTO BY PAUL CONKLIN COURTESY OFFICE OF ECONOMIC OPPORTUNITY

income-and-consumption level typical of the United States —began to lose luster, to feel hypocritical and hollow. We owned a second home with garden, old orchard, and woodland, and after self-searching discussion we decided to move into it as our only home. Testing whether life could be worth living at a consumption level that earth's resources could sustain for any reasonable population of man into the future, we determined to keep our expenditures below $1,800 a year (including food, clothing, housing, taxes, recreation, transportation, medical and dental services, insurance—everything). Though our change of lifestyle seemed to our friends as no more than early retirement, we had really gone off the living standard.

I previously had published a few magazine articles and written three novels (one published), and now I seriously began retraining myself from journalist to freelance writer. Absence of telephone and deadlines was welcome, but I missed daily audience response. Vegetable gardening, lawn mowing, and wood cutting—using muscle-power only—were enjoyable for their direct connection with the simple bare necessities, though they felt at first a bit like drudgery. My wife raised flowers, decorated and kept house, froze and canned fruits and vegetables, produced oil and watercolor paintings, also wrote—and insisted we were rich in our new way of living.

But obviously we could not long enjoy merely surviving as in a vacuum. We needed to feel ourselves meshing with, somehow contributing to, others. After prolonged puzzling we began seeing our home as a microcosm carrying on human culture in simplified form, emphasizing the earth-man interrelationship, perhaps protesting in a friendly way the technological-industrial alienation from nature. Yet we were not going "back to nature" according to the usual interpretation but going forward with nature in that we welcomed and utilized the man-developed combinations of natural energy and materials represented by science and technology, subject only to judgment as to human fitness in each case and as to the long-range effect on man's planetary home.

We gambled on being socially useful through trying out in miniature various patterns of work and recreation, resource management, and beautification that might have meanings capable of carrying over to more populated and typical surroundings of the worldwide macrocosm. More specifically, I assigned myself the tasks of mixing ecology with other approaches to the modern predicament and picturing a future that might satisfy and fulfill people without exhausting earth's bounty. Soon we were inviting friends, professors, students, and others for weekends devoted to discussion of our experiment and its tentative results and to enjoyment of our scenic setting—forms of entertainment that would not break our budget.

The new way of life was feeling more worth living than any we had known before. We began to see that widespread attitudes had been converging for a generation toward an ecological view of the human predicament, one in which the interrelationships of man and his environment (including urban air, land, and water) were being felt, though often unconsciously. In the modern swirl, sensed by some as total change, old common denominators remained visible to us. Persons truly alive still sought roots in reality to replace essentially useless status, which was the principal prize in the rat race. Oversatiation still produced boredom, from which youth, especially, tried to escape into adventure—creative if suitable opportunities were at hand, otherwise destructive.

Our new attitudes gradually became integrated and clear. Words of Martin Luther King, spoken when he startled even his friends by publicly opposing the Vietnam war, helped significantly. He said there was a "malady within the American spirit" and declared that "when machines and computers, profit and property rights are considered more important than people, the giant triplet of racism, materialism, and militarism is incapable of being conquered." It came home to me that what we euphemistically called a standard of living was not that at all. It was not even merely a high rate of consumption. It was inconsiderate arrogance, with consequences that the affluent generally refused to see, much less acknowledge.

Despite our personally reduced consumption, we could not help sharing the shame highlighted by convergence of the deprived on Washington as planned by Dr. King before his assassination. Not deprivation alone but also poverty-affluence relativity—far more shocking even in our own country than most of us realized—sparked that march. After visiting the poverty camp on the Mall, we confirmed in the Library of Congress that the top fifth of U.S. population was receiving 46 percent of the income, 10 times that being received by the bottom fifth. And the disparity between U.S. citizens and others proved far greater. The most recent worldwide figures showed U.S.

per capita income at $2,625, compared with only $1,625 in Canada, New Zealand, Sweden, and Switzerland, which were next in line, $225 in Brazil, $137 in the United Arab Republic, $75 in India.

Our personal experiment kept linking up with wider significances. For a while we hoped to find evidence that the situation was improving—but it was not. The rate of affluent-consumption, and accompanying planetary deterioration, continued to climb. Population increases by and large offset agricultural improvements. Disparities within the nation and around the world more often increased than decreased. Our personal question as to what lifestyle might be most satisfying was growing into a general question involving not only the issue of human survival but the enjoyment and fulfillment of life. It has now shaped itself into an indictment of our country's sacred cow, the standard of living.

First item, overconsumption and pollution versus resources and environment. U.S. consumption of the planet's resources is obviously disproportionate. Already in the present century we have used (or wasted) double the amount of most metals and fuels consumed by the entire world before 1900. *The United Nations Yearbook* shows U.S. consumption of steel in 1965 at 127,684,000 metric tons, more than a fourth of that used by all humanity. Our tin consumption is listed at 59,490 metric tons, more than a third of the world total; our rubber appetite at 1,088,000 metric tons, two-fifths of the total annual supply. We have 93,659,000 of the world's 195,300,000 telephones, which, like cars and all the varied appliances we acquire and discard so casually, use up vast quantities of the sinews of civilization, yet soon in our prodigal hands turn to junk, little of which is ever recycled. What other country can begin to match our 3,650,000,000 tons of solid waste per year or our 125,000,000 tons of air pollutants added annually to earth's atmosphere, including 65,000,000 tons of poisonous carbon monoxide—even though our U.S.-inspired friends, the Japanese and the West Germans, and our U.S.-inspired rivals, the Soviets, are coming along?

