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FIRST WORLD CONFERENCE

ON NATIONAL PARKS

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First World Conference on National Parks

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America's Natural Resources

Created in 1849, the Department of the Interior—America's Department of Natural Resources—is concerned with the management, conservation, and development of the Nation's water, wildlife, mineral, forest, and park and recreational resources. It also has major responsibilities for Indian and Territorial affairs.

As the Nation's principal conservation agency, the Department works to assure that nonrenewable resources are developed and used wisely, that park and recreational resources are conserved, and that renewable resources make their full contribution to the progress, prosperity, and security of the United States—now and in the future.

UNITED STATES
DEPARTMENT OF THE INTERIOR
Stewart L. Udall, *Secretary*

NATIONAL PARK SERVICE
Conrad L. Wirth, *Director*

First World Conference on National Parks

Proceedings of a Conference Organized by The International Union for Conservation of Nature and Natural Resources. Cosponsored by United Nations Educational, Scientific, and Cultural Organization; United Nations Food and Agriculture Organization; United States National Park Service; Natural Resources Council of America.

Seattle, Washington
June 30–July 7, 1962

Edited by
Alexander B. Adams

National Park Service
United States Department of the Interior
Washington, D.C., U.S.A.

THE WHITE HOUSE

WASHINGTON

June 23, 1962

It is with great pleasure that I welcome the delegates to the First World Conference on National Parks on behalf of the United States Government.

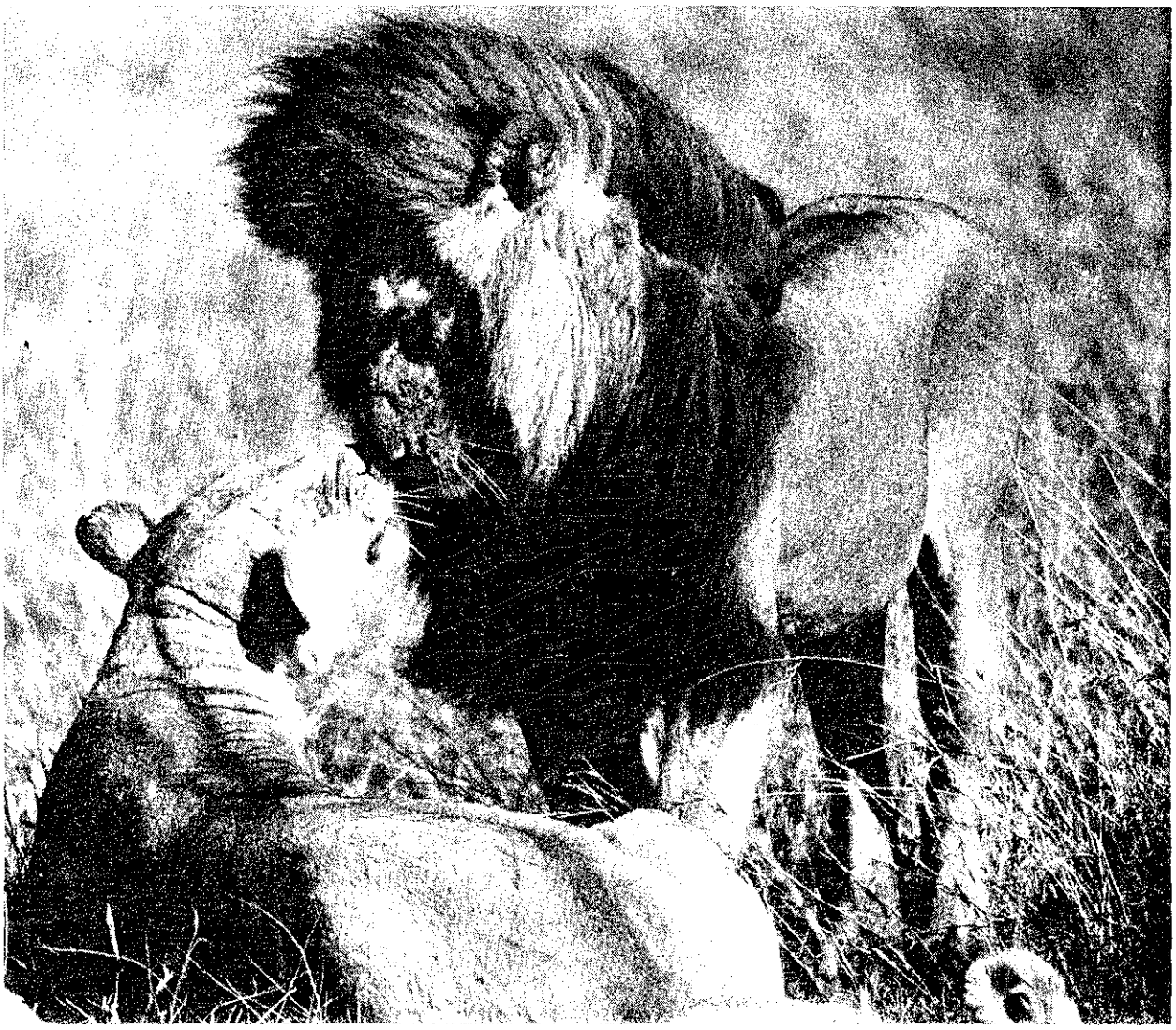
Growth and development of national park and reserve programs throughout the world are important to the welfare of the people of every nation. We must have places where we can find release from the tensions of an increasingly industrialized civilization, where we can have personal contact with the natural environment which sustains us. To this end, permanent preservation of the outstanding scenic and scientific assets of every country, and of the magnificent and varied wildlife which can be so easily endangered by human activity, is imperative. National parks and reserves are an integral aspect of intelligent use of natural resources. It is the course of wisdom to set aside an ample portion of our national resources as national parks and reserves, thus ensuring that future generations may know the majesty of the earth as we know it today.

Throughout history, much of the most productive human thought, many of our cultural concepts, have been shaped in the out-of-doors. As rising population pressures tend to emphasize conversion of resources into commodities, we must be careful to safeguard adequate and representative examples of the natural environment, where people may reflect, study, and enjoy the benefits of the earth.

JOHN F. KENNEDY

Note: This letter, signed by John F. Kennedy, then President of the United States, was sent to the delegates of the *First World Conference on National Parks.*