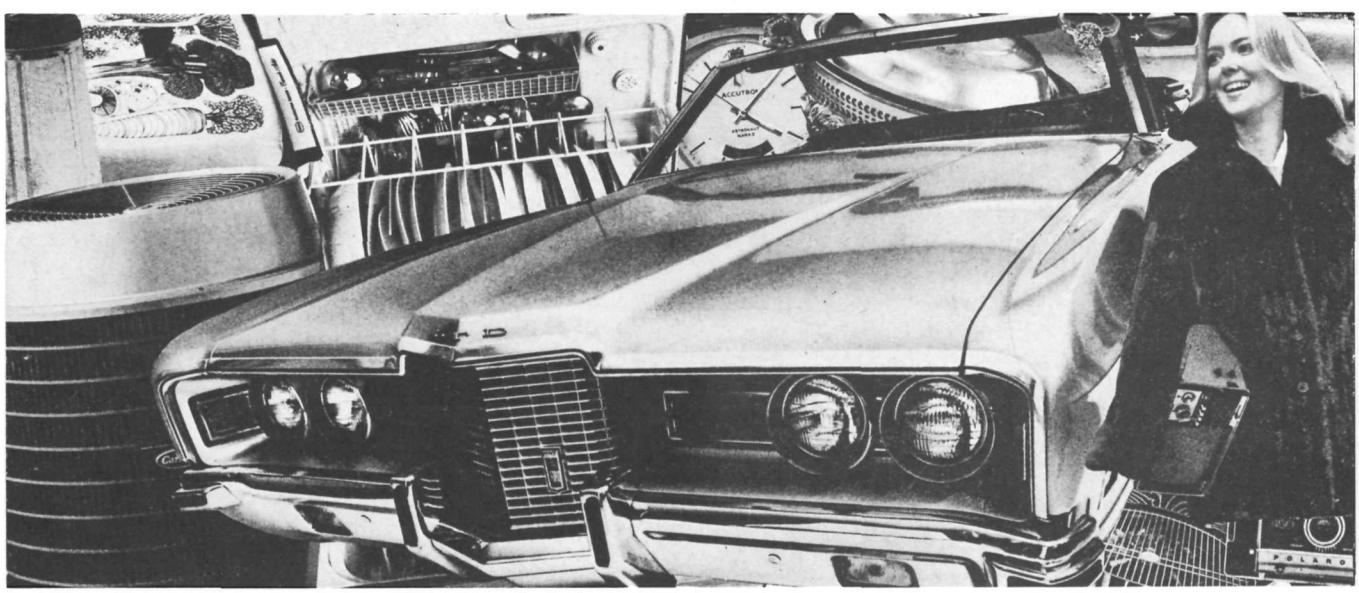
The tendency is to look at the resource picture nationally—if, indeed, at all. *Center Magazine* of November-December 1970 carries an article entitled "The Environmental Crisis," by Neil H. Jacoby, which assails the idea of materials shortages as stemming from "the Austerity School of environmental thought." He assumes that proper regulation by government can "eliminate" pollution and claims that Resources for the Future showed there are no "foreseeable limitations upon supplies of basic natural resources."

But the United States is not the world. The Resources for the Future book discussed the future of this country, and its conclusion was: "We do not see any general running out; instead we see the prospect of sustained economic growth supported by an adequacy of resource materials, *provided* technologic advances and economic adaptation of them continue, *provided* foreign sources of raw materials remain open through maintenance of a viable world trading and investing system, and *provided* government resource policies and private management of resource enterprises improve in farsightedness, flexibility, and consistency."

What comes through as joltingly clear is that the United States' disproportionate hogging will be perpetuated as long as possible while we go on embracing the myth of inexhaustible resources—if no longer inside our own borders, then obtained from inside others' borders. Our country and other adherents of the American standard are, indeed, continuing a mad scramble that not only prolongs and often worsens worldwide disparity of goods but threatens to leave humanity with a dissipated and poisoned planet.

Second item, overconsumption vs. deprived peoples. The tendency of the standard to produce and perpetuate extreme inequalities that undermine valuable cultures is multiplied by the flaunting of our legal looting and its gains in the very faces of those who have little. This may be unavoidable as long as the standard remains, inasmuch as overconsumption is conspicuous to all in an age of picture broadcasts and worldwide mingling. But do we have to rub it in through nauseously repeated commercials confusing the emotions of life?

Third item, overconsumption vs. social utility. Despite



its far-out-front income, the U.S. lags in factors essential to any hypocrisy-free standard. We have become so carelessly proud we are not even getting our own money's worth. Consider health. *The Comparative International Almanac* shows four nations exceeding the United States in life expectancy at birth and 24 nations bettering our child mortality rate, several with less than one death among ages 1 to 4 per 1,000 population, compared with our rate of nine. In population per physician Israel stands best, and the U.S.S.R. betters our rate of 690. We rank forty-third in number of people per hospital bed, 110 compared with 70 in Ireland or Sweden. Consider literacy. The almanac places us even with the U.S.S.R., 27 lines down on a list topped by Sweden. And, yes, consider crime. Our deplorable standing statistically is less expressive than the fear that stalks our proudest cities.

Fourth item, overconsumption vs. human enjoyment and fulfillment. Subtly, perniciously, the American standard is eroding key conditions that make our lives worth living—our ability to feel fellowship with all mankind, the satisfactions of using our muscles as well as our brains to create truly useful things and provide truly useful services that meet truly human needs. Though happiness is something that science cannot measure, subjective feelings that have persisted and grown stronger during the last 7 years persuade my wife and me that absence of affluence can increase the long-range sum of human enjoyment. Overconsumption imposes itself between the built-in biological program of the human being—physical, mental, spiritual—and many of the requirements for realization of this program.

A bit of solid evidence is the rate at which the affluent are opting out. Suicide soars to twice and three times the national average in high-consumption centers like New York and California, and even the national average does the standard no good in worldwide comparisons. The rate in the U.A.R. is one per million per year; in India, five per million; in the Philippines, six; but in the U.S. 110 persons per million are taking their own lives each year. Why? The answer is complex, but noted psychologist Karl Menninger declares in *The Vital Balance* that suicide "increases with prosperity."

Other behavioral scientists furnish evidence. Robert K. Merton sees disrupting inconsistency in America's cultural demand that all persons orient themselves toward high consumption while many are denied effective and legitimate opportunity to do so. Ben B. Seligman deplores "the curious inner tension of an industrial system whose fundamental Puritan outlook demands an incessant, unremitting outpouring of goods (for what?) while at the same time it imposes dreary idleness and dismal futures on those to whom the cornucopia is directed."

Though my wife and I thus indict the American standard of living, we feel that a verdict of guilty would be merely destructive. Far better to grant temporary insanity and recommend therapy—preferably with participation by all categories of population, because the cure can hardly be simple. Hope, unfortunately, is in short supply. Most red-blooded U.S. citizens (and the affluent few elsewhere), it will be argued, are not about to take less than they can earn or fail to consume (or waste) what they can get. And yet our voluntary donations, even if partly stimulated by guilt, dwarf any similar phenomenon in history. Thousands of our young people decline lucrative offers in favor of service with VISTA and the Peace Corps. Business executives are known to give up $200,000 or more a year to take governmental assignments in order to increase their usefulness. Personnel recruiters find creative opportunity a stronger inducement in some cases than high pay. And our hippies are emphatic evidence that money and a high rate of consumption are far from everything.

The search for therapy penetrates toward religion. All kinds of people are again asking the ancient question, "What is the purpose of life?" The record of a recent university Christian conference includes such statements as, "We're going to have to realize that we must act for the benefit of mankind more than for the nation, because the world is now so small." Similar thoughts are circulating widely now. Desmond Morris in his popular book *The Naked Ape* stresses the inseparability of man from biology. Noting general rejection of what has been called religion, he nevertheless maintains, "We simply have to believe in something. . . . A belief in the validity of the acquisition of knowledge and a scientific understanding of the world we live in, the creation and appreciation of esthetic phenomena in all their many forms, and the broadening and deepening of our range of experiences in day-to-day living, is rapidly becoming the 'religion' of our time."

Such a belief could put the standard of living in its place. If we understand the world, we will know we cannot overconsume and make venomous wastes of resources—and long survive. If we concentrate on esthetic phenomena, we just might discover that the greatest of all such phenomena is a society of man harmonizing with a healthful and productive planet. If we broaden and deepen our experience, we will find true adventure in countless parts of this overall creative opportunity and know that the most satisfying experiences are those balancing our personal benefit with that of all our fellows.