SOME PARKS IN PICTURES



Serengeti National Park, Tanganyika



Petkeljärvi National Park, Finland



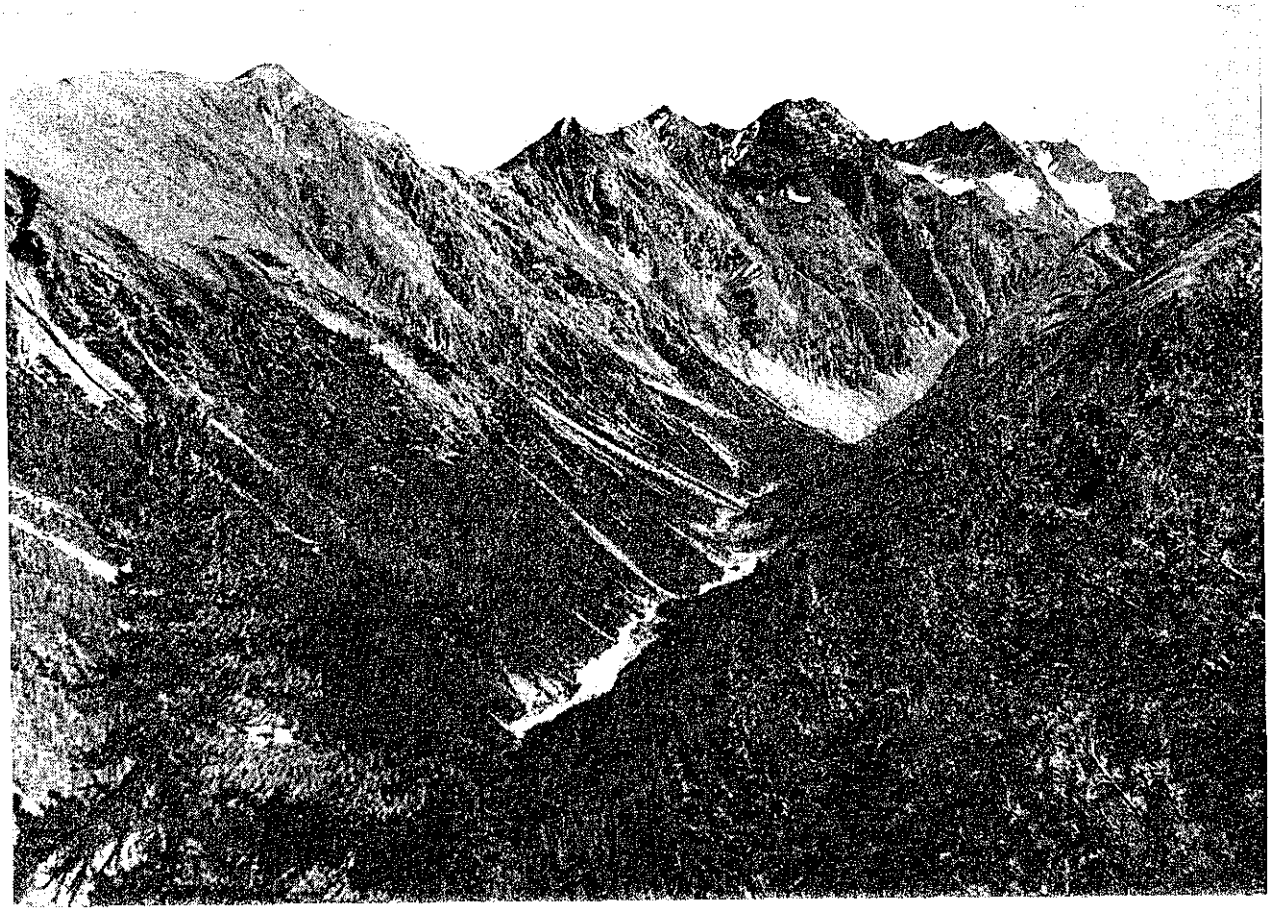
Sarek National Park, Sweden



Mayon Volcano National Park, Albay Province, Philippines



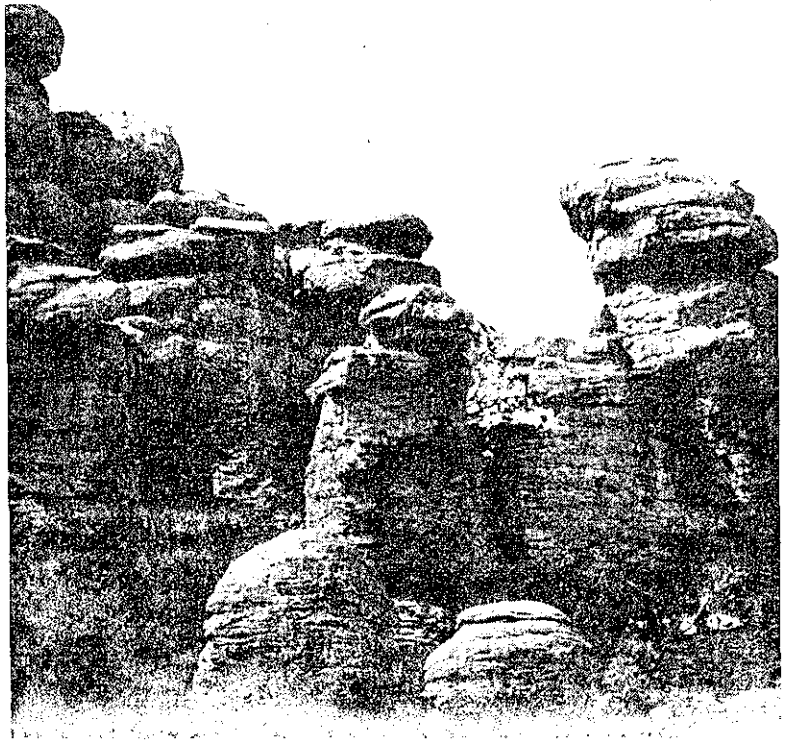
Jasper National Park, Alberta, Canada



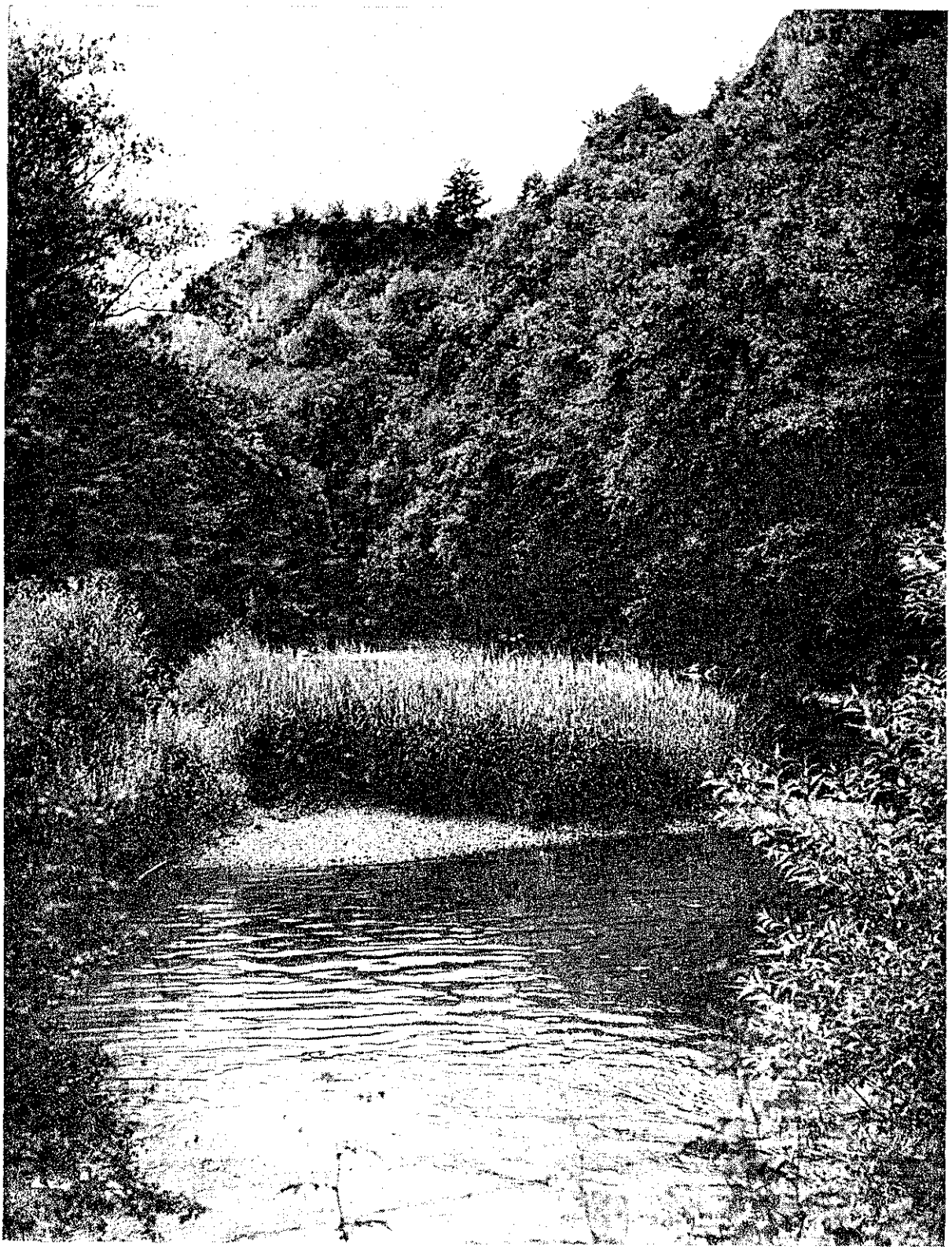
Swiss National Park, Switzerland



Lake Manyara National Park, Tanganyika



Cumbres de Majalca
National Park,
Chihuahua, Mexico

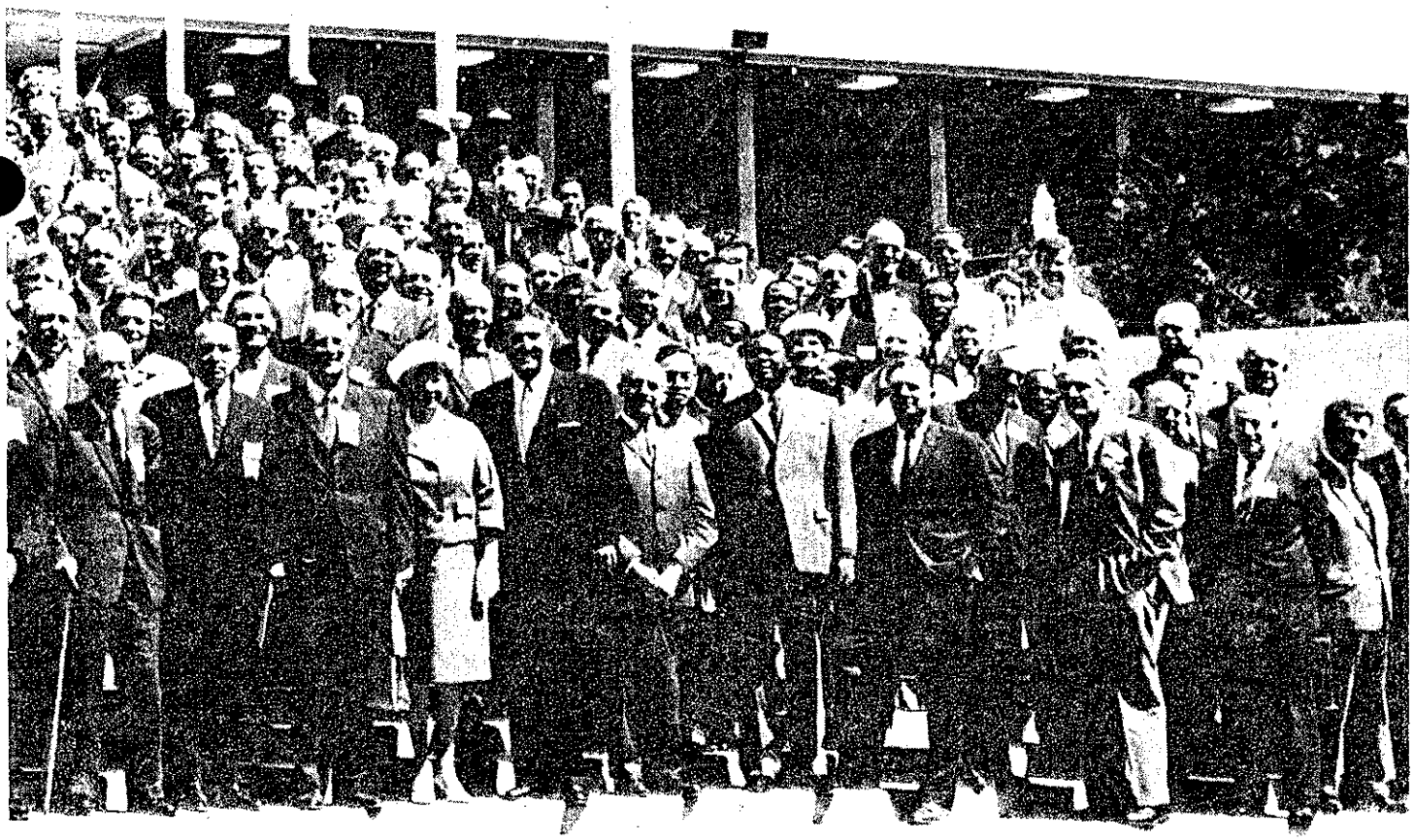


Parc National de Furfooz, Belgium

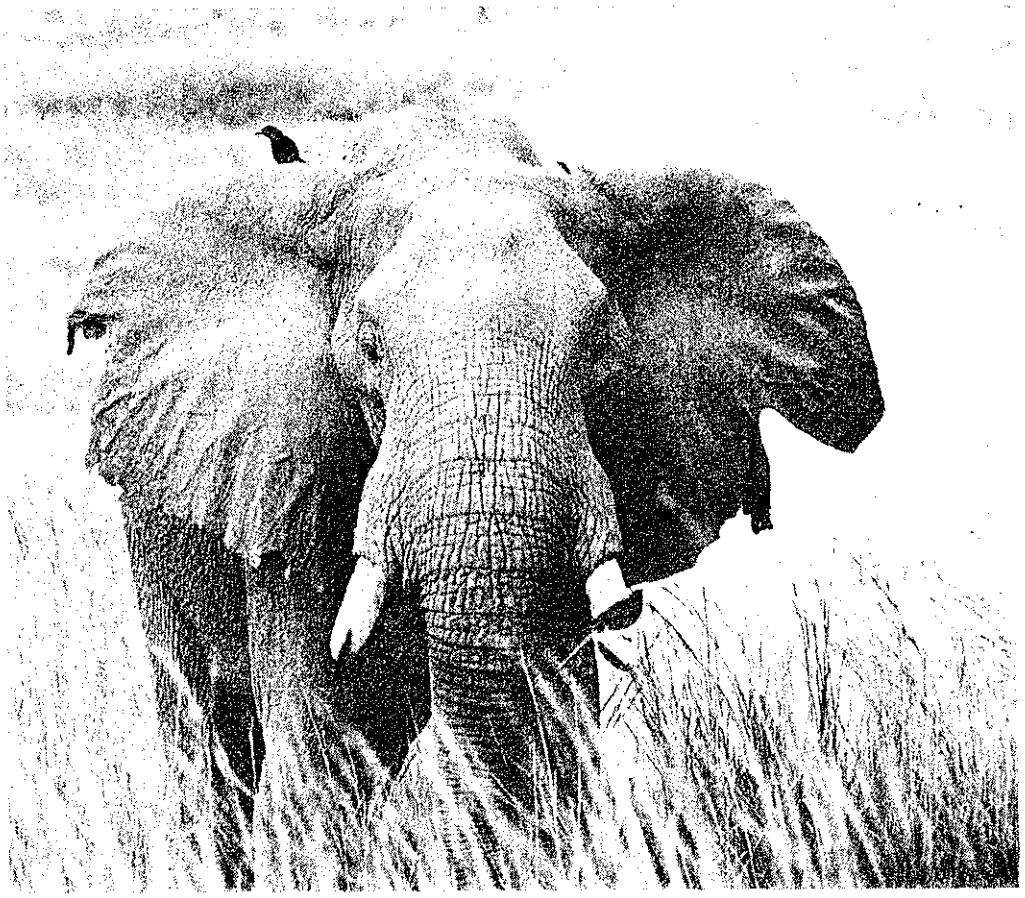


Lake District National Park, Cumberland, England



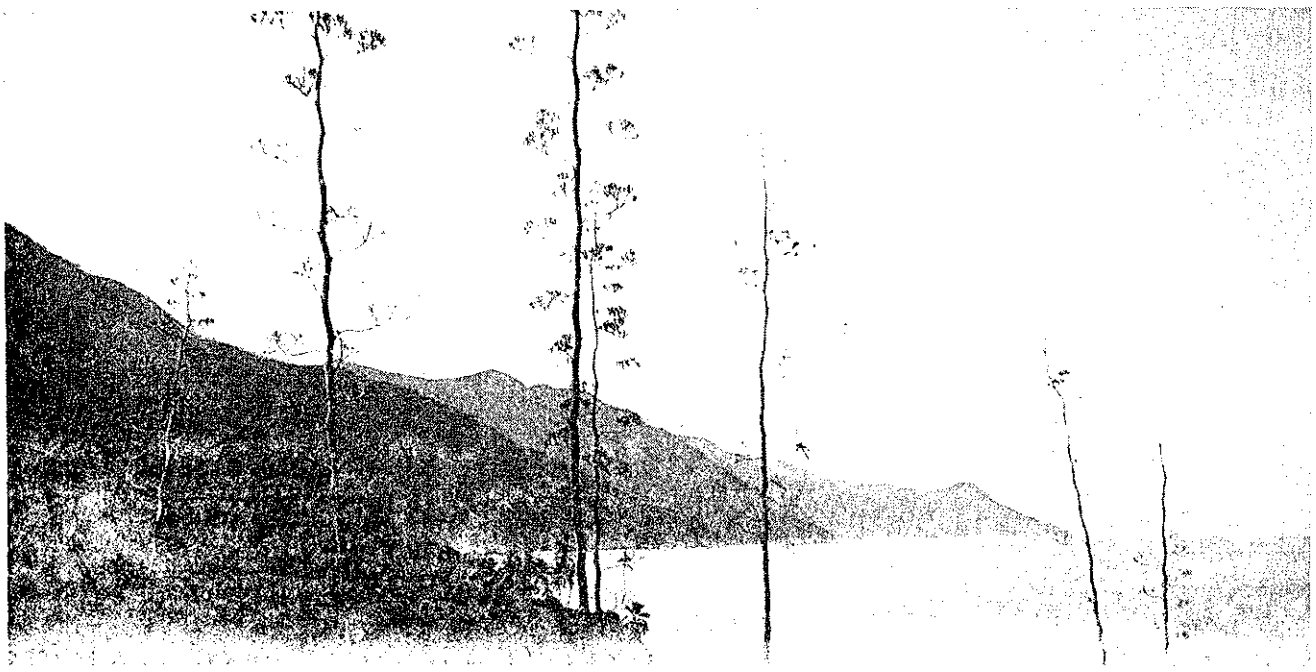


Delegates to the First World Conference on National Parks meet in front of the Civic Center at the Seattle World's Fair on July 2, 1962



Murchison Falls National Park, Uganda

Rancho Grande National Park, Venezuela

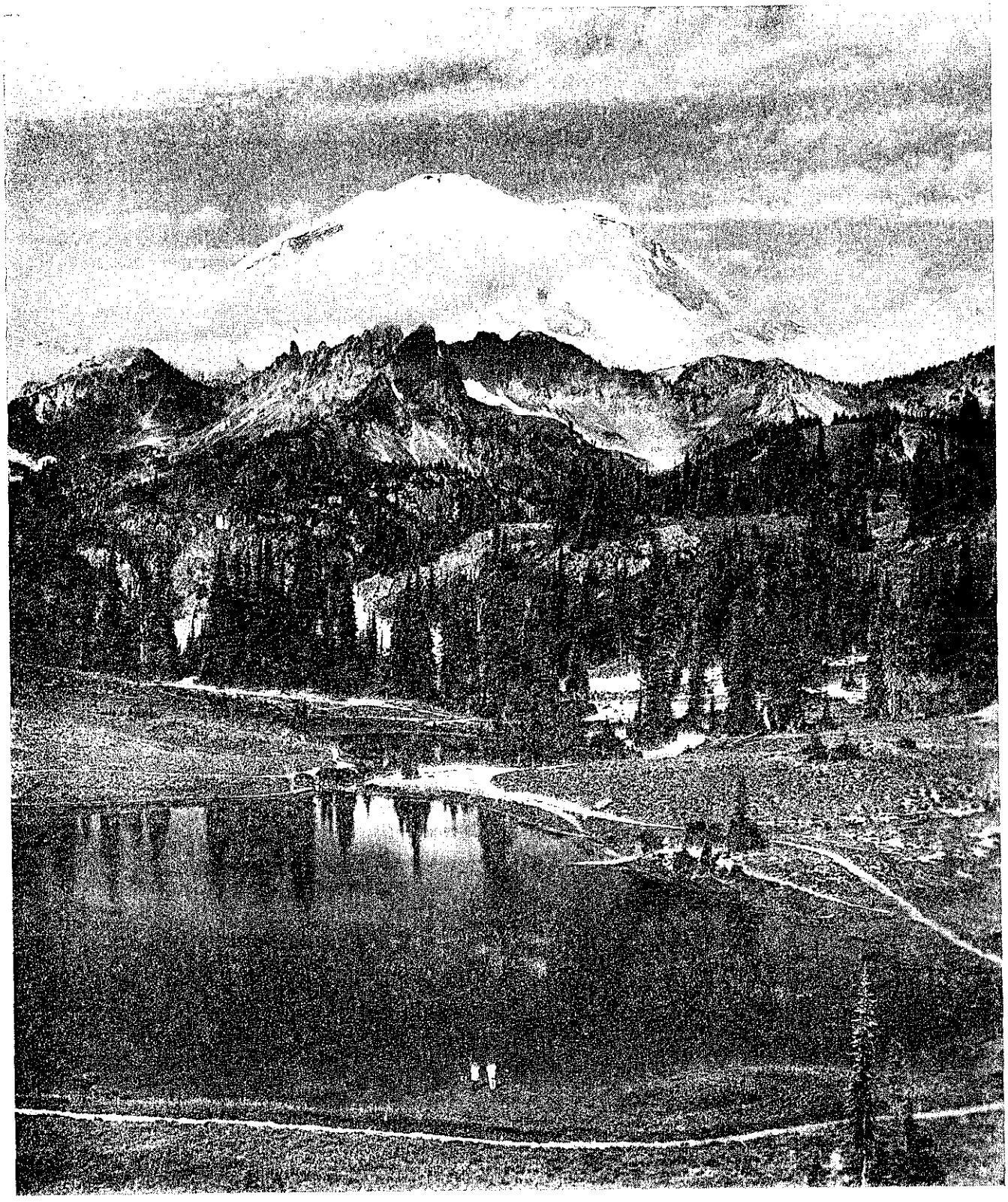


Vedunthangal Water Birds
Sanctuary, Madras State, India



Beinn Eighe National Nature Reserve, Scotland





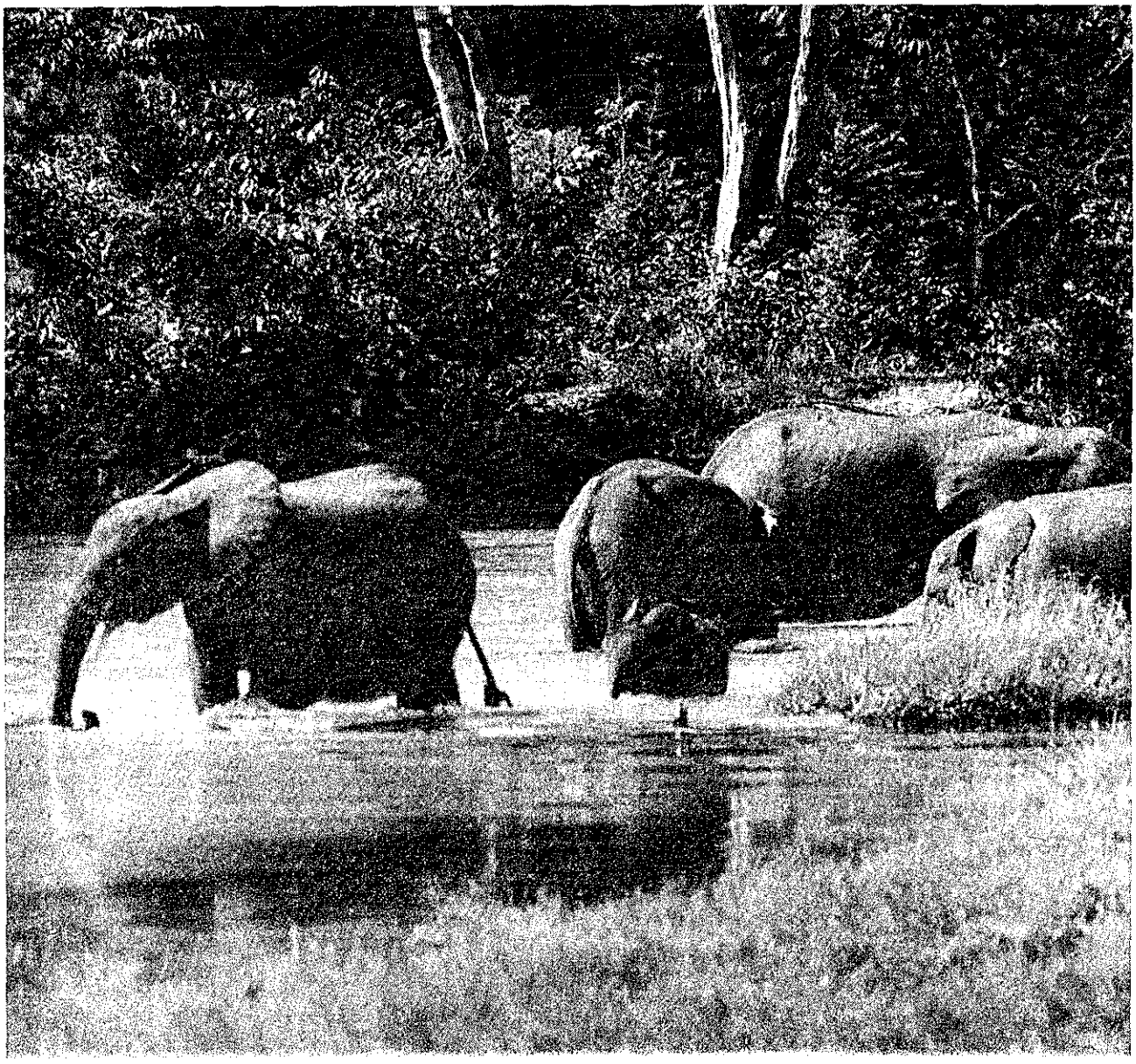
Mount Rainier National Park, Washington, U.S.A.

National Park, Costa Rica



Fuji-Hakone-Izu National Park, Japan





Rivière Nembouli, Lefini Reserve, Congo



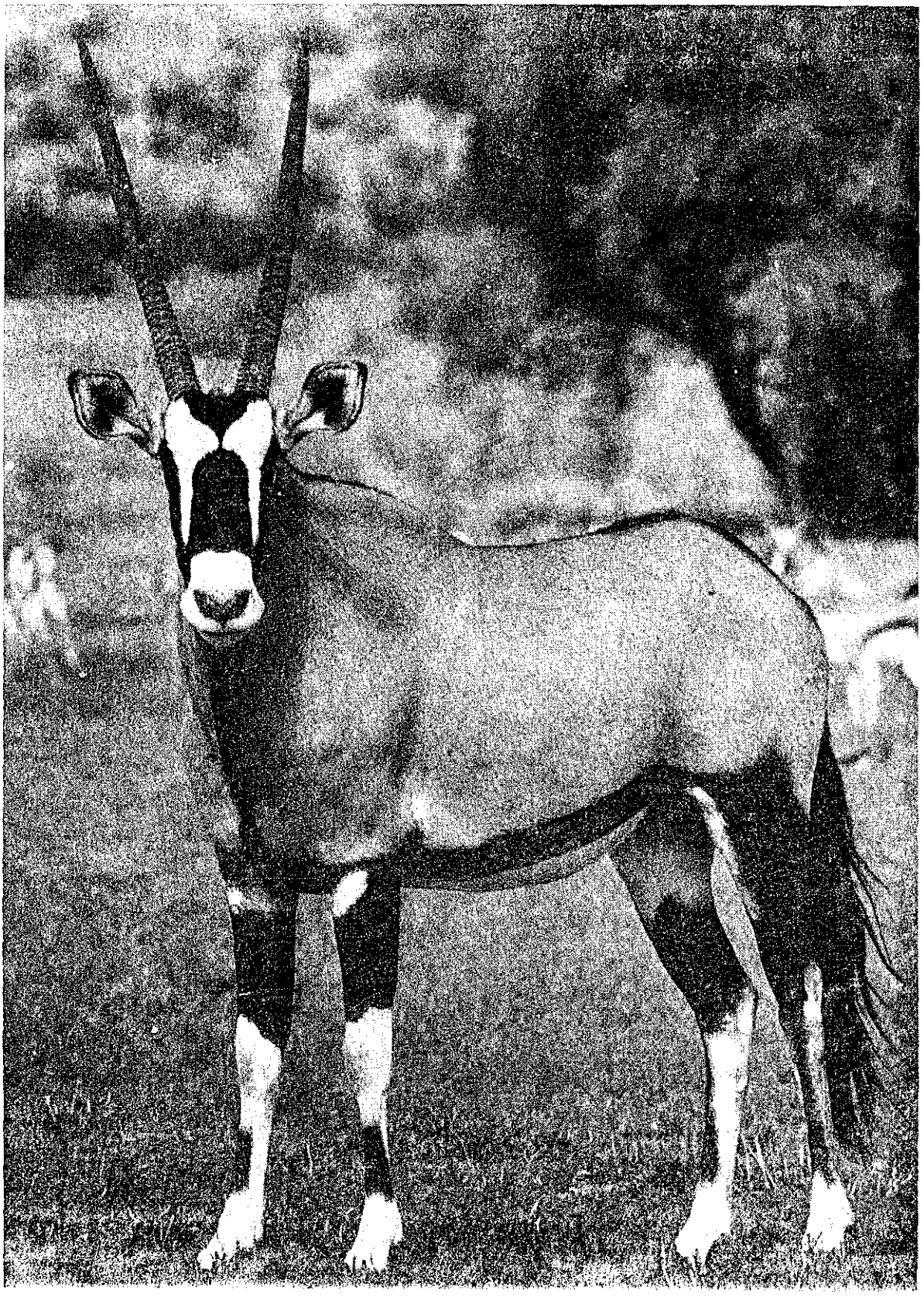
Dorrigo National Park, New South Wales, Australia