Thinking and feeling of this kind could grow into what my wife and I have been calling for some years now an attitude and a budding art of earthmanship. Such an art might render personal affluence—already both guilt-encrusted and boring to many of us—irrelevant. It could root us in terra firma and involve us in an obviously valid cause greater than ourselves. It could be a breakthrough into renewed usefulness on a large enough scale to lift man's morale as in a fresh country. It could extend the American Dream—which was, surely, of reasonable prosperity for all rather than of affluence for a fraction—into a World Dream, rich in the ferment of peace and protected by world law, that reawakens incentive and provides a foundation for meaningful achievement and reassuring identity. It could save us from the trap baited with an overinflated and largely false standard of living. ■

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The Canary Has Fallen Silent

HERMAN E. DALY

In 1857 John Stuart Mill argued that a "stationary state" (by which he meant constant population size and a constant stock of *physical* wealth) was both necessary and desirable. During the century since Mill wrote most economists have argued that the stationary state was either unnecessary, undesirable, or both.

There are many reasons for believing that the times have caught up to Mill, and that today the big question for the social and physical sciences is to invent institutions and technologies which will allow us to reach and maintain a stationary-state economy.

Since our world is finite nothing physical can grow forever —neither the population of human beings, nor the "population" of physical commodities. However, growth in nonphysical things, well-being, satisfaction, leisure times, can continue. In the stationary state technological progress must be aimed at nonphysical growth, or at improving the quality of life.

One may theoretically agree that eventually the stationary state is necessary, but yet argue that it is only relevant to the remote future. How do we know that the time is now? Coal miners used to take a canary into the mines with them. When the dust and gases had so fouled the subterranean environment that the canary had trouble staying alive, then the miners knew it was time to stop. With entire species of birds and animals unable to survive in our environment today (and with human life expectancy falling in some areas) it would seem that mankind is very much in the position of the miner whose canary has just died.

Depletion and pollution of the environment are inevitable by-products of production and consumption. Matter and energy can be neither created nor destroyed. Production must deplete the environment. Consumption must pollute it.

Populations of organisms and commodities have much in common: both are born (produced) and both die (are consumed); both draw primary inputs from the environment for production and maintenance, and both return to the environment the waste products resulting from maintenance and finally death. The flows of depletion and pollution are necessary to maintain the stocks of wealth and people, but they interfere with ecological processes and limit the carrying capacity of the environment.

The limiting factor which determines carrying capacity is not space, but the least abundant necessary material. The most fragile link in the chain of ecological interdependence. Nor is this limit necessarily approached gradually and continuously. Critical thresholds and "trigger relations" are common in ecology.

Constant stocks should therefore be maintained with the lowest possible rates of input and output (which, of course, are equal when the stock is constant and may be jointly referred to as the rate of throughput). The lower the rate of throughput the lower the rates of depletion and pollution, and the higher the carrying capacity of the environment.

Low rates of throughput imply increased life expectancy. The slower the water flows through a tank the more time an average drop spends in the tank. The lower the birth and death rates of a constant population, the longer an average person lives. The lower the production and consumption rates of a constant stock of commodities, the longer an average commodity lasts. If it is good for people to live longer and for commodities to last longer, then it is good to minimize the rate of throughput by which the stock is maintained.

Minimizing the rate of throughput which maintains a stock is equivalent to maximizing the life expectancy or durability of the stock. This can be done in two ways: increasing the durability of the individual commodities (instead of planning for obsolescence and self-destruction), and designing commodities and distribution channels so that the "corpse" of commodities can be recycled and "reincarnated" in a new commodity (the opposite of throw-away technology).

The rate of throughput, which is the same as the annual physical flow of production, which in turn is the same as real gross national product, is thus seen to be the *cost* of maintaining the stock of wealth. Since production is a cost it would logically be minimized in the stationary state, not illogically maximized as today. The same largely holds true for the growing economy. As Kenneth Boulding has argued for many years, it is the services of the stock of wealth which satisfy human wants. Production is a deplorable activity made necessary by the fact that wealth wears out or is used up, and must be replaced. It is not the increase of production, but the increase of capital stock which makes us rich. The social and economic implications of minimizing rather than maximizing production are decidedly radical. Ecological conservatism breeds economic radicalism.

In the past growth has been a solvent for sticky income problems. As long as everyone gets absolutely more the fight over relative shares will be less intense. But in the stationary state relative and absolute shares move together and the focus will shift to distribution of the stock of wealth, which is a far more radical issue than the distribution of income.

The main justification for inequality in income and wealth, namely that it facilitates saving and provides incentives, both of which are necessary for growth, would not be relevant in the stationary state. Also full-employment policies, which allow us to maintain the income-through-jobs principle of income distribution, require investment to stimulate aggregate demand. Investment means growth. The result of zero growth would be mass unemployment. Since production is minimized, the demand for factors, including labor, will be less. In fact the tendency will be to use ever less labor. Some form of supplementary non-wage income must be the rule, not the exception. Again this is all quite logical—labor is a cost, why not minimize it, even if it requires a different system for distributing income and wealth?

By keeping the "pie" constant we make fewer demands on our environmental resources. But in sharing the constant "pie" we make much greater demands on our moral resources.

Economists have generally assumed that moral resources are the scarcest of all and should never be relied on very heavily. But in today's world of doomsday machines, cybernetics, mass media brainwashing, genetic control, etc., there is no alternative. Indeed, the physically stationary economy must be a morally growing economy. ■

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RETURN TO WILDERNESS

L. C. Merriam, Jr.

On a warm July morning in 1970 with two of my sons and neighbor Jack Stutsman, I headed out of St. Paul across the freeways of Minnesota and North Dakota to the Bob Marshall Wilderness in Montana. At Missoula we joined Professor Bob Steele, fire ecologist at the University of Montana, and his nephew, Pete Steele, for the wilderness trip. It was hard to believe that ten years had passed since Bob and I researched the Bob Marshall for the Outdoor Recreation Resources Review Commission's wilderness study, which was being done under the leadership of Dr. James P. Gilligan.

Located in the northern Rocky Mountains south of Glacier National Park in the Flathead and Lewis and Clark National Forests, the Wilderness includes 950,000 acres of federal land. It straddles the Continental Divide and includes portions of the Flathead River drainage on the Pacific side and the Sun River drainage on the east side, whose waters eventually reach the Gulf of Mexico. The Bob Marshall contains several north-south trending high mountain ranges, with large forested river valleys between them. It has a great variety of terrain, with numerous streams. In past years the country has been especially attractive to horse travelers bent on fishing or fall elk hunting. Elevations range from 4,000 to 9,253 feet. There are no roads in the wilderness and only limited development related to U.S. Forest Service area administration, some outfitter camps, and the trail system. Except for limited pack-stock use, commercial grazing and other resource production uses of the wilderness are prohibited.