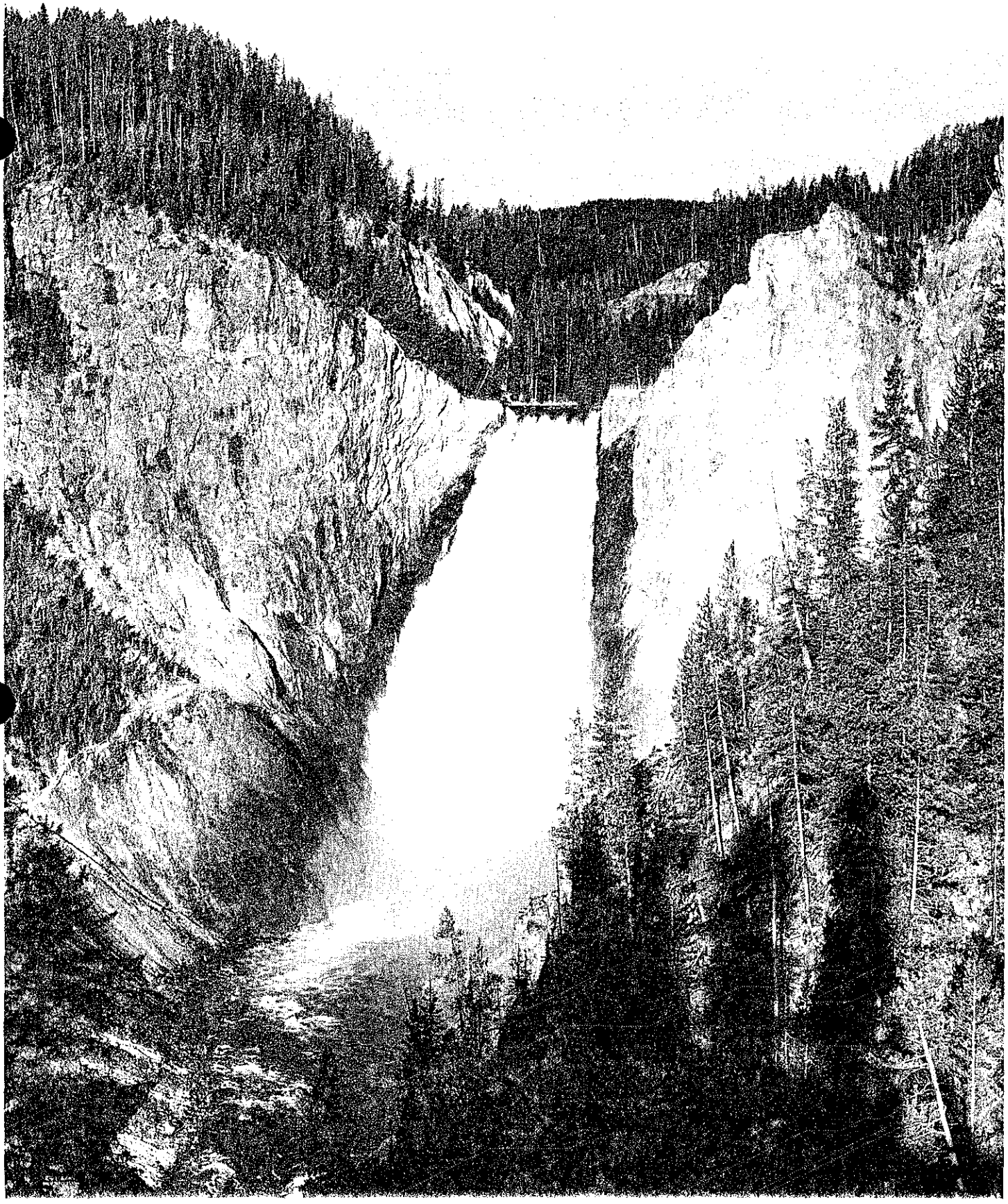
Mount Cook National Park, New Zealand

Umfulozi Game Reserve, Zululand, Natal, South Africa





Kalahari Gemsbok National Park, South Africa



Yellowstone National Park, Wyoming-Montana-Idaho, U.S.A.,
established in 1872 as the first National Park

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ACKNOWLEDGMENTS

An undertaking of the magnitude of the First World Conference on National Parks requires the support of thousands of individuals. It would be impossible to thank each of them by name—because their name is legion.

The conference also received the cooperation of many foreign governments, several offices within the United States Government, as well as international and national organizations, in planning and holding the conference.

The steering committee acknowledges with thanks the assistance given by the sponsoring organizations and wishes to especially thank the National Park Service of the U.S. Department of the Interior for its help with field trip arrangements, documentation, and personnel to assist with many conference activities. We are especially grateful to the superintendents and staff members of Mount Rainier, Olympic, Grand Teton, and Yellowstone National Parks for arranging and conducting tours to these parks.

The committee thanks the Forest Service of the U.S. Department of Agriculture for arranging tours of forest areas for certain of the foreign members; and the U.S. Department of State for its help in sending a message on the conference to all foreign posts and in furnishing the simultaneous translation equipment with a specialist to supervise its use in Seattle.

Special thanks are also given members of the United States Senate and House of Representatives for the enactment of a law authorizing the Federal Government—the Department of the Interior—to participate in this conference.

Financial support for the conference was received in the form of grants from several private foundations and individuals, and in the form of services and office facilities contributed by Conservation Associates of San Francisco. Two members of the latter organization, George L. Collins and Doris F. Leonard, served as Secretary General and Deputy Secretary General of the Conference.

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The committee and all those attending the conference are grateful to Joseph Gandy, president of the Seattle World's Fair, and his associates for the facilities and special hospitality given the conference and its members.

Particular thanks go to Irving Clark, Jr., chairman of the arrangements committee and to the members of that committee; to Mrs. Edward Garrett for the use of her home for the salmon barbecue; to the Seattle residents who entertained members of the conference; and to the many organizations in Seattle for help with local arrangements.

The committee wishes also to thank Mrs. Jean R. Packard for processing the conference panel papers and handling the documents room in Seattle and to Donn Remington for handling the duplication of conference panel papers and country reports.

Among those contributing $1,000 or more to the work of the conference are: American Conservation Association, Avalon Foundation, Walter W. Boyd, Ford Foundation, Edward Mallinckrodt, Jr., Old Dominion Foundation, Henry W. Oliver Foundation, Resources For The Future, John D. Rockefeller III, Laurance S. Rockefeller, Walter A. Starr, M. B. Tucker Foundation, Western Pennsylvania Conservancy, William P. Wharton, and the World Wildlife Fund.

Generous as these gifts were, they did not meet the full financial needs of the conference and were supplemented by many smaller donations—smaller in the amounts of money but not in their meaning to the conference. The committee is grateful to the donors, not only for the funds they gave but for the spirit in which they gave.

HOW IT BEGAN

Along with his growing ability to change his environment, man is becoming aware that his own survival depends on keeping portions of that environment unchanged. For in spite of his pretensions, he has never really gained his independence from the natural world—and probably never will. His air-conditioner may blow from his apartment the sultry air of a summer's night, but he needs the winds to blow the pollution from the skies of his cities. He may obtain his water from a tap in the kitchen, but fundamentally he is as dependent as his most primitive ancestors on the rains that fall from the clouds. When his crops fail, he often returns to the wilderness for new strains with which to strengthen his seeds. From the earth and the seas he draws the materials that he uses in his own life and the food that he gives to his children. More than that, he cannot shake completely free of his cultural and spiritual dependence on the world in which he developed. No degree of technological advance can obliterate a millenium of history.

But the problem of conserving nature is not a local matter, because nature does not respect political boundaries. The birds winging their way southward over Europe neither know, nor care, whether they are passing above a Common Market or a group of feudal duchies. The whales in the waters of the Antarctic and the penguins strutting over its ice cap do not restrict their movements in accord with international treaties. Nature takes no heed of political or social agreements, particularly those that seek to divide the world into compartments. It has been—and always will be—all-inclusive.

The men and women who work to preserve nature know this fact, and so it is not surprising that the First World Conference on National Parks, held in the United States in July 1962, sprang from a proposal made in 1958 by a Japanese landscape architect at an international meeting taking place in Athens, Greece. The Japanese was Tsuyoshi Tamura, known for many beautiful gardens he has designed,

and considered the father of the national park system in Japan. The organization holding the meeting was the IUCN (International Union for Conservation of Nature and Natural Resources),[1] established at Fontainebleau, France, in 1948. The meeting in Athens was its Sixth General Assembly.

Two years later, after much preliminary planning, a formal resolution calling for such a conference was presented and unanimously adopted at the Seventh General Assembly in Warsaw, Poland. IUCN agreed to serve as the sponsor; and UNESCO (United Nations Scientific and Cultural Organization) and FAO (the Food and Agriculture Organization) agreed to serve as co-sponsors in association with the United States National Park Service and the Natural Resources Council of America. The purpose of the meeting was to establish more effective international understanding and to encourage the national park movement on a worldwide basis.

Invitations to send delegates went out to the member governments of the United Nations and its specialized agencies, and invitations were also extended to various conservation organizations in the United States. The Seattle World's Fair offered to make meeting space available for the conference; and many individuals, organizations, and governmental agencies contributed funds or other needed assistance.

On June 30, 1962, the delegates started to assemble in Seattle. Altogether, 145 delegates, representing 63 different countries, were among those attending, in addition to 117 representing almost every state in the United States.

As the delegates gathered in the hotel to register, a babel of tongues filled the air. French, Spanish, and English had been chosen as the official languages (the United States government provided translating service) but many others were spoken. Differences of language, however, were no barrier to the communication of the delegates' mutual enthusiasm. These were men and women deeply concerned with saving land and fauna in their native countries through the use of national parks, and they had come to talk, to listen, and to gain better understanding.

In fitting fashion, the conference began outdoors. On July 1, the delegates were taken by bus to Mount Rainier National Park and Snoqualmie National Forest. They talked with representatives of the

[1] For a brief history of IUCN see Appendix B.

National Park Service and the Forest Service and then returned to their hotel, reaching it in the evening, refreshed and ready for the days ahead.

On Monday morning, the opening plenary session took place, and the formal part of the conference began. For the next 6 days, with little time out, the delegates presented their papers, discussed their problems and exchanged information and ideas. Never before in the history of conservation have so many different speakers talked about so many different aspects of parks. They discussed the effect of man on the wildlife of the Antarctic, the possible extinction of the rhinoceros, the religious significance of parks in the Far East, the international supervision of boundary parks and the economic benefits of parks in encouraging tourism. They spoke about the emotional meaning of wilderness areas to mankind, the important role of parks in scientific studies, and considered practical problems of park management. The range of their comments covered the globe, and their remarks emphasized the theme of the conference: National parks are of international significance.

In the following pages, the reader can find what they had to say, the questions they raised, and the solutions they discovered. For the most part, the material has been arranged in chronological order just as it took place. In the appendix is additional material designed to give further background.

Some of the material is of a highly technical nature and will appeal only to specialists. Much of it is more general and will interest any reader concerned with the conservation of nature. Some readers, therefore, may wish to start at the beginning and go through to the end. Others may wish to confine their reading to the topics that are of most interest to them. Yet others may find their needs suited by browsing. But however the reader goes about it, he holds in his hands a remarkable, worldwide study of national parks and their meaningfulness.

Only one thing is missing. The excitement and enthusiasm of the delegates. There was no way to commit it to paper.

THE KEYNOTE ADDRESS

The keynote address by the Honorable Stewart L. Udall, Secretary of the Interior, the United States of America, was given on July 4, a date that has significance in the United States, because it is regarded as the anniversary of American independence.

When Secretary Udall commenced to speak, the sessions had been running for more than 2 days, during which the delegates had shared not only their information, but also their mutual enthusiasm for an important cause. Each now knew that his own struggle to preserve intact some corner of his native land was neither unique nor lonely. It was a struggle going on across the face of the earth, and there were many engaged in it beside himself. From the Arctic to the Antarctic, from East to West, men were combatting the forces of materialism and expediency in an effort, not to make a different world, but to keep this world good.

Thus Secretary Udall's comment that we need "a Common Market of conservation knowledge," his emphasis on the urgency of the challenge and his philosophy that conservationists are saving human, as well as natural, values—all underlined the sentiments of the conference. For that reason, his speech has been taken out of chronological order and placed here. To the delegates in attendance, it was truly a keynote address. It will be the same to those reading about the conference.

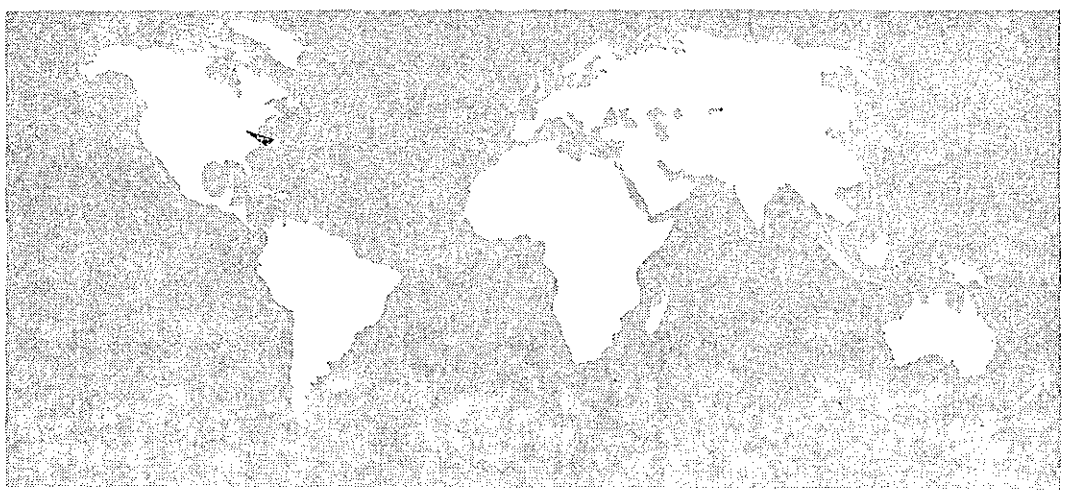
NATURE ISLANDS FOR THE WORLD

by

THE HONORABLE STEWART L. UDALL
Secretary of the Interior, United States of America
WASHINGTON, D.C., U.S.A.

Stewart L. Udall was born at St. John's, Ariz., one of the states lying in the American Southwest. His education was interrupted by service in the U.S. Air Force during World War II. He later received his LL.B. degree from the University of Arizona and practiced law in Tucson, Ariz., from 1948 to 1954. He was then elected a Representative to the United States Congress, where he served three terms before becoming Secretary of the Interior in the Administration of President John F. Kennedy.

As Secretary, he is meeting what he terms the "quiet crisis" of the 1960's. He sees this crisis in insufficient and polluted water supplies and in the inefficient use of energy potentials and oceanic resources. But most of all, he sees the domestic crisis in terms of the land itself, and he is determined that future generations will inherit a green legacy. Before our national land-use patterns become permanently fixed, Secretary Udall hopes to secure Federal and State protection for suitable park and recreation areas. To plan for this purpose, President Kennedy has established the Bureau of Outdoor Recreation within the Department of the Interior. An outstanding proponent of conservation, Secretary Udall reads, in his spare time, about ecology and applies its principles as far as possible to man's entire environment.



IN THE final months of his life, as World War II drew to a close, a great President of my country who loved the land, Franklin D. Roosevelt, exchanged letters with his friend, Gifford Pinchot, a pioneer American conservationist. Pinchot urged Roosevelt to strike a positive note at the end of the war by persuading other leaders to join him in convening a world conference on the conservation of natural resources. But because men were preoccupied at the time in creating international political institutions designed to enhance world order, this splendid idea did not come to fruition.

Yet as each intervening year has passed, the peoples of the world have become more deeply involved in the common cause of conservation of resources. The earth is our home, and we share responsibility for the management of our environment and the preservation of its values—this fact must be the starting point of a conference of this kind. The air that we breathe is common air, the seas at our borders are common seas. Even as advances in transportation and communication have drawn us closer together, our use of resources too has tended to unite us as one world. Agreements based on the mutual cooperation and mutual advantage of sovereign nations already control pollution of the sea and plans under which we harvest most of its creatures. Minerals and food and fiber are shipped from this land to that—one nation's surplus is another's shortage, and the inevitable sweep of history is making us increasingly dependent upon the stewardship and husbandry that countries and peoples follow.

Thus it is most fitting that we have gathered together in this international conference to discuss the preservation of national parks, and nature reserves, for these places of splendor are a precious world resource. The perspective of space exploration has tended to unify the geography of the earth and lends a new vision, as we consider new standards and new goals for the preservation of nature. Natural treasures are in reality a heritage of all mankind. They transcend provincial boundaries. They are a gift to those who prize the natural world and its healing influence.

I would like to think that this conference strikes a wholesome note of sanity in a troubled world. It is a sign that men are questioning the false gods of materialism and are coming to realize that the natural world lies at the very center of an environment that is both lifegiving and life-promoting. There is hope in this meeting, or so it seems to

me, that the values of the spirit are reasserting their primacy—and this in turn gives fresh hope in other vital areas of human endeavor.

This idea of dedicating choice tracts is seemingly as old as civilization itself. It was Justinian, the great Roman lawgiver, who laid down the principle that beaches and shorelines belong to the people.

Each generation must act anew to revise its conservation ethic, and to establish new plans for the wise use of its resources. The concept of conservation is old, but the problems that we now face are more urgent than ever. In our search for a higher standard of living, we have developed new needs and a dynamic and awesome technology to satisfy them. With this technology we are daily altering the face of the earth, and in the process the intimate relationships between men and their land are also being altered—often at the sacrifice of paramount human values.

So great is the power of men and nations to enlarge the machine-dominated portion of the world that it is not an exaggeration to say that few opportunities for conservation projects of grand scope will remain by the year 2000. Let me put the case even more strongly: With few exceptions the places of superior scenic beauty, the unspoiled landscapes, the spacious refuges for wildlife, the nature parks and nature reserves of significant size and grandeur that our generation saves will be all that is preserved. We are the architects who must design the remaining temples; those who follow will have the mundane tasks of management and housekeeping.

The hour is late, the opportunities diminish with each passing year, and we must establish here a Common Market of conservation knowledge which will enable us to achieve our highest goals and broadest purposes. With each day that passes the natural world shrinks as we exert greater artificial control over our environment. The lot of many men has been improved, but few of us would deny that there have been grievous human losses as well.

I daresay all of us gathered here would agree that nature-islands of solitude and repose are an indispensable ingredient of modern civilization. Save for homesites, park land uses are the highest human uses to which land may be put.

Yet, as we look ahead in this country (and your problems necessarily correspond with our own), we are faced with the fact that during the adult life of our children the demand for municipal parks and playgrounds will increase fourfold. There has been a 290 percent increase

in wilderness recreation over the last decade, and during the 40 years separating us from the 21st century, the demand for wilderness and seashore parks will be an estimated 10 times greater than it is today. But as the need increases, land and forest and water are being preempted for other uses.

However, technology is not the only threat—the only challenge—that confronts us. It is the uncontrolled growth of population that will surely and finally alter the man-land relationships on all of our continents unless our statecraft takes cognizance of this problem. The demographers now tell us, in measured tones, that the world population will double every 35 years—and double again every 35 thereafter—unless something intervenes to break their projections.

What is the significance of this staggering statistic for us, the park men of the world? I need hardly spell out the consequences for this audience, but we must inform the world that, if this occurs, congestion—with all the unlovely overtones of that too-familiar word—will be the be-all and the end-all of our lives, our nature reserves will be steadily sacrificed to the demands of progress—and park and wilderness experiences will be rationed out among the fortunate few.

At the recent White House Conference on Conservation, called by President Kennedy, Dr. Walter W. Heller, chairman of the President's Council of Economic Advisers, asked this rhetorical question: "What good is an increased gross national product if we—in the process of producing it—chew up, destroy, desecrate so many of the values, so many of the enjoyments which really add up to the improvements in human well-being and in the quality of life that we seek?"

There can be little argument, these days, in highly industrialized countries over the damage to living values as the result of pollution of air and water, overcrowded housing, inadequate places for outdoor recreation, and a surfeit of artificial things. It is not surprising that some men have a moral and spiritual sickness that results from being on the earth, yet not a part of it. In an era of noise and pollution and jostle and blight, it is not hard to predict that our children will place as high a value on the right of solitude in the out-of-doors and the right of access to places of natural beauty, as they now accord to the right of free speech and the right to a trial by one's peers.

Yet we have learned in this country (as I daresay many other nations have learned of late) that the preservation of land and wildlife resources is not only a happy ideal, but also a highly practical invest-

ment. At the turn of this century conservation was a protest against policies of waste in the United States. Now nearly all of our leaders of industry take pride in their conservation practices. You who are here today are keenly aware that any proposal for expending tax monies for park purposes will be weighed on a scale of dollars and cents, and park men are constantly on the defensive before the planners of public budgets.

However, in my own country it has become abundantly clear that national parks are not only sound social investments, but sound use of public funds as well. Time and time again citizens adjacent to new parks have bemoaned the loss of revenues from resources "locked up" inside a new reserve—lost taxes, uncut timber, undiscovered minerals, unharvested game—only to learn later that the income from providing services to visitor-tourists has equaled or surpassed whatever sums might have been gained exploiting these park resources.

Travel is one of the wonders of our age, and it is easy to foresee that, for example, East Africa will be only a day's flight away from New York and London and Moscow a few years from now. Without straining your credulity in the least, I can predict that if Tanganyika and Kenya and Uganda maintain their unique game preserves—which are the envy of us all—the world's travelers will add far more to their economic growth than would any alternate use of these lands.

But nature reserves involve far more than tourism as an economic potential: The watershed values, science laboratory values, and esthetic values must also be weighed in the scales. The pages of history are littered with wrecks of ships of state which have foundered because natural laws were ignored. Gobi, Mesopotamia, and other areas that were once the cradle of civilization had their fertility reduced to dust because of human improvidence. We know now that upriver forests and downriver cultivation will produce more crops than a land completly cultivated but without watershed protection. We know also that our wildlands form the only perfect wildlife habitat, and constitute an irreplaceable science laboratory where we can measure the world in its natural balance against the world in its manmade imbalance.

Opening an atlas, one is impressed by the magnitude of our opportunity. Mountains, beaches, river estuaries, tropical jungle, tundra, coral atolls, and pampas are a heritage for all men, and samples of them merit protection for all time.

Great strides have already been made toward preservation of some of these world's wonders, both by individual nations and, increasingly, through international cooperation. Poland and Czechoslovakia have jointly established a national park for the benefit of their mutual citizenry. The United States, Canada, and Mexico have for years worked together in protecting migratory birds on their seasonal routes from north to south. The United States, Canada, and the U.S.S.R. have long cooperated to restore the fur seal herds of the Pribilof Islands.

This consideration of international protection can take ultimate encouragement from what is happening in the farthest southern reaches where the 12 nations signatory to the Antarctic Treaty have included conservation protection of natural species among their primary areas of mutual consideration.

This initial World Conference on National Parks is a meeting ground in which the mutual interests of its participants is a reliable bond for strong communication and future action. Whatever differences of ethnology, geography, and traditions are represented here, we are bound together by the universal challenge to honor, dedicate, and maintain significant natural areas around the globe.

No feature of the globe has more cultural significance than our great oceans. Man from every nation has gone down to the sea in ships to try himself against the elements and to seek not only adventure but a livelihood. The sea has helped form our character and it has sustained our lives. Every sea-touched country has the opportunity to preserve for its people portions of shoreline with the unique opportunities which they hold for human refreshment and restoration of the soul.

If you have not walked the sands of the nearby Pacific coast area of Olympic National Park, I commend it to you as an experience not to be forgotten. There one can stand with thundering Pacific rollers on the one side and the impenetrable temperate rain forests on the other. In a few hundred yards of horizontal distance, the greatest contrasts of nature provide the excitement characteristic of a frontier edge. This is but one of many shoreline areas to be found in every part of the globe whose beauty and wholesome naturalness deserve our best efforts of protection for the years to come.

Another priceless element of the outdoor heritage is the great river estuaries which have long been key centers of our civilization. Today, the Lido at Venice in the estuary of the Po provides an outstanding example of the extraordinary beauty of this type of natural setting.

The land as well as the sea has its matchless values in nature's ageless splendors. Today, hundreds of thousands of people climb, ski, and hike across the surface of the great mountains of the earth, and I personally can testify to the soul-satisfying rewards to be found in these quiet and remote areas. Last autumn I had the rare opportunity of joining members of the Alpine Club of Japan on the pilgrimage to the summit of Mount Fujiyama. This slender volcanic cone has been a guardian over the affairs of Honshu since before the Ainu [1] crossed to the island shores. In the snow and wind at the summit I felt for a moment the eternal spirit of the Japanese people. We must act so that our children's children can also enjoy the highest outdoor experiences now available to us.

At the same time, in our search for harmony with the earth, we must give equal thought and consideration to the animals, the birds, and fish which share our planet.

At the recent meeting of the World Wildlife Fund in New York, Prince Phillip of the United Kingdom likened our situation today to that of the Great Flood. When it was threatened, Noah, at the Lord's command, constructed an ark of sufficient size to provide protection and survival for all of the animals, two by two. Today the threatening flood has a different guise, but its threat is just as real. If we, too, move in time to take protective action, the conservation leaders of this generation may well become the Noahs of the 20th century.

Not the least of our tasks is that of creating a new sense of values in the nations which we represent. Conservation begins with education, and past experience makes it plain that public men will not lead unless a conservation conscience is developed which prizes the choice things of nature. In the crowded countries, zoning regulations and requirements will be a prime conservation tool, and in the time ahead we are certain to hear much more about such things as scenic easements and conservation zoning.

In other less crowded countries the conservation battle will be won only if men with a sense of mission awaken their fellow men to the outdoor opportunities which are fast vanishing.

We must, if we are wise, establish an exchange program of conservation thinkers and planners. Nothing gives greater satisfaction to the American people than an opportunity to share the knowledge of their landscape architects, park interpreters, management specialists, biologists, and ecologists. Economists and planners can forecast the effects

of park establishment within a regional community. Foresters, agriculturists, and hydrologic specialists can study and advise on efficient methods of land and water utilization.

All nations developing park or wildlife preserve programs must have staffs of trained scientists and administrators. Education in school curricula is of first importance, and in this regard I would like also to stress the possibility of technical schools where experts can teach the techniques and rationale of land management to local people for immediate field application.

One measure toward our goal is the fact that we have started a new section within the National Park Service to handle international cooperation, and this function will be increasing in responsibility. I envision the day soon when park management personnel will be exchanged between countries of the Northern and Southern Hemispheres to assist and learn from each other's busy summer seasons.

In the end, each country must develop the kind of park or nature reserve system that suits the needs and aspirations of its people—and the economics of its land base. Each nation has pioneering work to do; each has something to teach—and much to learn.

If we are to cope with the enormous problems of the modern societies of which we are a part, we must establish a Common Market of conservation knowledge and endeavor.

In this regard, I would like to remind the delegates here of this nation's Peace Corps,[2] which already represents one of our finest exports of knowledge and good will. The Corps is anxious to serve in conservation and wildlife management capacities, and it is ready to give immediate and sympathetic consideration to proposed projects in these areas.

Actually, many nations in many parts of the world can take pride in the great strides already made toward preservation of unspoiled areas of matchless natural beauty and inspiration—and of the continuing progress now under way. We in this country only last year made another significant addition to our National Park System with the establishment of a magnificent National Seashore on the ocean sands of Cape Cod,[3] close to the congested population centers of our eastern states, representing the first such addition in decades.

In Europe, the progress in recent years has been most heartening. Before 1945 there were no national parks in England; today there are 10. In Germany the only park for the preservation of nature was

the Luneburger Heide; today there are 8 parks and in West Germany alone 24 more are planned.

On another continent—Africa—it is interesting to note that the greatest impetus to the creation of fully protected areas came from a gathering not dissimilar to this—the International Convention on Parks held in London in 1933. The inspired people who attended that conference designed what are still accepted as the basic rules for preservation. However, it was not until after the cruel years of World War II that East Africa could effectively attempt to set aside areas as parks and for the protection of wildlife.

In the intervening years, every endeavor has been made in the British territories of East Africa to establish national parks; there has been marked achievement in the Congo toward the establishment of large Strict Natural Reserves; and in other countries of Africa progress is being made toward setting aside portions of national parks as wildlife sanctuaries and as undisturbed breeding areas for the natural flora and fauna.

In Tanganyika, the Serengeti National Park, established in 1948, though subjected to certain boundary alterations, remains one of the finest game sanctuaries in the world. Meanwhile, plans have reached a final stage for the transformation of a fascinating crater on the foothills of Tanganyika's Mount Meru into a national park. Here, from the rim, a visitor cannot escape the impression that he is looking into a section of another planet. This crater, fringed with primeval forest, is the natural sanctuary for elephant, rhino, and buffalo, and, due to its proximity to the flourishing town of Arusha, will be a great asset, in addition to the famous Serengeti, to Tanganyika.

In Australia, the credit for having pioneered the development of national parks must go to Queensland and Tasmania, two of that nation's least populated states. Outstanding examples of the accomplishments there are the Lamington National Park, a splendid area of subtropical mountain scenery and vegetation near the Queensland-New South Wales border, and the beautiful subtropical islands along the unique Greater Barrier Reef. The State of Victoria has recently followed the example set by Queensland and Tasmania in establishing a National Parks Authority responsible to the Premier under a new National Parks Act. The national parks dedicated so far include a fairly wide range of Victorian environments and more are presently under consideration. Probably most widely known of Victoria's exist-

ing preserved areas is the Wilson's Promontory National Park, embracing a rugged peninsula at the extreme south of the state.

In Japan, certain localities have long been popular as pleasure resorts, such as the so-called "Three Scenic Spots"—Matsushima, Amanohasidate, and Miyajima. In the Meiji Era,[4] these places for the first time were regarded as "parks" on a democratic basis.

The concept was placed on a legislative basis in 1873 when a Cabinet ordinance was issued providing for the establishment of parks on state-owned lands. In compliance with the ordinance, local scenic areas were gradually designated as parks, chiefly as prefectural or provincial reservations, and the public began to take a deep interest in them. After the Meiji Era, under the influence of the federal parks in the United States, voices began to be raised calling for the establishment of a Japanese national parks system. After a long period of investigation and public education, the National Parks Law was enacted in 1931.

As a result, 19 areas have so far been designated as national parks where natural beauty is preserved and the people are offered an opportunity for pleasure and recreation. These areas now play an important role in the national life and contribute much to international tourism.

I have only begun to touch—and have omitted much—on an inventory of outstanding global achievements in the fast awakening and growing movement to keep something of the land intact in its natural state so that there may be refreshment of the soul and spirit for the peoples of the world now and in future centuries. But enough has been mentioned to show both progress and beckoning new opportunities awaiting all of us.

The objectives are clear—the air is electric with challenge. In the words of President Kennedy, "Let us begin."

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(1) The Ainu colonized a great part of Japan in its early history.
(2) A Government-sponsored, American group, dedicated to helping other countries.
(3) A large point of land on the northeastern coast of the United States.
(4) The Emperor Meiji assumed temporal power in Japan in 1868.

INTRODUCTORY CEREMONY AND OPENING PLENARY SESSION

On Monday, July 2, 1962, the delegates to the First World Conference on National Parks met in the Playhouse at the Seattle World's Fair, Seattle, Wash., U.S.A. Massed flags and green plants decorated the stage on which were seated officers of the International Union for the Conservation of Nature and of the conference, invited speakers, and special guests.

Chairman Harold J. Coolidge opened the conference by welcoming the delegates and observers from 63 governments and a large number of United States conservation organizations. President Jean G. Baer of the International Union for Conservation of Nature was then introduced and spoke briefly on the significance of the conference. Craig Colgate, Deputy United States Commissioner of the Fair, then read President Kennedy's message to the delegates. Further welcome messages were presented by Clayton Anderson on behalf of the Governor Albert D. Rosellini of the State of Washington; Gordon Clinton, Mayor of Seattle; Joseph E. Gandy, President of the Fair, who invited all delegates to take advantage of being in Seattle to visit the fair; and Horace M. Albright, Chairman of the Conference's National Council.

Following these welcoming speeches, greetings were extended by the following who served as spokesman for various regions of the world represented at the conference: Tsuyoshi Tamura for Japan and other East Asian Pacific countries; Boonsong Lekagul for Thailand and Southeast Asia; Howard J. Stanley for Australia and New Zealand; Salim Ali for India and South Asia; M. K. Shawki for Africa north of the Zambesi; Rocco Knobel for Africa south of the Zambesi; Enrique Beltran for Central America; Marcos Sastre for South America; J. R. B. Coleman for Canada.

C. R. Gutermuth, vice chairman of the conference, then stepped to the rostrum. After calling the roll of delegates, he said: "The response to that roll call is about the most impressive public activity that it has been my pleasure to perform."

He spoke also about the role of various United States officials in giving support to the conference. He said: "You will be interested in knowing that the Congress of the United States enacted a law authorizing the Federal Government, the Department of the Interior, to participate in this historic conference. The law was signed by President John F. Kennedy just 3 days ago. This establishes a good precedent and the conference organizers are particularly grateful to Senators Warren G. Magnuson and Henry M. Jackson of the State of Washington, and to Senator Lee Metcalf of Montana for their personal assistance in getting the Senate to enact this special authorization legislation. Individual thanks and special commendation also is going to Representatives Don Magnuson, Clem Miller,* J. T. Rutherford, and Chairman Wayne N. Aspinall for their emergency handling of the bill in the House. It is with great tribute to all of those distinguished statesmen that Secretary of Interior Stewart L. Udall and Director Conrad L. Wirth of the National Park Service are able to participate in the conference officially."

Then, discussing the nature of the conference, he added: "Technically, this is a nongovernment conference. In official language, this means that the assembly is not made up of instructed government delegates talking to instructed government delegates from other countries. There are many advantages in such a nongovernment conference, because it enables us to have a great deal more freedom of action in all of our discussions and deliberations, and enables us to dispense with the formality of elaborate voting procedures."

After discussing procedures to be followed during the conference and naming several committee appointments, Vice Chairman Gutermuth introduced Conrad L. Wirth, Director of the United States National Park Service, Washington, D.C., who gave the opening address.

At the conclusion of his speech, the group moved outside to plant a 30-foot metasequoia in commemoration of the conference. The tree had been obtained by Prof. C. Frank Brockman of the University of Washington, U.S.A. He also made the arrangements for its planting. President Baer made a few remarks on behalf of the conference; and responses were made on behalf of the fair by Mr. Gandy and on behalf of the City Councilmen and Chairman of the Seattle Parks Commission by Mrs. Harlan Edwards. A shovel of dirt was placed around the roots of the tree by officers of the IUCN and officials of the conference.

A group photograph was then taken, and the delegates returned to the Olympic Hotel in time for the buffet luncheon, at which visitors from other countries were guests of the conference.

*Since deceased.

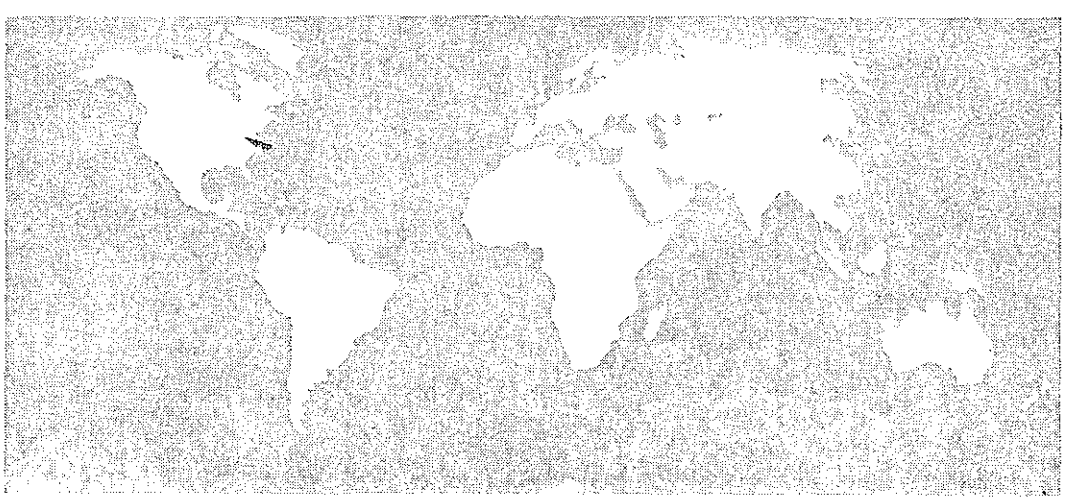
NATIONAL PARKS

by

CONRAD L. WIRTH
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WASHINGTON, D.C., U.S.A.