The wilderness was created in 1940 and named for the late Bob Marshall, forester, wilderness champion, and organizer of The Wilderness Society. Historically the area was used more by fall hunters than by summer visitors, and most travel was by horse because of the great size of the wilderness. By 1959 use had risen to an estimated 5,000 persons, from 1,500 in 1947. The Bob Marshall is now, of course, included in the Wilderness Preservation System created by the Wilderness Act of 1964. Boundaries are the same as in 1960.

In 1960 Bob Steele, his son Robin, James S. Lambert, and I covered most of the wilderness trails on foot, interviewing wilderness users and studying the area's ecology, attractions, and management. We also visited with a number of the lookouts, and contacted trail crews, other Forest Service personnel, and many of the private outfitters whose special-use permit camps were numerous, particularly in the valley and tributaries of the South Fork of the Flathead River. Many of the outfitter camps had semi-permanent frames for tents, and often small corrals.

Since Wilderness horse travel was predominant then—estimated at 91 percent of visitor use in 1960—management was in this direction. Permit allotments of meadows and range areas to outfitters were a major concern, and there was a general allocation of two horses per person—one pack animal and one riding mount. Large parties and frequent use seriously depleted the grass in many meadows and forest openings. Because of this difficulty the Big Prairie Ranger District, then completely within the wilderness, was the subject of a Forest Service special project in 1960. A special budget was allocated to provide adequate trails, manage range resources, provide primitive camping facilities, and work on the problem of elk range, among major objectives. During this operation, which kept several trail crews busy during the summer, pasture fences were rebuilt and trail signs improved. Supplies were brought in by air to Big Prairie and shipped into the wilderness by pack train.

In addition to the Big Prairie District three other ranger districts partly extended into the Bob Marshall. Efforts in these other districts in 1960 were not as intensive as at Big Prairie, though each had its trail crews and fire guards or lookouts. But the Big Prairie District was the one we knew best. Here camped many of the fine old outfitters—Joe Murphy and Hobnail Tom Edwards, to name two. We visited with many of their guests and enjoyed the coffee always offered the visitor.

Now, after a decade, the Wilderness had changed but little. There were forest encroachments on openings and the effects of a major flood in 1964. Though Bob, my older son Howard, and I had been in the Bob Marshall during intervening years, the most obvious changes, in comparing 1960 with 1970, were two: the personnel associated with the wilderness, and the reduction of man-made intrusions.

As in past years, we backpacked into the Bob Marshall for a week. We hiked some 85 miles of trail in the old Big Prairie Ranger District. The mountains seemed higher than in past years of closer association; the distances 10 years longer; the wilderness effectively bigger. Our slower pace

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did not allow for as much wilderness travel and limited the activity of the younger men as well. Still, we were in the beautiful, isolated mountain valley of the South Fork of the Flathead for several days, seeing no one but the District Ranger and three of his staff. We learned that the Big Prairie District no longer exists, being now part of a bigger district with headquarters outside the Wilderness.

Late spring rains provided verdant river flats with lupine, gentian, paintbrush, and cinquefoil, where drier seasons and more horse parties would have produced sparse, brownish grass. Fishing was good. There was ample drinking water along the trail. Mountain vistas were superb. The weather was ideal, and only the roar of the streams broke the forest silence.

Yet, with all the natural beauty and serenity, I missed the people in parties; people to walk with and share impressions. Gone were many of the outfitters' camps of old. Hobnail Tom Edwards, a rarely fine gentleman, is in his last year of operations and had not yet brought a party into the Bob Marshall. Others, like old Joe Murphy, had retired. Tucson Jones of the Forest Service trail crew, who counted visitors for me in 1960, had retired, as had Pinnacle Paul Hazel, the gentle, scholarly, and elderly lookout whom the mountain goats visited on Beartop. For me, "people associations" are a major part of a wilderness trip—especially those founded in common adversity.

Our talks with Ranger Jack Dollan and his staff revealed a growing concern for naturalness. Semi-permanent out-

fitter horse camps are to be phased out. They are being replaced by portable camps where gear goes with the party, not remaining in place on a leased site during the July to November season. Some areas, once heavily overgrazed by saddle parties, are now closed to horses; and the limited camp space at one major lake is restricted to hiker use. Stock numbers are to be regulated so that there will be one saddle horse per person and one pack horse for two, compared with the old norm of two-plus horses per person. Garbage must now be packed out by wilderness parties.

I was impressed with the reduction of semi-permanent camps and the environmental restoration that followed elimination of corral fences and removal of tent frames, so much in evidence 10 years ago. We saw but a limited number of these sites, but the change is for the better. There is also less evidence of construction of improvements —bridges, for example—and trail crews are smaller than in 1960.

The Bob Marshall Wilderness is still a horse area, and because of its size may always be. Yet backpacker use is increasing, according to Dollan. I hope the Forest Service will shape its trail system with this group, as well as horse parties, in mind. Saddle riders, in their involvement with animals and members of their own group, often are insulated to some extent from both the beauty and struggle that are parts of a mountain wilderness trip. To riders, trail location is minor; but to hikers, scenic ledge walks are superior to long avenues through lodgepole pine.

In this Wilderness there are many fine mountain walk opportunities along ridges—as Picture Ridge—or to lakes nearer the road. These places could well be emphasized for hikers, requiring only better signing, some trail improvement, and public education. Many of the best areas for high mountain hiking are near Wilderness boundaries, except near the Continental Divide, and would require less time and effort than a trans-wilderness walk. Many hikers might be interested in such lesser trips.

Although the Forest Service is making changes to protect the Wilderness environment from overuse and development, the larger ranger station at Big Prairie (no longer a "ranger" but a "guard" station) still dominates a portion of the South Fork Valley like a feudal castle, its fenced pasture "battlements" reminiscent of a headquarters ranch of the Old West. The adjoining airstrip, less used than formerly, seems out of place in the vast calm of a trail wilderness. The buildings and development should be relocated in a less conspicuous place.

On the way out of the South Fork Valley we met several horse parties and two government pack trains. Some of the riders seemed surprised to see hikers. Then there was a large party of Boy Scout hikers—seventy, all told—that we passed on its way toward the wilderness. The Scouts could use some of the large flats along the Flathead River without being observed by other parties, and doubtless they would trample the grass a bit. Unlike horses, however, they would not consume it.

Near the roadhead 8-year-old Bill and I followed a new trail to the packer camp at Owl Creek. This was built some five years ago to provide for corraling outfitter and private horses headed into the Wilderness, particularly fall hunting parties. With a decline in elk hunting and Service interest in reducing horse pressure on the Wilderness, this facility seemed to me rather formidable, though I realize that it relieves a difficult congestion problem of former years.

We left the Bob Marshall Wilderness with generally good impressions over the condition of the country and the deemphasis on development. Although there are minor problems—trail mileage on signs, and the remaining Forest Service buildings—the trend seems favorable for retention of the wilderness. The increase in backpackers mentioned by Ranger Dollan was confirmed by other 1970 visitors. We missed some of our old friends and wilderness associates of the past, but this is the price of passing years. Natural environment is, after all, the really meaningful part of wilderness. ■

Dr. L. C. Merriam, Jr., vice-chairman of the Board of Trustees and Executive Committee of the National Parks and Conservation Association, is professor of forestry at the University of Minnesota.

npca at work

ASSOCIATION SEEKS REVERSAL OF FPC'S STORM KING ORDER

The tortuous case of Consolidated Edison's attempts to wreck Storm King Mountain on the Hudson River has taken another turn. The Association, the National Audubon Society, and the Izaak Walton League of America have joined in a brief on behalf of a petition to have the U.S. Court of Appeals for the Second Circuit review and set aside a licensing order by the Federal Power Commission.

The FPC order granted Con Edison a license to build a pumped-storage plant at Storm King. In 1965 the Court of Appeals sent a similar licensing order back to the FPC on the grounds that it had not adequately considered the environmental impact of the project. The FPC restudied Con Edison's application, allegedly with an eye to the environment, and rather predictably asserted that its first decision in granting the license was right all along.

Challenging this assertion, the brief filed by NPCA *et al.* supports the contentions of the Scenic Hudson Preservation Conference and the City of New York, both of which also have petitioned for a reversal of the FPC order. The Association's brief makes three additional arguments not made by the other petitioners: that the FPC failed in its duty to the public to "develop a complete record examining into all relevant facts," particularly the matter of Hudson fisheries, as instructed by the court; that the FPC failed to adapt the project to a comprehensive plan, as required by the Federal Power Act setting up the FPC; and that the FPC failed to follow the court's instructions to "include as a basic concern the preservation of natural beauty," but rather was biased in favor of power development and paid only "lip service to the question of natural beauty."

The brief concludes that the licensing order should be set aside and not remanded for further deliberation by the FPC, as was done in 1965: "the commission's disregard for the court's instructions and its demonstrated lack of concern for environmental values show that a remand would serve no useful purpose."

DO HAWAIIAN PARKS DOUBLE AS GOAT HUNTING PRESERVES?

As it is the responsibility of the National Park Service to maintain parks in their natural state, NPS policy has been that goats should be removed from Hawaii Volcanoes and Haleakala National Parks. Because of lack of park personnel, hunters have been deputized as part-time rangers to help shoot the goats. It now seems that the removal effort may have evolved into nothing but a public hunt, with some effort being made to maintain a breeding stock of goats in the two parks so as to ensure a future supply of game. The same forces that brought about this situation seem bent on making the two parks little more than state parks, run according to local desires.

Goats were introduced to the Hawaiian Islands toward the end of the eighteenth century. By the middle of the nineteenth century the animals had proliferated to the point that goat skins were being exported. They had also become a serious threat to the native plants and animals of the islands, eating the former and thus robbing the latter of habitat. Goats and other exotic species introduced by Europeans combined against native Hawaiian species with such effect that today the Hawaiian Islands constitute probably the worst endangered-species disaster area in the world.

Newspaper reports from Hawaii and a letter to NPCA from National Park Service Director George Hartzog's office indicate that the Park Service's attitude toward the goats has done an abrupt about-face, seemingly under political pressure from hunters in Hawaii. Earl Pacheco, president of the Big Island Fish and Game Association, said Mr. Hartzog wrote him a letter promising that goats in Volcanoes Park would not be eradicated. Mr. Pacheco said his group would not go along with eradication. "We have too little game available for hunting as it is," he said.

On a visit to Hawaii, Mr. Hartzog announced that "goat management" would thenceforth be the object of Park Service policy, rather than the original goal of eradication.

NPCA queried the Park Service to determine whether policy on the feral goats definitely has changed. Mr. Hartzog's office replied that NPS policy "has not been altered by the goat management program." Presumably this means only what it says—that the new goat program has not altered general Park Service policy. It says nothing about whether the Park Service has changed its mind about the goats. The reply maintained that it is not realistic to ask whether the goats can be eliminated. Yet many experts who know the situation believe that a properly financed and executed program could indeed wipe out the goats in the parks and that perimeter fencing (some already in existence) could prevent reinfestation.

Additional evidence that the parks are being used for recreational hunting lies in the fact that hunters entering the park are required to have valid Hawaiian hunting licenses, despite Park Service rules on the matter, and that they receive no instruction or supervision in their shooting. Park Service regulations governing part-time deputized hunters stress that there shall be no overtones of recreational hunting and that all deputized hunters will be selected for their marksmanship, be trained for the specific job at hand, and operate under the direct supervision of full-time park employes.

Some citizen's groups in Hawaii, includ-

A CITIZEN'S VOICE IN GOVERNMENT

Organizations like the National Parks & Conservation Association, which enjoy special privileges of tax exemption, may not advocate or oppose legislation to any substantial extent.

Individual citizens of a democracy, however, enjoy the right and share the responsibility of participating in the legislative process. One of the ways citizens of a democracy can take part in their government at state and federal levels is by keeping in touch with their representatives in the legislature; by writing, telegraphing, or telephoning their views; by visiting and talking with their representatives in the national capital or in the home town between sessions. Every American has two senators and one congressman with whom he may keep contact in this manner.

The best source of information for such purposes is the official *Congressional Directory*, which can be bought through the Government Printing Office, Washington, D.C. 20402, at the price of $5.50. It tells you who your senators and congressmen are and lists the membership of the various Congressional committees. It also gives full information on the personnel of the various executive bureaus of the government whom one may contact about administrative programs and policies.

ing Mr. Pacheco's outfit, are pressing for more than just hunting in the parks. They want local control of park regulations and a break from "national conformity" in park policy, all in order to meet what are termed unique island conditions. Specific desires include continued sustained-yield goat hunting and more recreational development in the parks. Unfortunately, the Park Service seems to be heeding these demands to an extent.

Every locality privileged to be host to a national park could claim that it is unique in some way, and that local desires for use of the parks should be met. But national parks are set aside precisely because their natural and historic values are of great interest to the people of the whole nation, and because only national control can ensure that everyone's interests are served. Less than 1 million of the 200 million owners of the two Hawaiian parks live in Hawaii, and only a tiny fraction of these are behind the heavy political pressure on the Park Service.

DR. EDWARD C. CRAFTS NEW NPCA CONSULTANT

Dr. Edward C. Crafts, a noted forester with a distinguished record of achievements, has agreed to serve as consulting forester to the Association. He also will serve as consulting forester to the Environmental Coalition for North America.

Dr. Crafts spent 29 years with the Forest Service, including 12 as assistant chief. From 1962 to 1969 he was director of the Bureau of Outdoor Recreation in the Interior Department. Presently he is a director of the Citizens Committee on Natural Resources and special articles editor of *American Forests* magazine. He was the 1968 recipient of the Rockefeller Public Service Award in Natural Resources.

NPCA DISPLAY TRAVELS

NPCA now has its own traveling "road show." A portable three-panel display designed to inform the general public about NPCA's programs, staff, and magazine has appeared recently in several environmental exhibits and meetings.