Conrad L. Wirth came by his interest in parks naturally. His father served as superintendent of the parks in Hartford, Conn., and in Minneapolis, Minn., both in the United States. After obtaining a degree in landscape architecture from the Massachusetts Agricultural College (now the University of Massachusetts), he entered the private landscape and town planning business in the states of California and Louisiana. In 1923, he accepted his first government appointment, joining the National Capital Park and Planning Commission. In 1931, he was asked to become Assistant Director of the National Park Service in charge of land planning.

One of his early assignments was to supervise the work of the Civilian Conservation Corps. In 1935, he was given direction of all emergency activities in the National Park System and in 1936 was appointed the Interior Department's representative on the Civilian Conservation Corps Advisory Board. These duties were in addition to his responsibility for land planning. At the close of World War II, he was made a policy advisor with the United States Allied Council in Vienna, Austria. In April 1951, he was made Associate Director of the National Park Service and became Director in December of the same year.



THE IDEA OF setting land aside as national parks arises from an old and basic human need, one that has been with us since man first wondered about the colors of an ancient sunset or joined his companions in marveling at the symmetry of a flight of geese, as they winged their way to a distant nesting ground. These first fleeting moments of perception were the beginning. And then when some distant ancestor planted a row of tiny seeds and watched them day by day as they grew and supplied food and fiber for his family, he learned, whether he fully realized it at the time or not, that he had the power to bend his environment to his wishes. He also learned that his power was not supreme, that other factors—the myriad natural laws that give order to our universe—were constantly at his elbow. Recognizing them and working with their magic represented man's first steps toward intellectual growth.

Later, as his knowledge broadened, he gained additional insight. Whereas he once had taken his environment for granted and had accepted its blessings with oftentime callous indifference, he now began to realize that the abundance of his natural storehouse had limits and that his material existence would be decided by his stewardship of the land. With proper husbandry he might exist throughout time; without it he would, in the end, perish. At this point in history, conservation of natural resources became a national and world doctrine.

National parks are one means of expressing this doctrine. They also demonstrate that man now knows that although he has it within his power to change the face of the earth, the earth and its bounties have had, and still retain, ability to shape the destiny and aspirations of man. Thomas Jefferson, the third President of the United States, once said: "The face and character of our country are determined by what we do with America and its resources." While our forefathers were carving a civilization from the wilderness, the land in turn made enduring impressions on their minds and thoughts. Jefferson saw the qualities of perserverance, independence, and initiative being developed and refined, as the American character was shaped on vast stretches of virgin prairie, beside rolling rivers and in lonely mountain passes. It is in the national parks that these influences on the United States can be maintained and kept pure, so that this and future generations may know and feel—and benefit from—the same wonderous exposure that our forefathers experienced.

In other nations, national park programs may be different. Circum-

stances may warrant a particular approach here, a variation of it there. But always the motivation, the goal, remains the same: perpetuation of those natural and historic values of the land so as to provide a country's people with visual and tactile contact with their natural environment. This was the compelling motivation behind the establishment of our first national parks before the turn of the century; this is the guiding principle before us in the present drive to establish and develop new parks, while there are still suitable areas available.

Over the years, this country has added certain refinements to this basic concept as it applies to our particular needs. National parks, for example, are the crown jewels, representing the finest and most superlative scenic wonders we can offer. Of equal importance, but contributing to the perpetuation of different values, are the great array of national monuments, established to protect features and objects of national scientific, archeologic, or historic significance. Outstanding natural scenery is not a requirement for placement in this category, although many of our national monuments contain landscapes that compare favorably with those found in the national parks. We also have national parkways, which are elongated parks with studiously landscaped highways, designed for the pleasures of scenic travel. These roadways are closed to commercial traffic and are free from local access.

Nor has our heritage of history been overlooked—that link with the past that gives meaning and a sense of continuity to the happenings of today and tomorrow. Events that shaped the destiny of our country, and the men who guided them, are well represented.

Independence Hall, where on July 4, 1776, our Founding Fathers signed the Declaration of Independence and later the Constitution of the United States, stands today much as it did then. It is, in the words of the American writer, Carl Van Doren, ". . . a shrine honored wherever the rights of men are honored . . . a shrine cherished wherever the principles of self-government on a Federal scale are cherished." The hall and other historic landmarks in the city of Philadelphia are preserved in Independence National Historical Park.

From what I have said, one would almost be tempted to suppose that the road leading to this country's present national park system has been a smooth one, paved with unanimous public approval and support, and with scarcely a bump or rough spot to prevent us from moving ahead with great speed. But this, of course, has not always been so. For the responsibility of a nation to provide appropriate

park lands for its people also carries with it the obligation to assess and weigh all the considerations, pro and con, to consider standards and feasibility and, at all times, to keep in mind the broad national interest. This involves widespread public understanding of the values that may be lost, as well as those that are to be gained, by the establishment of a public park, and also a workable plan to resolve conflicting and divergent viewpoints concerning competitive land uses. Although there was a time when a vast stretch of wild country could be set apart for park purposes with scarcely a glimmer of public concern or opposition, this abundance of free land disappeared with the American frontier. But the demise of the frontier also brought with it the realization that the frontier's contributions to the American dream of greatness had been immeasurable and that somehow, somewhere, vestiges of this element of American life should be protected and perpetuated. With the need for a strong national park system becoming more evident every day, and with the diminuation of available and qualified land, the stage was set for conflict. These conflicts are being met today with increased understanding and with greater vigor. They will be settled, I am sure, to the benefit of all.

So that the growth of the national park system in the United States can be compared with the experiences of other countries, I believe it would be desirable for me to outline its history.

The first action by the Congress of the United States to set apart some of the public lands for man's inner needs came during the Civil War. In 1864 the Congress granted the Yosemite Valley to the State of California upon the express condition: ". . . that the premises shall be held for public use, resort, and recreation; shall be held inalienable for all times." In those words are to be found the seed of an idea and the beginning of a new national public-land policy—a policy that recognized the need for the holding of land in public ownership in perpetuity for other than material gain.

This act of Congress, coming as it did during a period of internal strife, when the founding principles and ideals of the Nation were at stake, was more than a coincidence of history. For in subsequent periods of adversity, curiously enough, similar actions have been taken to preserve land. Strange, too, is the fact that the action was taken at a time when a large portion of the country was still unknown and untamed wilderness.

The action of Congress in 1864 looked beyond the period of a

divided government to a day of internal unity, a day when the wilderness would be tamed and there would no longer be an abundance of virgin land and natural resources, to the time when the original creations of nature would be sought and revered by mankind for their recreational benefits alone. Little time was lost in translating that vision into recommended actions.

In 1865 the Board of Commissioners, appointed by the Governor of California to assist with the management of Yosemite Valley, prepared a report defining the policy that should govern its management. The report is still a classic treatise on public-park philosophy. It was written by Frederick Law Olmstead, a member of the Commission and the first superintendent of Central Park, the large public park located in New York City.

In a broader sense the report developed the basic philosophy for publicly owned parks and laid the groundwork for the national park idea. The philosophy is best expressed in the following extracts from the report:

"Thus, unless means are taken by government to withhold them from the grasp of individuals, all places favorable in scenery to the recreation of the mind and body will be closed against the great body of the people. . . . To simply reserve them from monopoly by individuals, however, it will be obvious, is not all that is necessary. It is necessary that they should be laid open to the use of the body of the people.

"The establishment by government of great public grounds for the free enjoyment of the people under certain circumstances, is thus justified and enforced as a political duty."

A few years later those thoughts found expression in the action of a group of men exploring the Yellowstone country in the northwestern part of the United States. They decided that the natural wonders they had seen—including the great geysers for which the region is famous— should not be exploited for the benefit of a few individuals but held in public ownership for the benefit of the many.

That idealism brought into being the first national park and has been characteristic of the establishment of each succeeding one. In 1872 Yellowstone National Park was authorized by an act of Congress. That act defined a policy and purpose that has been reaffirmed each time the Congress has authorized an additional national park. The significant passage in the act setting forth the policy reads as follows:

". . . is hereby reserved and withdrawn, from settlement, occupancy or sale under the laws of the United States and dedicated and set apart as a public park or pleasuring ground for the benefit and enjoyment of the people."

No charter for establishment of a public institution was ever stated so meaningfully and explicitly. The words "reserved and withdrawn from settlement, occupancy or sale" emphasized the departure from traditional public land policies and uses. The establishment of a new category of public land and a new form of land use was defined in the words "dedicated and set apart as a public park or pleasuring ground."

Park land was to be used "for the benefit and enjoyment of the people," not the production of material goods or commodities. The natural curiosities and wonders of the park were to be the resources of enjoyment. That they were to be for this purpose was made expressly clear in the authority given the Secretary of the Interior to establish rules and regulations. For the act specifically said ". . . regulations shall provide for the preservation, from injury or spoliation, of all timber, mineral deposits, natural curiosities or wonders within said park and their retention in their natural condition."

The act of Congress that established the National Park Service in 1916 did more than provide for a unified administration. It defined a purpose that gave form and substance to a specific type of land use that in turn decreed the management philosophy for park lands and their resources. The particular passage in the act that has guided the actions of the National Park Service for the past 46 years reads as follows:

"The Service thus established shall promote and regulate the use of Federal areas known as parks, monuments, and reservations hereinafter specified by such means and measures as conform to the fundamental purpose of the said parks, monuments, and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations."

That passage is the most quoted and misquoted of all the laws applying to national parks. All too frequently only a portion is quoted, and its intent and meaning is thus distorted. The philosophy expressed in the quoted passage represents almost a half century of evolution. It is interesting to note that the man credited with writing this impor-

tant section of the act, Frederick Law Olmstead, Jr., a landscape architect, was the son of the man who wrote the report on Yosemite Valley in 1865.

During the past half century, science has discovered and developed new resources, and substitutes have been developed that ease the drain on natural resources. But despite all of those advances, no satisfactory substitute has been developed for the joys and pleasures of the outdoors. The need for land for these purposes increases rather than diminishes with the advancement of civilization.

The resurgence of public interest in the outdoors is revitalizing the ideals and broadening the vision of the past. It is expressing itself in legislation leading to the acquisition of additional public parks, greater use of all public lands for recreation, greater accessibility, and increased financing of improvements. All levels of government—Federal, State, and local—are participating in the revival of interest.

Crowning the revival of interest are the wilderness and outdoor-recreation resources bills now being deliberated by the American Congress. The bill to establish a national wilderness preservation system declares it to be:

". . . the policy of the Congress of the United States to secure for the American people of present and future generations the benefits of an enduring resource of wilderness. . . . to be administered for the use and enjoyment of the American people in such a manner as will leave them unimpaired for future use and enjoyment as wilderness."

The bill to promote the coordination and development of effective Federal and State programs relating to outdoor recreation states:

". . . the Congress finds and declares that the general welfare of the Nation requires that all American people of present and future generations shall be assured the availability and accessibility of such quantity of outdoor recreation resources as are desirable and necessary for the physical, spiritual, cultural, recreational, and scientific benefits which such outdoor recreation resources provide; and that timely and coordinated action is required by all levels of government on a nation-wide basis to conserve, develop, and utilize such resources for the benefit of the American people."

These two expressions of national policy hold forth great promise of new heights yet to be achieved in the general welfare. The welfare of mankind is a primary factor in our philosophy of government. It is the motivating force behind park legislation and the activating

spirit of the park philosophy of management. It is best expressed in the words, "for the benefit and enjoyment of the whole people."

A national park is a natural land composition spacious in extent, of such outstanding natural character, wonder, and beauty that it has been dedicated and set apart as a public park by the Congress of the United States to preserve the distinctive quality and resources of the composition and their inherent capacity to provide enjoyment and inspiration for the benefit of the people of this and future generations.

National parks are a specific form of land use. The distinguishing characteristic is the nonconsumptive use of natural resources. The product of park lands is not a commodity that can be moved to the marketplace. Instead, the consumer—the park visitor—must move to the park. There through the knowledge and skillful guidance of park management, the benefits are derived without consuming the natural resources. Only through the harmonious blending of the land, the management and the consumer can the benefits of national parks be realized in any significant measure. Without all three elements, national parks would be but a meaningless term.

The national parks are a priceless part of the American heritage. They are a national resource, a scientific resource, an educational resource, and a recreational resource. They are all of these, because they are so used.

National parks symbolize democracy in action. They are created by the people for the use of the people. Public-spirited men and women conceive of a plan and give their time and talents to bring it into being. There are those who support the proposals and those who oppose it, each guided by his own sincere convictions. It is the Congress that makes the final decision. The Congress must weight the national interest against the local interest and decide whether the national welfare is best served by foregoing material gain for eternal spiritual values. The cycle is completed by those who use the parks, partake of their benefits, and pass judgment on their efficacy.

However, in building our future plans, we need guidance. And this guidance, it seems to me, can be found in the good words of Daniel Burnham, the architect and planner, who said:

"Make no little plans, they have no magic to stir men's blood, and probably themselves will not be realized. Make big plans, aim high in hope and work, remembering that a noble, logical diagram once recorded will never die, but long after we are gone will be a living

thing, asserting itself with ever growing insistency. Remember that our sons and grandsons are going to do things that would stagger us. Let our watchword be 'order' and our beacon be 'beauty'."

GENERAL SESSION

Section One

Purpose, Principles and Policies of National Parks

The first of the general sessions held during the conference was conducted under the chairmanship of Jean G. Baer of Switzerland. In keeping with the spirit of the conference, the speakers came from widely separated areas of the world: India, Mexico, Tanganyika, and the United States. Between them, they dealt with many of the reasons for establishing and maintaining parks. One speaker, for example, described the early traditions of the conservation in the Far East. Another spoke of the economic importance of parks to newly developing nations. Together, they emphasized the many roles—scientific, cultural, sociological, and financial—that parks play in the growth of a country.

Peter Scott from England acted as the discussion leader. Richard H. Pough from the United States served as the rapporteur.

NATIONAL PARKS: THEIR PRINCIPLES AND PURPOSES

by

M. A. BADSHAH

Wildlife Officer, State of Madras, India

and

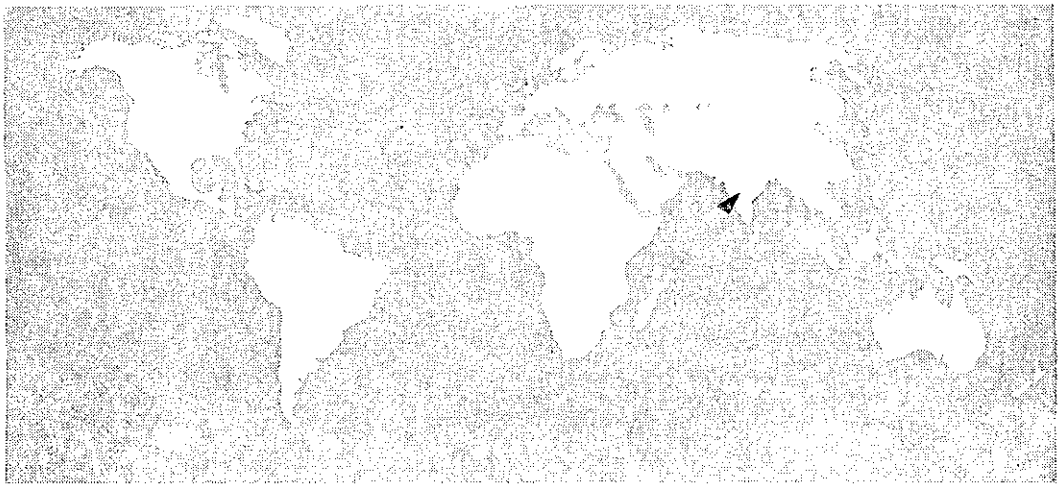
C. A. R. BHADRAN

M. A. Badshah was born in Madras, India, in 1910 and as a boy developed an interest in nature while living on his family's farms. In 1931, he graduated from Madras University and entered the Madras Forest College, where he obtained his diploma in forestry. He then joined the Forest Service, serving as District Forester, Assistant Conservator of Forests and also as Forest Utilization officer. He was the first person to be appointed State Wildlife Officer, a position that he still holds.

His duties involve the administration and development of all sanctuaries, parks, and waterfowl refuges. He is also responsible for the formation of new sanctuaries.

His work has led him to travel widely, and he has visited parks and zoos in many countries, including the United States, Canada, Japan, and Malaya. He is a member of many professional societies and the author of numerous articles on wildlife.

In the preparation of his speech, he was assisted by C. A. R. Bhadran.



NATIONAL PARKS as broadly defined by the United States and Canadian National Park Services are areas set aside by statute containing regions of outstanding natural beauty, characteristic of the finest scenery in different parts of the country, nature's curios, relics of historic interest, native fauna and flora to be maintained forever as closely as possible to the unspoiled original state and dedicated to the people for their enjoyment, education, and benefit. National parks are chiefly areas of scenic splendor, but there are some which represent other interests such as geological, archeological, and historic. The Grand Canyon is the finest example of a geological national park, and Humayun's Tomb in the setting of Delhi's Zoological Gardens is of much archeological and cultural interest. The proposed national park at Point Calimere (Madras State) will be of great historic and national importance as it contains "Ramarpadam," the place where Lord Rama stood and surveyed the country around him before he embarked on his journey to Ceylon. This was a few thousand years ago, according to tradition.

The urgency for the establishment of more national parks throughout the world was never greater than it is today. Firstly, the existing parks are getting congested due to rapid increase in the population. The large number of visitors to the parks is proof positive of their appreciation of the national parks policy. Secondly, with rising trends in the income of the working classes, and with more holidays and cars, the national parks will surely become still more crowded and the need for recreation will be ever increasing. Lastly, the whole of humanity—in its fight for political emancipation and economic freedom—is heading toward a crisis. It is facing fear and frustration and stands oppressed with the pressures of modern ways of life. Man does not live by bread alone. Materialistic considerations have come to exercise such a powerful influence over him that soon he will totally succumb to them, leading to the utter extinction of his latent spiritual powers, without which the prospect of peaceful coexistence with nature and with the peoples of other lands appears to be dim. The only remedy for this malady is the healthful recreation that the national parks can make possible. He should be attracted, nay, induced to return, to nature as often as possible, so that he may at least periodically restore himself to his original self. This change, however short it might be, will still bring him solace and peace, balance his way of life and enable him

to return to his pursuits, with renewed buoyancy, vigor, and energy.