NPCA had the exhibit built in response to many requests from commercial and private organizations sponsoring environmental shows. Because it has been steadily booked, its use thus far has been limited to shows attracting large numbers of people.

The display has been tended by volunteers. More volunteers are needed in various parts of the country to handle future shows. NPCA members interested in tending the display booth if an opportunity should arise to show it in their areas are invited to write us so their names can be added to our roster.

conservation news

DRAINAGE, DEVELOPMENT HIT 'GLADES DESPITE COURT RULE

A new potential disaster is boiling up for Everglades National Park that could be worse than the formerly planned Miami jetport. Drainage and development for housing and farmland are taking place in portions of the Big Cypress swamp between the jetport site and the park's northern boundary. In one instance lots are being sold for private development on inholdings in the park.

In a letter to Interior Secretary Rogers Morton, the Environmental Coalition for North America (ENCONA) called for prompt acquisition of a major part of the Big Cypress by the federal government, in order to fend off drainage and development.

We reported here in March that a Florida circuit court had ruled in favor of conservationists by dismissing a petition to establish a drainage district in Gum Slough, which is one of the areas in the Big Cypress now being put to the bulldozer. The drainage district would have permitted a network of canals to be built with money raised by taxing property owners in the proposed district. NPCA and the National Audubon Society opposed the petition in court on the grounds that drainage would disrupt water flow to the park, would wreck the Big Cypress ecosystem, and would damage southwest Florida's water supply. The court supported these contentions and found also that pollution from proposed dairy farming would threaten fish and wildlife in the park and beyond it.

Gum Slough is in the path of the 50-mile-wide riverlike sheet of water flowing south into Florida Bay from Lake Okeechobee. This water is the reason for the Everglades' existence, and its purity is vital to Everglades National Park. Of special significance in the court's ruling was the recognition of the park's riparian rights in the water, rights that under the Fifth and Fourteenth Amendments to the U.S. Constitution cannot be harmed without due process of law.

Despite this implication of the ruling, developer James G. Pace, a key figure in the petition for the drainage district, has gone ahead with drainage on his own land. The present outlook for his 4-square-mile tract is a vegetable farm, although Pace describes his plans as "open ended." Pesticide and fertilizer runoff from a truck farm this size would be considerable. Just this sort of threat was one of the main arguments against the jetport.

In another part of the Big Cypress, landowners are clearing vegetation preparatory to drainage. In one of the private inholdings in the northwestern part of the park, a Miami real estate firm is selling 5-acre "waterfront estates" on which people may build without zoning restrictions of any kind.

The ENCONA letter to Mr. Morton commends the Administration's "standing firm on its decision to relocate the proposed airport at an ecologically acceptable site, and to transfer the existing runway to that site. . . .

"But the removal of the airport will not necessarily save Everglades National Park and Big Cypress Swamp. The Big Cypress will be lost to unwise and unplanned drainage and development by real estate speculators, and the park will be deprived of a substantial portion of its necessary water supplies" unless the federal government acquires "at least 400,000 acres of the Big Cypress Swamp. . . . otherwise the entire effort at protecting the park and the swamp by relocation of the jetport site will come to nothing." The letter also urges vigorous enforcement of a law passed last year guaranteeing the park delivery of a certain minimum amount of water through the Army Corps of Engineers' canals running south from Lake Okeechobee.

SHENANDOAH PARK VIEW MAY INCLUDE POWER LINE

The Potomac Edison Power Company is proposing to build a high-voltage power transmission line through scenic Rappahannock County that will come within a mile of the Shenandoah National Park boundary and will be visible from nine of the scenic overlooks along the Skyline Drive. The line is being fought by the Rappahannock League for Environmental Protection, Flint Hill, Virginia 22627, a group formed in response to the power line threat.

The League contends that the line will reduce property values in the vicinity of the right of way by 80 percent, yet will do nothing for the people of Rappahannock County, as the line is for transmission only. Furthermore, the League maintains, the line is not needed for meeting power demand, but is simply a competitive play between Potomac Edison and its rival in the area, the Virginia Electric Power Co.

HOW TO MAKE A FAST BUCK IN THE NATIONAL PARKS

Among the most vexing problems afflicting the national park system is that of inholdings—privately owned plots of land inside park boundaries. It might be expected that the National Park Service would like to eliminate inholdings, and so it would, theoretically. But when it comes down to practice, bureaucratic inertia has left a lot of inholdings to fester.

A case in Glacier National Park is a good example. A 68-acre patented mining claim deep in the heart of the Montana park's proposed wilderness recently reverted to the state for the owners' failure to pay back taxes. The land was purchased, apparently legally, by two women in Cut Bank, Montana, for $48. The land was offered to the Park Service regional office in Omaha, Nebraska, for $6,800. The Park Service, however, failed to pick up the offer, and the land was sold into other private ownership for the same $6,800. The asking price for the tract now is $150,000.

The Federation of Western Outdoor Clubs, terming the asking price exorbitant and private ownership of the tract a threat to wilderness designation of the area, has urged condemnation of the land at $10.00 an acre. In a letter to NPCA, Loren L. Kreck, vice president of the Federation, calls the business "strictly an attempt to get rich quick by present owners."

In another letter, the Federation says the threat of development, including the possibility that a 7-mile access road might be demanded through the park to the property, is being used to support the "exorbitant figure. . . . There is no reason that the tax-paying public should have to pay the blackmail price for the recovery of this land. . . . There seems to be no action from the Omaha office that would indicate condemnation proceedings. . . ." The government, the letter suggests, should seek to recover the land through condemnation at its "assessed value on its previous land classification, which is approximately $10 an acre or something close to this."

DEVELOPMENT PLANNED NEAR YELLOWSTONE

The National Park Service has proposed turning the 52,000-acre tract of national forest land that links Grand Teton and Yellowstone National Parks into a national recreation area. The Park Service says it wants to assume administration of

the corridor in order to "eliminate confusion and provide better services" for tourists who drive the 6-mile, north-south highway along the Snake River between the two parks. The road will be "beautified" and renamed the John D. Rockefeller Jr. Memorial Parkway to honor the man who donated much of the acreage of Grand Teton National Park to the federal government.

Many local conservationists fear the Park Service has other objectives. The tract is bounded by a national forest on the west and a wilderness area on the east; the two national parks form the northern and southern borders. It is a haven for wildlife, and the Snake River flows undisturbed within it. Presently the two resorts and one campground in the area provide under 500 overnight units. According to a Park Service spokesman, more facilities will be built if the demand increases. Undoubtedly the demand will increase, inasmuch as the Park Service proposal calls for the completion of a road from Ashton, Idaho, in the west to connect with the parkway inside the corridor. Local conservationists believe the area is slated to be developed to accommodate 12,000 people. All present recreational uses, which include hunting, camping, and fishing, as well as commercial resorts will be permitted to continue under the Park Service plan.

If the area gains national recreation area status, either the Park Service or the Forest Service could administer it. Conservationists prefer retention of the tract by the Forest Service, which seems less intent on overdeveloping the area and has less money to do so. Although some 450 million board feet of marketable timber grow in the tract, there are no present plans to harvest it, and the Forest Service long has recognized the recreational values of the corridor.

FIGHT STILL ON AT JOYCE KILMER MEMORIAL FOREST

Having won the first round in an effort to stop highway pollution of the Joyce Kilmer Memorial Forest, conservationists are digging in for a second, probably much tougher battle.

We reported in April that the Forest Service had agreed that it would respect its 1936 commitment to preserve the forest. The tract was set aside as a memorial to the young poet killed in World War I. It was chosen as one of the finest stands of virgin timber remaining in the East. Besides this, it has great scientific value because it is a complete watershed in its natural state. The Forest Service proposed building a road across one corner of the watershed. The road would have required deep cuts, silt from the erosion of which would have washed down into the valley and polluted the stream, ruining forever the tract's value as an untouched watershed, and also ruining much of its scenic value.

In announcing that the road would not enter the Joyce Kilmer watershed, the Forest Service said a "compromise" route had been decided on. It is this "compromise" that is now being fought by the Save Joyce Kilmer League and other conservationists. They contend that the new route is as environmentally destructive as the old one and will divide the Joyce Kilmer Forest from the adjacent Slickrock Creek *de facto* wilderness, thus harming the chances of either area's being given the protection of official wilderness status.

National forest lands surrounding the Joyce Kilmer–Slickrock Creek complex have been excessively lumbered in an exploitive fashion, according to NPCA consultant Dr. Walter Boardman. The Slickrock Creek wilderness owes its condition to its inaccessibility to loggers. Though the proposed road is officially billed as a "scenic highway," it will give the lumbermen the access for which they have been pressing so they can strip the Slickrock Creek area as they have adjacent country. Therefore the threat is more than just the division of the two tracts. The conservationists involved favor improvement of an existing road between Robbinsville, North Carolina, and Tellico Plains, Tennessee. They point out that the Forest Service itself has called the existing road "an outstanding scenic route."

SUIT TO HALT FEDERAL POISONING FILED

Defenders of Wildlife and the Sierra Club filed a lawsuit in mid-April to curb the Interior Department's wildlife control activities. The suit charges that programs administered by the Bureau of Sport Fisheries and Wildlife to kill predators and rodents judged "injurious" to agriculture and animal husbandry are killing other animals and birds as well, including several endangered species.

According to the suit, some nontarget animals die when they eat lethal bait or poisoned target animals, and some are killed by traps. Others lose their habitat or food supply when the animals that provide them are wiped out.

Those endangered species threatened by the federal programs include the black-footed ferret, the San Joaquin kit fox, the Utah prairie dog, the California condor, and the southern bald eagle. The black-footed ferrets of the Great Plains prey on prairie dogs and live in their burrows. The zealous poisoning program aimed at the prairie dog has caused this creature practically to disappear.

Other unintended wildlife victims, according to the lawsuit, are badgers, swift foxes, gray foxes, ringtail cats, wolverines, Utah prairie dogs, fishers, western burrowing owls, rough-legged hawks, golden eagles, and several species of birds—woodpeckers, nutcrackers, jays, chickadees, and nuthatches.

The suit calls for a halt to wildlife control programs that threaten endangered species and migratory birds, and it asks for suspension of other programs until studies are made and environmental impact statements filed.

conservation docket

Every Congress considers thousands of bills related to environmental problems. We cannot list them all; therefore, below is a selection of those so far introduced in this Congress, together with their House of Representatives (HR) or Senate (S) numbers and the committee(s) to which each has been referred. Members, as citizens, are free to write to these committees to request that they be put on a list for notification when bills come up for public hearing. When notified of hearings, they can ask to testify or they can submit statements for the record. To obtain copies of bills, write to the House Documents Room, U.S. Capitol, Washington, D.C. 20515, or to the Senate Documents Room, U.S. Capitol, Washington, D.C. 20510. When requesting bills, enclose a self-addressed label.

The Senate Commerce Subcommittee on the Environment held hearings April 15 and 16 on S 1032, the Hart-McGovern environmental citizen suit proposal. Joseph L. Sax, Professor of Law at the University of Michigan and author of the state's citizen suit law, testified in favor of the bill. The Administration will not support the bill, according to the testimony of Mr. Timothy Atkeson, General Counsel of the President's Council on Environmental Quality. Additional hearings will be held.

On May 3 and 4 the House Subcommittee on Conservation and Natural Resources held hearings on dredging, modification, and channelization of rivers and streams. Conservation groups advocated a moratorium on channelization projects until the environmental impact is more fully studied. The hearings will continue in June.

House Resolutions 363 and 365 call for creation of a select committee of the House to conduct a full and complete

investigation of all aspects of the energy resources of the United States. The bills have been referred to the House Committee on Rules.

New national parks proposed and referred to the House Interior & Insular Affairs Committee are as follows: Arches National Park in Utah (HR 7136); and the Tinicum National Urban Park in Pennsylvania (HR 7088).

Referred to the same committee are the following proposed recreational areas: Amistad National Recreation Area in Texas (HR 6275); and Gateway National Seashore in New York and New Jersey (HR 7232 and HR 7609). Bills were introduced in the Senate for these areas (S 1295 and S 1195) and referred to Senate Interior & Insular Affairs Committee. The House committee also has a bill to provide for the establishment of the Ohio Canal and Cuyahoga Valley National Historic Park and Recreation Area.

Several bills concerning transportation were introduced. HR 7428, referred to the House Committee on Banking and Currency, and S 1344, referred to the Senate Committee on Banking, Housing, and Urban Affairs, would permit a state to elect to use funds from the highway trust fund for purposes of urban mass transportation. Two bills in the House Committee on Public Works (HR 7427 and HR 7428) would amend the Urban Mass Transportation Act of 1964 to remove the existing percentage limits on the amounts of regular grant assistance which may be provided for projects in any one state. A bill to amend the Department of Transportation Act in order to modify the national policy with respect to protection of lands traversed in developing transportation plans (HR 6367) was referred to the Committee on Inter state and Foreign Commerce.

A bill to establish a Department of Natural Resources was introduced by the Administration in both houses (HR 7274 and S 1431) and referred to the House and Senate Committees on Government Operations.

The House Merchant Marine and Fisheries Committee has held hearings on the many bills prohibiting ocean dumping within specified areas. After evaluating all legislation, the issue will be given active consideration. The Administration-supported bill is HR 4723. Others include HR 285, HR 336, HR 3662, and HR 4359.

Bills to provide for the settlement of land claims of Alaskan natives are being considered in the House and Senate Committees on Interior and Insular Affairs. Congress hopes to act upon the legislation by June 30, when the Alaska land freeze expires. The Administration bill (S 1571) would deed natives 40 million acres of land, while the Harris bill (S 835) deeds 60 million acres.

Continued from page 2

should be. The need is for a strong world agency capable of protecting the interests of the people of this nation and the world as a whole in the resources of the seas.