The essence of a national park is freedom to follow one's natural bent, in isolation if so inclined. As early as 1050 B.C. David prayed to the Lord, "Oh, that I had wings like a dove! for then would I fly away and be at rest, Lo, then would I wander far off and remain in the wilderness." This was the longing of a Psalmist 3,000 years ago when the earth was young and most of its natural resources remained unspoiled and undefiled. Since then we have drifted far away from our natural environments. The longing of the present generation for peace of mind and solitude can well be imagined.

National parks also preserve all historic and memorable sites in a nation's history. These monuments constantly remind us of a higher goal in life. As Longfellow [1] said, "The lives of great men all remind us, we can make our lives sublime." If sublimity is to be achieved, the serenity of the national parks is an essential adjunct to the process.

Apart from maintaining the pristine beauty and charm of nature, the parks provide unequalled opportunities for vacationing and picnicking; amidst forest and other scenes, campsites, beaches, hot mineral springs, swimming pools, plunge baths, boating, surf-riding, golf courses, tennis courts, bowling-greens, mountaineering, hiking, riding trails, ski slopes, ski jumps, gondolas, children's playgrounds, all these provide for the recreational needs of the people and contribute to a healthy and happy life. Opportunities for sport fishing (by restocking the lakes and streams with fish from hatcheries) also are provided in the national parks. Bird watching is another pastime which the parks provide. To their unspoiled virgin forests and lakes, flocks of birds are attracted, giving the bird watcher a unique opportunity to study the various species of birds. Point Pelee National Park in Canada is outstanding in this respect.

The establishment of a national park may involve foregoing forever the advantages of exploiting the material resources of the area, whether they be farming, mining, lumbering, irrigation, or hydroelectric projects. Undoubtedly, the formation of a national park calls for a great sacrifice on the part of the nation, as there may be hardly any place within the park area which would be devoid of any potential economic value. The benefits derived from the national parks will be largely intangible, except of course for the fees levied on the users, which can be quite substantial.

We owe a duty to the future generations of the world to save the

natural heritage from further diminution and ultimate extinction. We can no longer afford to ignore the ethics of nature conservation or disown our responsibilities for the guardianship of natural resources for the benefit of the people to come. The ever-growing population of the world has been appropriating large slices of land for human habitation and agricultural and industrial undertakings. The forests are cut down ruthlessly, and streams dry up. The giant trees wail as they fall, the denizens of the forest are driven out either to face the bullet or die for want of shelter and food. In short, all the good soil of the earth is being drained and exposed to the sun and the winds. The desolate and barren Sahara, once the granary of Rome, is man's handiwork. Whatever land there is still under nature's cover is likely to meet the same fate unless specially preserved. Experts have estimated that only about 2 percent of the earth's entire surface is fit for habitation, the rest being covered by mountains, deserts, water, and eternal snow. The world's population is ever on the increase. At this rate what precious little is left of our land resources will soon be occupied by the children of today, the citizens of tomorrow. This distinguished body of the International Union for Conservation of Nature wedded to a most laudable task should also take into consideration the population trends and seek the assistance of the recognized demographic societies.

The politicians and the scientists should be approached, and convinced of the wisdom of retaining the natural resources of the world for the good of mankind and, if necessary, their advice and cooperation sought for making the inhospitable portions of the land habitable. If this is not achieved, the conservationists might remain, but the natural resources will disappear.

However much mankind may be separated by geographical barriers, it should be borne in mind for all time to come that the natural resources all over the world are interrelated. The depletion of natural resources in one continent can have adverse repercussions on another. For instance, in the case of migratory birds (which know nothing of passports and visas) their very lives will be affected. The rosy pastor breeding in eastern Europe is one of the earliest emigrants to India and so also are the pintails and pochards from other parts of Europe and Asia. Europe is as much their habitat as India. Any disturbance of their natural habitat in any of these continents will certainly affect their way of life. Already a progressive decline in the number of

migratory birds visiting India from year to year is noticeable, mainly due to loss of habitats on account of interference by man. During the 3 years of my stay at the Hosur Cattle Farm as District Forester (1948 to 1950), I watched with great interest thousands of rosy pastors (*Sturnus roseus*) between July and February each year flocking to the vegetation around, cackling and quarreling, but today not a single rosy pastor is seen. In lakes where I used to see a mass of migratory wildfowl only a few linger now, and I survive to regret these changes. Similar is the case with the local migrants, particularly the Indian pittas (*Pitta brachyura*).

The good and virtuous have been promised an abode in paradise after death. Everyone has heard about paradise but no one has seen it, nor has one who has seen it come back to tell the rest about it. So far as I can visualize, the nearest approach to a paradise on earth—short of a fabled land with milk and honey flowing and angels and fairies in attendance—is a national park, a combination of some or all of the ingredients: forested hills and valleys, sparkling multicolored lakes, crystal clear streams, rippling brooks, placid rivers, silvery beaches, scented flowers, luscious fruits, sweet berries, snow-clad mountains, and wildlife. In the parks coexistence, tolerance, goodness, love, and affection prevail, and both man and beast can go each his own way and wander freely. When I mention this I have in mind Banff and Jasper National Parks in Canada, where I spent many happy days in direct communion with nature. On an occasion like this I cannot help recalling a refreshing incident at Jasper where one night I heard a knock at the door. I expected to see my roommate. Instead, there appeared a black bear. Obviously the bear was hungry. I gave him some food and he went away. I hope I shall not be penalized on my own evidence, for I still remember the big notice boards warning visitors against feeding bears. The very first evening I arrived at Jasper, I saw a bear crossing the main thoroughfare followed by four young cubs in a leisurely and unconcerned manner, absolutely regardless of the traffic around. This should be the pattern of a national park, where man and beast can live side by side, each fearless of the other.

Some national parks in Canada which I have visited are tending to become more and more urban with all the conveniences and paraphernalia of city life—cinemas, dance halls, electricity, radio, television, telephone, and whatnot. In a few national parks small towns with a variety of shops have sprung up and I fear that such built-up areas may

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extend and expand, encroaching upon the natural beauty. To the extent these landscapes of unsurpassed splendor and excellence are urbanized, to that extent will it mar the scenic beauty and tranquility of the place. Should such towns be allowed to grow in national parks?

Boarding and lodging in national parks that I have visited are very costly. Only the rich could afford to stay in them. Therefore, the benefits of such parks are not fully enjoyed by people of the middle- or low-income groups. Such splendid scenic areas should never be allowed to be monopolized by a few hotel interests. When millions are spent on the maintenance of these national parks, is it difficult for the state to provide inexpensive accommodations in dormitories with canteens attached on a nonprofit basis? For those who cannot afford their own automobiles to visit the national parks, the state should provide bus transport. Only then will the benefits of the parks be enjoyed by all and sundry. In the long run, the state will stand to gain by providing such amenities to the people, as there will be less and less expenditure in the maintenance and management of clinics and hospitals, for there will be a lesser number of sick and mentally deranged.

Permanent human settlements within the sanctuaries and reserves should not be permitted. Even existing settlers, if any, should be evacuated. Alternative sites outside the parks and reserves could be found for their occupation. Experience has shown that some settlers have been extremely unscrupulous, and their presence in the sanctuaries has been fraught with danger to wildlife. Their bows, arrows, and traps do not require any separate mention, let alone the modern versions of this equipment of destruction.

Cases of violation of game laws are treated lightly in courts in some countries. The judiciary must be convinced that the destruction of wildlife by poachers and inconsiderate sportsmen is a crime against the rights of posterity. Unless this view is taken by the trying magistrates, it is doubtful whether wildlife will survive for long.

Grazing of livestock in national parks should be strictly prohibited, as cattle resorting to grazing in the area become serious competitors to the herbivores in the matter of fodder, besides communicating cattle diseases to the wildlife.

The preservation of the existing species of wildlife of the world, and particularly those which are tending to vanish, is the most urgent problem facing the conservationists in all parts of the world today. The national parks are the only places which can afford effective pro-

tection to all surviving species of wild animals. But for these national parks, the species commonly seen now would have become rare, and the rarer ones would have become extinct. Today, if bison, okapi, moose, elk, Asiatic lion, the great Indian rhinoceros, and a number of other rare animals and birds once threatened with extinction are surviving, it is chiefly due to the shelter given to them by the national parks and reserves.

If our Holy Scriptures, the Quran, the Bible, the Vedas, and all other Holy Books are to be studied and understood by our children, and their children, then nature has to be conserved in all its entirety, for there is hardly any Holy Book which does not mention plant life and wild animals besides man as equally part of the world environment. The Bible is full of references to cedars, herbs, plants, wild asses, wild goats, lions, hippopotami, crocodiles, deer, gazelles, bears, jackals, wolves, mice, monkeys, swifts, doves, storks, ostriches, peacocks, eagles, partridges, quail, pigeons, sparrows, swallows, cranes, owls, bitterns, pelicans, etc., and the national parks are the only places to conserve such plant and animal life in the context of present-day pressures of life on earth.

The national parks also should be looked upon as open books of nature, repositories of knowledge, on which every plant, herb, tree, animal, bird, insect, and reptile forms a page. From the dawn of history, as our Scriptures teach us, the Greeks were regarded as the most intelligent and wisest men, for in the Grecian period it was the rule to study nature directly and think over the results of observations. But unfortunately in the Middle Ages, during the long scholastic period, the fashion changed to the study of books, resulting in intellectual stagnation and utter lack of appreciation of nature. In some countries, our present educational system almost excludes efforts to gain firsthand knowledge of nature.

Facilities should be afforded in the national parks for study of life histories, habits, and behaviors of animals and birds. Lessons in natural history should be completed in these parks, and not within the four walls of schools and colleges in cities.

Unless the part played by most species of wildlife in the great scheme of nature is highlighted and publicized, man himself is likely to destroy the great company of wildlife that God has provided. The question is often asked, why preserve wildlife? Are we not living without the dodo, the auk, and the quagga? What will happen to

us if the great Indian rhinoceros and the whooping crane disappear altogether? Little or no information is available at present about the functions of several species in the scheme of nature. Their aesthetic, recreative, predatory, and scientific values—described in general terms—fail to convince the members of the public regarding their value to mankind. The future of the world's fauna to a large extent will depend on the education of the public in matters relating to its function. It has to be considered whether the national parks policy should not include intensive research on the specific role and functions of particular animals and birds in the scheme of nature.

A national park should be looked upon as a *sanctum sanctorum*. It must be inviolate, as it often represents the last remnant of the original stand of the country. The concept of multiple land use, such as selective lumbering, controlled grazing by livestock, harnessing the water resources, should never be allowed to be translated into action in such parks. The exponents of this philosophy should be told in no uncertain terms that this is contrary to the policy of national parks.

In all projects involving extensive use of forested country for industrial development, there should be a conservationist on the Board to advise on the retention of pockets of native fauna and flora in the area which may not be of direct use but might yet be thoughtlessly destroyed. This arrangement is necessary so that wildlife from that area may not be totally displaced.

Active interest and systematic work in nature conservation is a comparatively recent development in India, though in the past it did receive attention from individuals among our illustrious ancestors and rulers. Ashrams[2] of India's ancient saints and sages were considered as refuges for wild animals where they enjoyed perfect freedom. It will be recalled when King Dushyanta was about to let go his arrow at a deer in the vicinity of the ashram of Rishi Kanva,[3] he heard a voice warning him that the deer belonged to the hermitage and should not be killed. The famous compilation, Artha Shastra,[4] of Kautalya, mentions the reservation of forests for wild animals and the existence of Abhaya Aranya, which means a forest where its denizens could roam about without fear of molestation. Lord Gautama Buddha preached his gospel of Ahimsa[5] in the famous deer park of Sarnath near Banaras.

The Fifth Pillar Edict of Emperor Asoka[6] at Delhi is a standing monument of his nature conservation policy. In this edict he had

declared that the rights of parakeets, mynas, geese, queen ants, fish, rhinoceros, and doves are inviolable. The same edict bears the inscription, "Forests must not be burnt either uselessly or in order to destroy living things." A careful reading of the edict will show that the Emperor had protected forests, mammals, birds, insects, and fish. This forms as good a basis as any for our modern policy for the conservation of nature. Many of the Moghul Emperors later also evinced equally great interest in the plant and animal life of the country.

In short, India's history, literature, folklore, and legends so abound with the descriptions of the beauties and bounties of nature and its impact on mankind that it will be impossible for man to isolate himself from his natural environments and lead an independent life, and if he ventures, he is doomed.

Yet no resource has suffered so much for want of frequent mention of its value and importance as the natural resource. But for a few modern exponents of nature like Rabindranath Tagore, Mrs. Sarojini Naidu, and Sir Mohammad Iqbal, who sang the beauties of nature, India would have drifted away still further from nature conservation. Tagore's *Shantiniketan* is world famous.

In 1952 the Indian Board for Wild Life was formed for the conservation and control of wildlife, to sponsor national parks, sanctuaries, and zoological gardens, to promote public interest in wildlife, prevent cruelty to birds and beasts, advise Government on policy in respect to export of wild animals and wildlife products, and to perform such other functions as are germane to the purpose for which the Board was constituted. On the recommendation of the Indian Board for Wild Life, many states in the Indian Union have formed State Wild Life Boards to advise the respective state governments in conserving and managing the wildlife resources. These boards have been holding their sessions every year in different parts of the country and tackling various problems confronting wildlife conservation and taking adequate action to safeguard its interests. Several states have appointed wildlife officers, particularly to protect and safeguard wildlife.

Wild Life Week is celebrated throughout the country each year with great enthusiasm, commencing from the first of October when processions of wild animals are taken out, broadcast talks, film shows, wildlife photographic and painting exhibitions are arranged and wildlife posters are distributed to interest the public in matters relating to wild-

life conservation. It is gratifying to note the growing wildlife consciousness both among the masses and the intelligentsia in India.

India, in spite of its 438 million population, has not lost sight of nature reserves and wildlife conservation. It has a fairly extensive system of wildlife reserves where the Asiatic lion, the great Indian rhinoceros, the wild buffalo, swamp deer, Kashmir stag, musk deer, and tragopan, once threatened with extinction, have now been rehabilitated. Today, we have in India 70 sanctuaries and 5 national parks covering an area of 6,206 square miles, besides the scenic spots and many more sanctuaries in the making. Of the 79 sanctuaries, 4 are noted for their gigantic congregation of wildfowl during the winter months. These are the Ghana Bird Sanctuary, Bharatpur (Rajasthan), the Bhupindar Sagar Sanctuary, Patiala (Punjab), the Waterfowl Sanctuary, Seringapatam (Mysore), and the Vedanthangal Water Birds Sanctuary, Chingleput (Madras). The incidence of bird life in India is very rich. India is affording at least a seasonal home to 2,060 species of birds, out of the world's 8,600 species known to science today. The proposed national park at Point Calimere (Madras) will afford protection to flamingoes and wildfowl, mostly migratory, and to some rare species in the marshes and back waters within its confines.

The rest are all general sanctuaries affording shelter to varied forms of wildlife—mammals, birds, reptiles, and insects. Of these, three are noteworthy, the Kaziranga Sanctuary in Assam sheltering the world-renowned great Indian rhinoceros, which was about to vanish, the Gir Sanctuary in Gujarat, sheltering the last remnants of the Asiatic lion, and the Deer Park in Guindy, Madras, where more than 500 black buck, India's most beautiful antelope, a vanishing asset, breed in peace.

The present status of mammals in India is extremely distressing. It is estimated that India has lost about 90 percent of its herbivores and 75 percent of its carnivores; the Asiatic lion, whose population once sprawled over a quarter million square miles, is now confined to the limited area of the Gir Sanctuary. Black buck, which were a common sight throughout the country, now survive only in certain protected reserves and number about 1 percent of their original population. The same is the case with musk deer, ibex, markhor, and wild buffalo. The population of tigers has also dwindled, as an inevitable sequel. But the relieving feature is the general awareness of the beauty of nature and the many forms of wildlife and the need for them to be conserved.

If nature conservation is to survive the onslaught of civilization, the

first requisite is the education of the masses, particularly in countries where the percentage of literacy is low. The basic requirement for the survival of the fauna and flora in any country is an awareness of its people of the value and importance of nature conservation. What is required is strong public opinion; when public opinion is firm, nature conservation will be a *fait accompli*. Unless the deliberations and findings of the International Union for Conservation of Nature and other allied organizations reach the common man it will be futile to expect him to be duly informed in this respect. Conservationists should work among the masses with missionary zeal if the world's fauna and flora and all that is beautiful in nature are to survive. Conservationists must be dedicated men.

To sum up, much can be achieved by enlisting the cooperation of statesmen and scientists in developing and conserving our natural resources. Reclamation of large tracts of inhospitable land to relieve the pressure on land suitable for nature conservation will require huge sums of money which only the statesmen can make available.

National parks should not look like small towns, as this mars their natural beauty. Accommodations in national parks should be as inexpensive as possible, so that all may enjoy the benefits conferred by the parks. The accommodations should never be allowed to be monopolized by a few hotel interests.

Permanent human settlements and grazing of livestock in national parks should be totally prohibited.

A national park should be a *sanctum sanctorum,* and no exploitation of the material resources of the park should be countenanced.

To interest the public in wildlife, intensive research on the role and function of several species should be instituted. In all projects involving use of extensive forested land there should be a conservationist on the Board to advise the technicians in charge on the frugal use of the natural resources in the area.

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(1) Henry Wadsworth Longfellow, an American poet (1807–82).
(2) In India, an ashram is a retreat for a group of religious disciples.
(3) A "rishi" is a Hindu sage or saint.
(4) Hindu religious writings.
(5) A doctrine preaching restraint against hurting others or taking life.
(6) Asoka reigned from 264 to 227 B.C. in northern India. A convert to Buddhism, he did much to spread the faith. He issued a number of edicts, which were carved into rocks, caves, and pillars, especially erected for the purpose.

USE AND CONSERVATION: TWO CONFLICTING PRINCIPLES*

by

ENRIQUE BELTRÁN

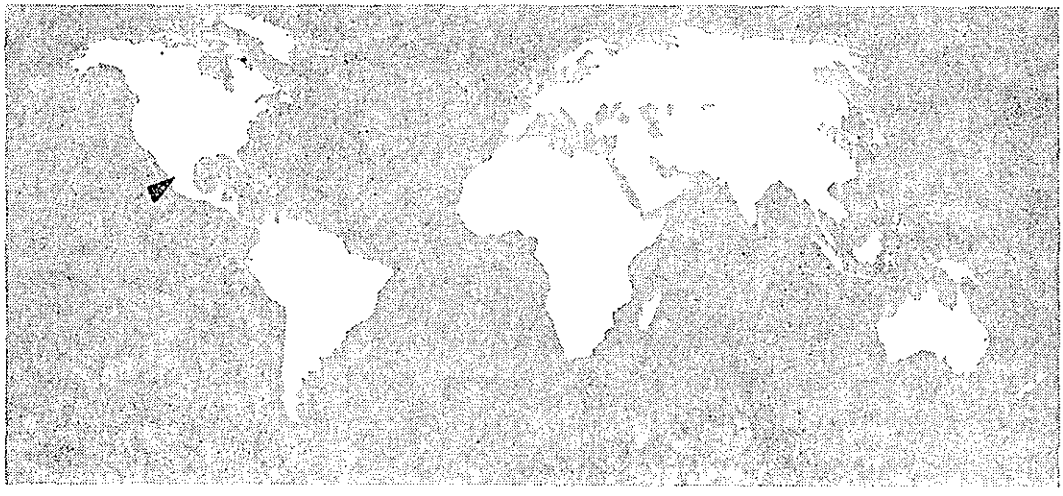
Director, Mexican Institute of Renewable Natural Resources

MEXICO CITY, MEXICO

Enrique Beltrán has combined two outstanding careers in a single lifetime. His first interest was tropical medicine, and he is now a world authority on malarial and filarial diseases. But his interest in resource conservation became so great that it led him to foresake this career and accept an appointment as Director of the Mexican Institute of Renewable Natural Resources. The President of Mexico subsequently appointed him as Sub-Secretary of Agriculture. This branch of the government administers matters pertaining to forestry, national parks, and wildlife protection.

As Beltrán points out, Mexico has a national park system as old as that of the United States. However, many problems remain to be solved. It is toward their solution that Beltrán has dedicated his career.

*Original text in Spanish.



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FUNDAMENTALLY, national parks are established for two basic reasons: On the one hand, to preserve a particular area of exceptional beauty and attractiveness—of whatever nature—in order to make it a site for recreation and relaxation, providing the best facilities, so that the area can be enjoyed by the largest possible number of visitors.

On the other hand, to preserve a particular area in its natural state, so that it will be useful in the study of scientific problems, especially in the field of ecology, where zones that have not been disturbed by human intervention have extraordinary value.

When the first point of view prevails, the attraction of visitors—as the example of the United States and Japan demonstrates—requires the construction of the best roads and other means of access, as well as other facilities that visitors want, such as campgrounds, restaurants, cabins, and hotels. In addition, such parks should contain facilities for suitable sports. These, according to the conditions in the park, might include swimming, rowing, motor boating, water skiing or sledding and snow skiing. Fishing can also be permitted, if it is strictly regulated; but hunting should absolutely be prohibited.

When the second point of view—the preservation of nature in its original form—prevails, the example set by the national parks in the Belgian Congo can be followed. The largest possible area should be protected. No access roads or visitor facilities such as restaurants and hotels should be permitted. Permission to enter the area should be restricted, permission being given perhaps only to those who have study projects they wish to carry out.

As a biologist, I sympathize deeply with the second point of view. I realize the enormous value of areas in which human action has not disturbed nature and which therefore lend themselves to studies of their native flora, fauna, and ecology. But, at the same time, I am not able to avoid considering the social questions that oblige us to create national parks, not as potential areas for study and investigation, but as places for recreation and relaxation. Two fundamental considerations suffice to make one see, not only the propriety, but also the undeniable necessity of paying attention to this latter point of view.

In the first place, there is the lamentable fact that the human population is growing by leaps and bounds without anything serious being done to regulate this growth, although attention has been drawn to the need for such regulation by many different organizations like the In-

ternational Union for the Conservation of Nature and Natural Resources and by documented publications such as those by Vogt, Sax, and Osborn. This uninterrupted increase in the number of humans that people our planet creates an increasing demand for space for them, and this demand may some day reach critical proportions. The dramatic title of Karl Sax's excellent book *Standing Room Only* describes a rather distant future. Before then, hopefully, humanity will have understood the true need for planning and controlling the population. However, the title still makes plain the value that physical space holds for our future existence. Less than half a century ago and on some occasions even a shorter time ago, land around some of the big cities sold per hectare at a price many times lower than the same land sells today for a square meter. And there is every reason to believe that this trend will accelerate. As a consequence, every day there is a greater demand for land for the production of food (agriculture and livestock), commercial products (lumber, fibers, etc.), residential construction, and airports and other types of communications. As a result, there is less possibility of planning the ultimate use of a given area, because the use chosen finds itself in direct competition with other uses that might be made of the same land.

In the second place, there is a trend at the present time—thanks to the development of science and technology—for men to produce more easily the materials that they need for living. As a consequence, less time is required in the work of production. The 8-hour day is the general rule for industrial workers. On occasions, it has been reduced even further, or efforts are being made to reduce it with reasonable chances of success. And the mechanization of agriculture, along with improved varieties of crops and technological advances, will create a situation in which the worker in the field will have more free time after his task is done.

Some of this time will be employed in the simple physical rest that permits the body to restore the energy required by work. But there will still be considerable time left over. It is in the collective interest that this time be used well from the point of view of society. One way of doing this is to use it in healthy relaxation, which has the double result of affording rest and recreation and, at the same time, offering opportunities for increased knowledge or, at the very least, the development of important human faculties and capabilities.

As a consequence, the maintenance in adequate condition of today's

national parks, as well as the establishment of new ones, is a matter of increasing interest and justification, whether the particular area is to be used for scientific purposes or for the recreation and relaxation of the public.

It is also clear that from the point of view of the public interest there is justification for maintaining undisturbed natural areas for scientific studies and that a major effort should be made to do this.

Now, it is not very difficult to obtain public support when land is to be reserved for a use that can be considered economically justifiable, such as the production of food and lumber, or held as a recreational area open to everybody. However, it is quite a different question when it comes to convincing this same public that it should voluntarily deprive itself of the economic or recreational use of land only to have it serve as a tract for scientific studies—actual or potential—studies whose value the majority of the public does not know or is not capable of evaluating adequately. The point is constantly raised that the use of the land for recreation and its preservation for study are in direct conflict. For on the one hand, the use requires the best means of access; on the other, such access must be restricted and the activities of the visitors must be controlled.

In order to resolve this conflict, I propose what I believe to be the general solution to this problem: In all national parks, where it is possible to do so, three types of zones should be used. These zones would have the following characteristics: 1. Zones for general relaxation. These would be used by the majority of visitors, who dislike inconvenience and are searching for the greatest possible comfort. These areas would have the best means of access, parking lots, campgrounds, hotels, restaurants, etc. 2. Intermediate zones. These would be open to all visitors but would contain no roads for automobiles, parking lots, hotels, restaurants, etc. Automatically, they would attract fewer visitors even without restrictions just because of the difficulty of getting to them and because of their inconveniences. 3. Restricted zones. These zones would be reserved exclusively for study and investigation. Admittance would be permitted only to duly qualified individuals or groups.

I think that public opinion would back this idea of using zones in creating national parks—and such backing is indispensable in a democracy—because of the significance the parks would have for

general recreation. At the same time, there would be no important opposition to reserving certain zones exclusively for scientific uses.

Naturally, this general idea of zoning, which I think can be applied in general form and without limitations in any country, would necessitate careful planning in each case.

I think that the three themes underscored in this first section of the conference—"Purposes, Principles, and Policies of National Parks"—can be expressed in the following form:

The "purposes" must be to protect, effectively and permanently in each country, areas of particular beauty or attractiveness and also areas of particular scientific interest. If it is possible to place them under the proper control, they should be declared national parks.

The "principles" should be those that, considering the special characteristics of each case, make it possible to follow exactly the purposes mentioned in the previous paragraph. One of these principles, in my opinion, must be the creation of zones, as I explained earlier.

The "policies" of national parks will be those that make it possible to convert into reality the purposes and principles just alluded to. And in order that these can be developed in an effective form, sufficient funds should be dedicated to the administration of the national parks.

Having discussed the general points pertinent to the theme of the second section of the conference, I would like to point out the relationship of some of them to the present management of national parks in Mexico. I will not go into detail regarding the history, number, and characteristics of national parks in Mexico, because these facts are included in the official report submitted to this conference for circulation among those attending. I will only point out that the national park system of my country started at the close of the last century and that we now have 48 parks.

However, until recently, the legislation with respect to national parks was notoriously deficient, which made it difficult to manage the parks properly. The Forest Law that existed in Mexico from the beginning of 1948 until the end of 1959 demonstrated an outstanding lack in this respect. Only article nine, which recognized the existing parks and the possibility of establishing more of them, told how they could be regulated. But it did not establish specific principles for doing so. The ruling setting up enforcement of the law was more explicit and dedicated six of its articles (130 to 135) to the national parks.

Naturally, article nine of the 1947 law was not sufficient to provide

the legal basis for good management of the parks or the fundamentals required to establish them. Actually, this last point, although desirable, was not absolutely necessary, because article 27 of the General Constitution of the Republic, adopted in 1917, gives the nation the right to impose on private property any restrictions that are considered in the public interest. This, of course, applies with respect to national parks.

The present Forest Law, enacted in January 1961, and in force since then, corrected the omission of the previous law. Section Six of Title Three, which deals with the conservation of forest resources, has 11 articles devoted exclusively to the national parks.

The basic provisions of this law are: 1. To consider the establishment, conservation and management of the parks to be in the public interest; 2. To give to the Federal Executive—the President of the Republic—the right to establish national parks; 3. To permit parks to include land without regard to the land's ownership, using the right of expropriation when necessary; 4. To assign the management of the parks, in all its aspects, to the forest authorities, or, rather, the Under Secretary of Forest Resources and Hunting; 5. To authorize him to issue licenses for the construction of restaurants, lodgings, and so forth within limitations believed to be necessary, applying the income to the protection and improvement of the parks; 6. To prepare appropriate regulations for the management of each park.

In addition, the 1961 Ruling on the Forest Law contains a section of eight articles, specifically designed to implement the law itself.

Of the two fundamental purposes to which national parks may be dedicated—enjoyment by the public or use by scientists—Mexican legislation leans decidedly toward the first. Article 62 of the law states: "The Federal Executive is permitted to establish, *for public use* [the italics are mine] national parks in forest lands, when these are suitable because of their location, topography or other reasons."

Nevertheless, by using my idea of establishing zones, we can restrict access to certain areas and reserve them for scientific purposes. This is within the authority of the forest officials, who are required to write regulations governing the use of each park.

The beginning of the Mexican national parks dates back to 1898, with the establishment of El Chico, near the city of Pachuca, although it did not officially have that designation. Nevertheless, the development of the parks was extremely slow, because by 1935, there were only

two of them: the one just mentioned and El Desierto de los Leones in the Federal District. However between 1935 and 1942 the majority of the remainder were established. Subsequent to 1942, there have been created only Sierra de San Pedro Martir in Bajo California in 1947, Rayón, Michoacan, in 1952, Molino de Belem, Federal District, in 1952, and Lagunas de Montebello on the Guatemalan border in 1960.

As can be seen, the main impetus for the creation of national parks was concentrated in the 7 years from 1935 to 1942, a period in which their administration was originally confided to a specially designated agency, the Autonomous Department of Forests, Hunting, and Fishing. This department had nothing to do with agriculture or livestock, which formerly had been joined to forestry matters, just as they are today. Today the Under Secretary of Forests and Hunting—who has authority over the national parks—belongs to the staff of the Secretary of Agriculture and Livestock.

Unfortunately, the desire to create national parks was romantically oriented toward saving as many interesting and beautiful places as possible, removing them from possible commercial exploitation and declaring them national parks. As a consequence, the problem was not thoroughly studied, and carefully thought-out policies were not developed.

Thus, a large number of the parks were established on areas that are too small: El Contador, Mexico, 34 hectares; El Sabinal, Coahuila, 8 hectares; El Sacromonte, 10 hectares; Lago de Camécuaro, 19 hectares, and so forth. There can be no attempt to zone areas like these. They must be used entirely for the enjoyment of visitors.

Some others, like Insurgente Miguel Hidalgo, near Mexico City, with 1,836 hectares; Lagunas de Zempoala, with 4,669 hectares, and some others, including the latest—Lagunas de Montebello with 6,000 hectares—lend themselves to the type of zoning that we have been discussing.

It can be said that the majority of Mexico's national parks do not have sufficient land. Even Cumbres de Monterrey, which is the largest area in the system, because it comprises no less than 246,000 hectares, does not really have the desirable characteristics of a national park, because its boundaries enclose several important population centers, one of them being no less than the city of Monterrey, with 500,000

inhabitants, and considered one of the country's principal manufacturing centers.

When the majority of Mexico's national parks were established, the law did not contain adequate provision for safeguarding areas of historic interest. For this reason—because it was the only legal means of protecting them—Histórico Coyoacan, which is nothing, if it is not a suburb of Mexico City, and Xicotencatl, which includes the city of Tlaxcala—capital of the state of the same name—were made into national parks.

Added to these problems is the fact that a large part of the land included in the national parks was not the property of the nation and was not acquired later. As a consequence, there exists within the parks some communal property—especially in the peculiar form that Mexican law calls "common property" and even some small villages.

Such a condition, which is not unique to our country since it exists in other places like Japan, whose beautiful parks enjoy international fame, greatly complicates planning for the proper use and management of our parks.

As a last point, it should be mentioned that the budget for the parks is not as large as might be desired. At last, starting in 1961, we began to establish in appropriate parks, special sites for parking automobiles, charging for each car the small amount of 3 Mexican dollars (equal to 25 cents in United States currency). This practice has been well received and endorsed by the public. It permits us to count on some additional funds, which, however small, have served to improve the services at the parks where they are collected.

At the present time, we are studying in all their aspects the problems of the Mexican national parks, bearing in mind the following fundamental objectives:

1. To analyze carefully each park to eliminate those that are not justified, such as Historico Coyoacan and Xicotencatl.

2. To study the possibility that some of the very small parks near important population centers should be given to the local authorities and maintained as municipal parks.

3. To reduce the boundaries of certain others, especially for the purpose of eliminating cities and towns within their perimeters. This will facilitate the acquisition by the nation of land remaining within the parks.

4. To establish, where it is practical to do so, the principle of zoning, which I have mentioned so many times.

5. In parks that are too small to be used for anything but recreation and in the areas to be used for recreation in the larger parks, to increase the facilities necessary for the greater enjoyment of visitors: access roads, interior roads, campgrounds, shelters, cabins, restaurants, hotels, and so forth.

6. To work for an increase in the funds available for the national parks (these funds are now notoriously insufficient) by a major increase in the official budget and by using funds that can be obtained from services established for the public's benefit.

These various points, which seem basic to us in improving our national park system, nevertheless present a series of difficulties. In certain instances they hurt special interests that must be recompensed; in others they run the danger of not being completely understood by the public. This must be avoided, which means carrying on a broad program of education and public relations before implementing some of our projected plans.

A PHILOSOPHICAL CONCEPT

by

SIGURD F. OLSON

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As a boy, Sigurd F. Olson moved from Chicago, Ill., in the United States, to northern Wisconsin. He graduated from the University of Wisconsin, and did graduate work there and at the University of Illinois. For a time, he taught biology at Ely Junior College, Ely, Minnesota, U.S.A., and later served as dean.

One of his great interests has been the Quetico-Superior region. There he knows where to find the beaver and the moose, the loon and the trout. Traveling by canoe and on foot, he has followed the route of the Hudson Bay traders through the Canadian wilds, which were once the ancestral home of the Crees, Chippewyans, Yellow Knives, and Dog Rib Indians, going down the Churchill River from Hudson Bay to Mackenzie.

Although he has held many important conservation posts in the United States—serving as President of the National Parks Association, a member of the council of the Wilderness Society and as a consultant to President Eisenhower's Quetico-Superior Committee—perhaps his greatest contribution has been his writing. His books *Listening Post* and the *Singing Wilderness* stand among the classics of American outdoor literature.



OVER 100 years ago Henry David Thoreau [1] said: "In wilderness is the preservation of the world." The amazing thing is that he made this prophetic and far-reaching statement at a time when civilization on the North American continent was largely confined east of the Mississippi River, while to the west the land was still comparatively unknown and undeveloped. In the east there was still much wild country and the rural village of Concord where he lived was far removed from the marts of commerce and industry. Even so, he saw portents of the future, and what he saw disturbed him.

The space age of today is a far cry from the elemental world he knew, for we have opened up a veritable Pandora's box of treasures which has changed entirely the pattern of our lives. Scientific advance has brought nuclear energy, space exploration, and satellites in orbit with the possibility of placing men on other planets. Computers solve problems so complex their meanings are beyond most of us. Medical science is controlling disease. We are exploring the secrets of chlorophyll and may soon be able to synthesize foods. Under Project Mohole a hole will be drilled into the floor of the Pacific to find what the interior of the planet is like, and with our great machines we are remodeling the face of the earth. Climates may be changed, ocean currents and rivers rerouted, and our environment shaped to suit our needs. Science is moving so rapidly, we are stunned by its progress.

From the standpoint of sociological development, the pace is equally swift; the springing into being almost overnight of new governments which mark the end of colonialism: the United Nations, Common Market federations, world health and world agricultural organizations, Alliances for Progress. There is communism versus democracy, emerging ideologies, and religious nostrums to take the place of ancient beliefs, with the growth of a communication and transportation system which is wiping out isolation.

As if this were not enough to confound and confuse us, there is the population exploding at almost an astronomical rate. The United States is no exception, and by the year 2000 it is estimated we may well have 350 million, and the world at large 6 billion, people. While aware of the implications, there seems to be no end to the pyramiding of numbers and the resultant shrinkage of available living space for human use.

We live in a strange and different world from the one Thoreau knew, with the silences of a peaceful countryside shattered by the roar of

jet engines and the great cities we have built vibrating with noise. We travel faster than the speed of sound, and the smells of fields and forests are replaced for most of us by those of combustion and industry. Man has come a long way during the past century; and while he has made some adjustment, his subconscious steeped in a racial experience that knew little of all this makes it difficult. The past lives with him, and biological processes of all species, including man, refuse to be hurried. Adaptations to new environmental conditions take eons.

We are still too close to our beginnings to ignore them; and in spite of comforts and luxuries we have never had before, we are conscious of tensions and pressures, are often uncertain and insecure, and seem unable to make the transition. When the British historian Trevelyan said, "We are children of the earth and removed from her our spirits wither," he spoke the truth. One has only to glance at the history of the human race to realize the depth of his belief.