Notable also is provision for stop-order powers. The Authority is not to be a helpless institution presiding over chaos; when destructive trends emerge it may call a halt under penalty; rapid appeals may then be taken to the Tribunal, a judicial agency provided for in the Treaty; the Tribunal may order a stay pending appeal.

Thus the Treaty establishes both executive and judicial institutions, a nucleus of world government under law in the specific field. On the emergence of world institutions of this kind the welfare and security of this nation and all others depend.

Legislative institutions are also proposed in the draft. Regulations governing procedures and the essentials of environmental protection are incorporated in annexes. Provision would be made in the Treaty for the amendment of the Annexes; proposals for change would be submitted to the contracting parties and would become effective unless one-third of the parties registered disapproval. The procedure is familiar and salutary; a very rapid buildup of regulations comprising a well-considered world law of marine resources is imperative in the interest of the individual nations and the world community.

THE MARINE RESOURCE problems which press for solution are staggering. Pollution of grave dimensions can arise from the mere harvesting of sessile organisms or the extraction of minerals; a continuing contamination is occurring from navigation, including oil transportation, and will increase with traffic from resource extraction; and all the rivers of the world are feeding the seas with effluent contamination.

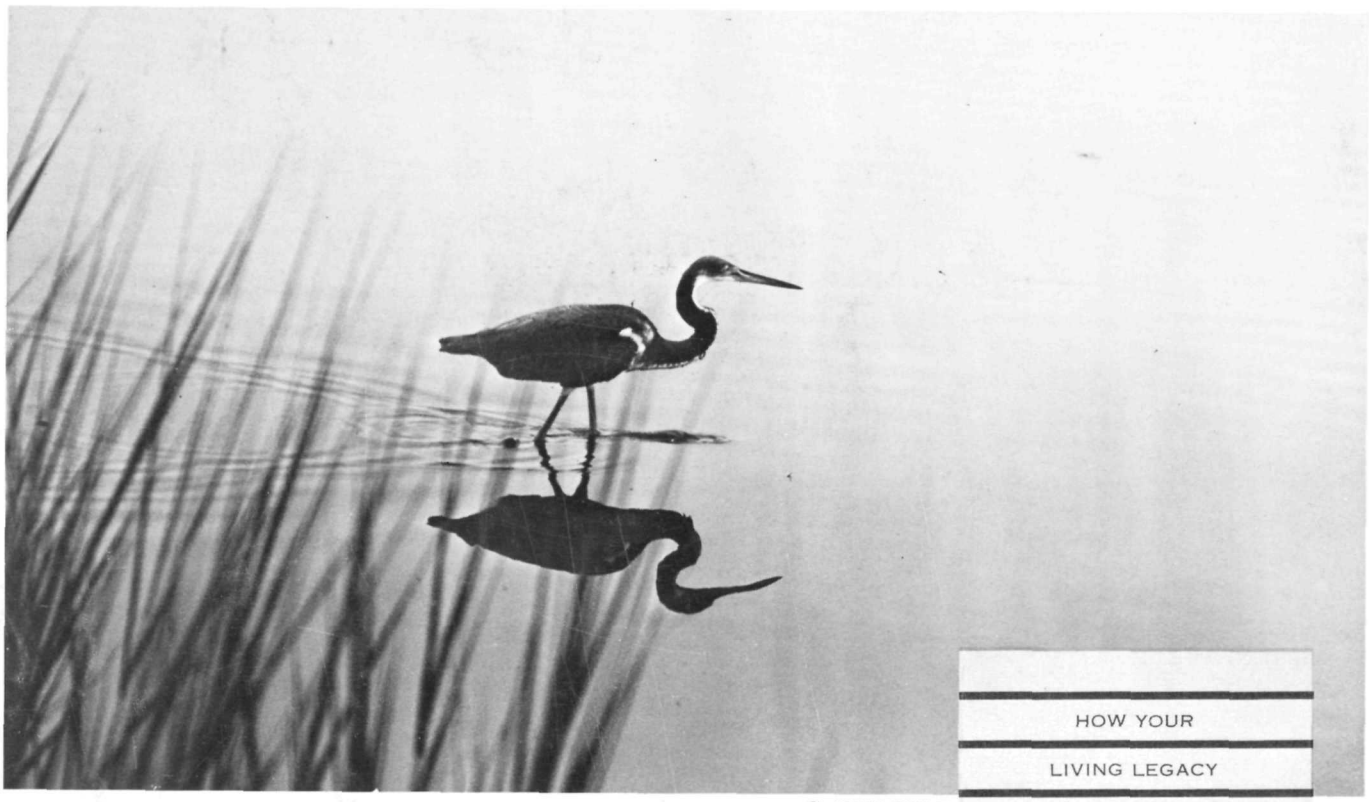
Extraction and navigation problems probably lie squarely within the obvious jurisdiction of the world Authority; if they are not fully expanded in the draft treaty, the final version should be tightened. Effluent pollution from the continents poses a major challenge; to rely on unilateral action or new multi-national agreements to police practices within the national territories will mean intolerable delays; it would seem that provisions must be incorporated in the Treaty whereby signatories agree not to contaminate the seas, and whereby penalties can be established for violations.

WE HAVE one major criticism to make of the draft treaty; namely, that it seems to extend only to measures for the protection of the resources of the seas against the harmful effects of mineral exploration and extraction. Important as such protection undoubtedly is, it is not enough.

The United States should be taking the lead in the protection of the life of the oceans, without regard to mineral wealth. Unless agencies like the International Whaling Commission are to be mightily strengthened, their duties should be transferred to the Seaboard Resource Authority, and the powers of the latter should be expressly expanded. The Resolutions of the General Assembly enlarging the responsibilities of the Seabeds Committee appear to authorize an expansion of the proposal beyond mineral regulation. A more comprehensive project is needed in this respect.

THE United Nations Conference on the Law of the Sea will be one of a number of significant comparable developments. We have had occasion to comment favorably on the forthcoming United Nations Conference on the Human Environment in Stockholm in 1972. All governmental organizations accredited to the UN will have a chance to participate in the Stockholm meeting, as indeed in the Conference on the Law of the Sea. It is very important in our judgment that conservationists, environmentalists, and humanitarians avail themselves of this opportunity and assume the full responsibilities of participation. Meanwhile, a ministerial meeting looking toward a multilateral convention on endangered species is in prospect; this, too, is a worldwide development of great significance and must have close attention by the environmental movement of the world. Proposals have also been advanced for an agency in the United Nations system to grapple with the population problem. This Association has recommended the establishment of an Environmental and Population Organization within the United Nations structure, comparable to the Food and Agriculture Organization, the World Health Organizations, and others.

All conservationists have a great stake in the success of the United Nations Conference on the Law of the Sea. All humanitarians have a stake, because the project looks toward the establishment of that kind of democratic world order which alone can rescue the planet from the Four Horsemen of the Apocalypse. —*Anthony Wayne Smith*



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