A hundred thousand years have elapsed since the emergence of man, with vague and nebulous beginnings running back possibly a million years or more. During all of this time he regulated his life by the seasons, hunting or raising his food, knowing the fears, challenges and satisfactions of a life entirely dependent on natural things. Only during the last 40,000 years did he develop any sort of culture, and not until 5,000 years ago begin to leave any evidence of historical record. During the past century, however, and especially during the past few decades, he has almost succeeded in weaning himself from nature and the old ties with the past. With growing urbanization everywhere, the change is coming more and more swiftly. And now embarking on the greatest adventure of all, he is exploring the universe while holding in his hands physical forces which threaten his survival.

Catapulted into such a dynamic and unfamiliar world, he has begun to question his objectives and the meaning of his new pattern of existence. While he may be urbane and sophisticated and with a wealth of knowledge never before available, he is beset by longings he cannot understand. He dashes from place to place, searching for panaceas that will fill the void within him, unaware that the answer may be simple and that at least a partial solution may lie in a return to the scenes of the past. In the light of physiological and psychological conditioning that for a million years made him what he is, any contact with the out-of-doors is beneficial to him, but wilderness has the most powerful impact. Out of his present need is growing an almost

universal urge to aline himself somehow with those forces and influences that were dominant for ages. Julian Huxley,[2] in commenting on the needs of modern man, said recently:

"One function of the earth whose importance we have only just begun to recognize is that of wilderness, the function of allowing men and women to get away from the complications of industrial civilization and make contact with scenery and unspoiled nature. In more general terms, the function of conserving nature is one to which we must assign a not inconsiderable area of the globe's surface."

Modern man is turning almost instinctively to the last remnants of the primeval scene to know again the mystery of the unknown and the beauties of unchanged terrain. While it is doubtful if his ancestors appreciated the intangible qualities of wild country, he is developing that capacity. Now that wilderness is no longer a threat to security or survival, he is beginning to look to it for the first time with some measure of appreciation and understanding, realizing that within it may be the answer to confusion and a source of inspiration closely allied to beauty.

Beauty is a powerful stimulant to the imagination and there is no question but that the first vague and groping emotions of primitive man generated by it played a role in the eventual development of the creative genius of the human mind. National parks, as reservations of beauty, are sanctuaries where people may recapture at least in part some glimmer of the visions that may have stirred their forebears.

Here also are opportunities for contemplation and regaining the almost forgotten sense of timelessness the world once knew. Because the national parks of America are largely wilderness, they are unchanged and still symbolic of the ecologically balanced environment which man since his earliest beginnings has accepted and adjusted himself to. Surrounded by beauty and in a setting of stability and permanence, he may acquire there the perspective he needs and sense perhaps some of the ancient earth wisdom of the race, and so better gage the results of his cleverness and ingenuity. He may understand more clearly in such places that, even though he can never completely return to the conditions of the past, what matters is a renewal, no matter how brief, of old contacts and through it an orientation to the new situation he has created.

Physical rejuvenation is so closely allied to the spiritual as to be almost inseparable. The very act of walking through a wilderness,

of breathing its unpolluted air, and using muscles once accustomed to constant violent activity, sets in motion a train of hidden and dormant reactions that lift the spirit and prepares the way for receptivity to its deeper meanings.

The real function of national parks is to provide such opportunities. Because of their character, it is impossible to evaluate them from any other point of view than that of the intangibles. Their wilderness quality places them in this category. While they may have great additional value as museums of nature, archeology, history, or physical phenomena, their real worth will always lie in what they are capable of doing to people's spirits and emotions.

If they provide a sense of oneness with the earth and all living things, give satisfactions that have been lost, and somehow still the hunger of a people, then in a concrete sense they serve their highest purpose as spiritual reserves in our high-speed mechanized world.

In the development of any concept for the protection of such natural areas, we must therefore ask ourselves whether or not we care enough about such values to hold them intact. It is always easy to allow political or economic pressures to take precedence over considerations of beauty and values that have to do with basic spiritual needs. The former can be measured, but there is no yardstick for the latter. In order to withstand the demands and pressures of both population and an expanding industrial complex, we must look upon national parks as necessities.

The urgency which faces the United States today may not be as great as in some countries where there is still an opportunity to set aside areas of superlative value before encountering the pressures we have here. Whatever the situation, however, the challenge to all nations is the same, to build up their park systems before it is too late. While preserving the final remnants of the primeval scene may appear to be only one facet of the many decisions people must make in the future, the choices are vital, for they indicate a basic philosophy and attitude, not only toward human goals and ideals, but to life in general.

We may not all need close contact with the primeval. Some must penetrate the wilderness physically and for long periods to know peace and gain perspective, but I am firmly convinced its influence is so powerful, that millions sense its meaning through a glance or in a fleeting moment of experience. Even those who do not have the privilege of seeing the national parks are enriched through the knowl-

edge that they exist at all. Such areas are islands of removal and solitude in the midst of noise, confusion, and speed, islands from which we may glimpse not only the mystery of the universe, but ourselves in the new role we now must play.

From them we may better be able to make the transition, perhaps even bridge the enormous gap, between the past and the present. This is our major problem today, to achieve balance and equilibrium through a wisdom and perspective which will enable us to evaluate the progress we have made. National parks are vantage points from which this can be done. In the mountains, in great forests, in desert regions, or in the presence of clean waters, such perceptions come more easily than in cities, and when they do, confusion leaves, quiet and sanity return. This is the primary purpose of national parks, the basic philosophy behind their establishment. Their real function is philosophical in nature, humanitarian in purpose, cultural in impact; as Thoreau said, within them are inherent values that may well mean the preservation of the world.

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(1) American writer and philosopher, much respected for his views on nature (1817–62).

(2) Contemporary English biologist and author.

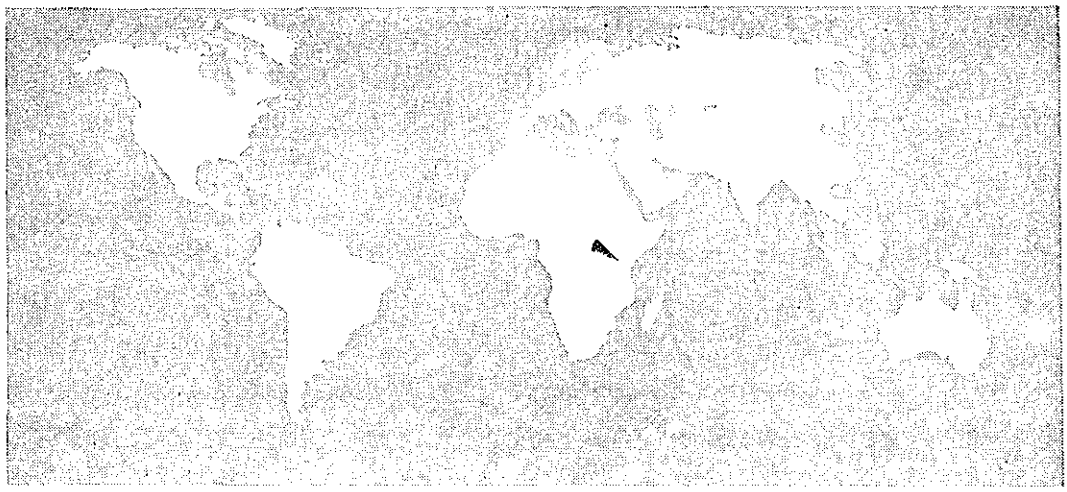
THE NATIONAL PARKS OF TANGANYIKA

by

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ARUSHA, TANGANYIKA

John Simpson Owen was born in Uganda in 1912. He graduated from Oxford, where he read chemistry, and then entered the Political Service of the Sudan. He remained with the service from 1936 to 1955, when he became an executive with a large industrial concern in the United Kingdom. In 1960, however, he resigned this position and returned to Africa to accept an appointment as Director of the National Parks of Tanganyika.

There he has been deeply concerned with the preservation of various species against encroaching herdsmen and by the role that national parks can play in the economic growth of the newly developing countries of Africa.



THE CONCEPT of national parks originated in the United States, and we in Tanganyika, the newest of newcomers to the field of conservation, are unlikely to improve on the precept laid down by the American Government that the purposes, principles, and policies of their national parks system shall be to "conserve the scenery and the natural history and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations."

It must be admitted that when we started a few years ago in Tanganyika—and the same perhaps applied in the Congo and elsewhere in East Africa—we tended to think in terms of preservation rather than conservation and were tempted to overlook the importance of encouraging humans, particularly the local residents, to visit and enjoy the parks. We have undoubtedly suffered by so doing. But is is always easy to parade the wisdom of hindsight and more difficult to apply fully the lessons taught thereby. And of course, though we may use the general principle enunciated in America as our lodestar in plotting our course for the future, many of our most pressing problems are totally different from those of the National Park Service in the States and require a quite different approach.

Tanganyika has just become independent, and the future of her national parks is now wholly in the hands of her new leaders. Few of them, or their countrymen, have visited the national parks which have been, in the past, very much the preserve of the foreigner. At the moment the parks are virtually undeveloped and can contribute little to the economy of the country; indeed, they require a subvention of £45,000 from the hard-pressed finances of the country whose electorate are clamoring for more education, more health services, and a better way of life. The parks cover, in total, a considerable area of land, some of which is coveted by the tribes living round their boundaries for agriculture and grazing. The parks' main impact on the African has been to prevent him from carrying out the traditional hunting of the animals on which he has depended in the past for food and personal status. The need for conservation is a completely alien idea to most Africans, as indeed it was to most Westerners only 50 years ago. And experience both here and elsewhere in the world has demonstrated that, without proper measures of conservation, no natural resource is more vulnerable to quick and irreversible loss than the wildlife of a country.

These are some of the basic facts which must influence our policies.

But the picture is not all so sombre. In the existing national parks and in some other extensive areas of Tanganyika, wildlife continues to exist in numbers and variety unequaled anywhere else in the world. Generally speaking, there is no land hunger; there is ample cultivated land in the country to meet the needs of the growing population for many years to come. The new Government has given a solemn assurance that "we will do everything in our power to make sure that our children's grandchildren will be able to enjoy this rich and precious inheritance of wildlife." There is a growing national pride in the parks and an increasing awareness of their potential economic value. These most important factors on the credit side should dispel any general feelings of pessimism about the future. We are not faced with trying to achieve the unachievable. Far from it.

We have had, however, to make a determined shift of emphasis in our policies. Instead of regarding our parks mainly as nature sanctuaries where humans were allowed on sufferance, we now look on them as areas to which we must attract as many people as we can, while making it possible for them to enjoy their natural beauties. This may alarm some of our friends in the United States who are now struggling to prevent the amenities of their parks being ruined by too many visitors. But our problems are very different. The difficulties and expense of intercontinental travel will always intervene to keep an overwhelming flood from our doors. Our problem is the converse—and will remain so for generations: how to get sufficient visitors into the parks to make them a viable part of the country's economy.

We believe this problem is likely to be solved within the next 5 to 10 years for the following reasons. The middle classes in Europe and the States are getting more and more money, are being subjected to a greater and greater pressure by a materialistic civilization, are willing and able to go further and further afield "to get away from it all" during their holidays, and are finding the cost of doing so getting less and less, due to the steady decrease in the cost of air transport. World tourism has grown and is growing faster than any other industry since the war, and its tide is already beginning to lap at the shores of East Africa. We believe that it only needs the provision of adequate facilities for the present trickle of tourists of modernate means to East Africa to grow rapidly until it becomes a steady flood, provided Tanganyika continues to welcome visitors of other races, still has its game, and is prepared to spend, and encourage others to invest, a

moderate amount of money on hotels, roads, and other tourist facilities—and we believe that of all the countries in East Africa, Tanganyika has by far the best chance of providing these necessary conditions.

The role that we of the national parks can play in the building up of a major tourist industry is limited. We can and do provide the primary attractions, but it can never be our function to put in the necessary airports, roads, hotels, and other tourist facilities; these can only be done by the Government with the help of outside capital. In the past, the former colonial Government did little more than pay lip service to the part tourism could play in the economy of the country. And yet, for a poor country, with no prime movers, few prospects of establishing sizable industries, and dependent largely on peasant agriculture—but with unique tourist attractions—the building up of a major tourist industry provides a potent means, well proven elsewhere, of raising the economic standards of the people. The new African leaders are far more aware of this than were their predecessors but are finding it hard, because of the political urgency attached to the other pressing demands on the limited finances of the country (e.g., education and public health), to devote more than a very limited amount of money to tourism. There is, however, good reason to hope that one of the many agencies now endeavoring to strengthen the economies of the underdeveloped countries will realize the potential value of tourism to Tanganyika and will enable the industry to be built up.

This, then, is one of our major purposes—to encourage by every means the growth of a tourist industry. Once this is achieved it is certain the Africans themselves will be very anxious to cherish the chief of their country's tourist attractions—its wildlife. But this can hardly take less than 5 to 10 years. In the interim, arguments based on the economic value of the parks can only be advanced on the basis of future potential rather than present performance. The appeal of "pie in the sky" must be reinforced with "cake today" if public sympathy and support are to be assured. For this reason, we believe that by far and away the most important of our immediate tasks is to engender in the Africans the realization that their parks are of real value and well worth maintaining, quite apart from the economic benefits they will bring in the future.

The importance of interpretive programs has long been recognized in the States, and elsewhere, but nowhere has there been so great a need

for them as at the present moment in Africa, where the newly independent nations are assuming responsibility for these natural assets of unique and irreplaceable value to themselves and to the world. In the West, without the conscious and determined mobilization of public opinion many parks would not be able to resist continual encroachment and eventual spoliation by interests and antagonistic to them. Public opinion in Africa has not yet been mobilized in this way, and the need to do so is paramount.

During the past year much thought and work have gone into this field. Films, posters, and publicity educative material, all in Swahili, have been produced. We have built dormitories to accommodate parties of Africans in the parks, equipped them with cinema projectors, and obtained funds to pay for the cost of transporting parties into the parks. By every possible means we are trying to build up an image in the public mind of the parks as a source of genuine national pride, as recreational areas which Africans themselves can greatly enjoy, and as a heritage which must be preserved for their children's children. In this work we have been greatly helped by a grant from the Munitalp Foundation. The results, even in this short time, have been beyond our expectations, and it is abundantly clear that our public responds very readily to this type of approach.

We now have had the great good fortune to obtain from the Ford Foundation funds which will enable us to employ an American to extend and develop the work that he himself had initiated during the past year with the help of the New York Zoological Society, and to plan, prepare, and put in a comprehensive interpretive and educative program in all our parks. He will also train an African staff to carry on after his assignment ends. In doing this he will be breaking a lot of new ground, and we find this whole project most exciting and stimulating.

Let us now turn to another policy objective. The three existing national parks—the Serengeti, Lake Manyara, and Ngurdoto Crater—are all in northern Tanganyika. They do not include many of the country's rich variety of different species of animals, which therefore lack sanctuaries that ensure their future survival.

We believe that we should strive for the establishment of more national parks in order to build up a more balanced system, so that—

(1) the parks will be adequate in area and variety to meet the needs of the major tourist industry of the future, spreading

the benefits of this industry more equitably throughout the country;

(2) more of the local population shall enjoy and appreciate the facilities provided by a national park within reasonable range of their own areas;

(3) as many species as possible can be conserved.

There are still several areas in Tanganyika which abound in wildlife and which are not under the immediate threat of settlement by humans. It is essential that the best of these be made into national parks as soon as possible while they are unencumbered by human rights and before poachers exterminate the game. We have three such areas now under consideration; others yet to be surveyed.

The Government has accepted in principle the desirability of establishing two of these areas as new national parks, the Northern Selous (1,700 square miles) and the Southern Rungwa (4,000 square miles); they have approved the allocation of £32,000 for the capital expenditure necessary for their establishment. But, because of the other demands on their limited resources and, in particular, the unforeseen expenses incurred in combatting the effects of the recent disastrous drought and floods, the Government is at present not able to allocate funds for the recurrent expenditure needed to run these parks. The position therefore is that two large areas of Africa, plentifully endowed with wildlife, can be turned immediately into national parks, if the money for their running expenses can be found from external sources. It is estimated that each park would require approximately £35,000 a year and that the Government would probably require an assurance of this sum for at least 5 years before committing themselves to the establishment of these areas as parks in perpetuity.

The third new park under consideration includes the upper slopes of Kilimanjaro. The local authorities are anxious that this should become a national park, and we estimate that if we can raise a capital sum of £30,000 we can establish a national park there in such a way that it will be selfsupporting financially thereafter.

Those who have experienced the difficulties of establishing national parks in even the most conservation-minded countries will agree that it is unusual for local as well as national interests to press for them wholeheartedly. To some extent, we would claim that this happy state of affairs here is due to our own efforts in selling the idea of national parks to the public. But we feel it is only common prudence

to do all that we can to get them established immediately in case the situation should change for the worse. We can only do this, if the rest of the world comes to our aid and enables us to preserve for them, as well as for Tanganyika, these few remaining refuges of African wildlife.

Then we come to our next main policy objective. For if we are to conserve these areas properly, we must know more than we do now. Pitifully little is known about the ecology of wildlife in East Africa—what the animals require in food and land for them to prosper, and what causes some of them to migrate over large distances. Valuable work on these problems is now being carried out by the national parks and game departments, but it was lack of knowledge that resulted in the present boundaries of the Serengeti being drawn in such a way that many of the animals have to move outside the park for several months each year. If we are to ensure that the game in our parks and its habitat are preserved for posterity, intensive research is absolutely essential, so that our management policies are firmly founded on a scientific basis. Rigid protection is not enough, as has been shown, for example, in several areas in East Africa where hippo and elephant have been allowed to multiply to such an extent that they are starting to destroy their own habitat and are having to be thinned out. A purely preservationist policy will be fatal in the long run to the future of the parks; we must adopt positive management policies. But history is full of instances where man has interfered with the balance of nature with little else than the best of intentions to guide him and has arrived at results exactly opposite to those he was trying to achieve.

We in Africa do not yet know most of the basic facts about our wildlife. It is essential that we should learn them quickly. During the last few years much valuable work has been carried out in the Serengeti by various scientists including, among others, the Grzimeks, Professor Pearsall, the Lee Talbots, Dr. Greenway, and Hugh Lamprey; in addition, we have had available to us the most valuable experience of experts in the Government and Regional Research Departments. But to enable policy and management decisions to be taken wisely, there can be no adequate substitute for a continuing research program purposely directed to the solution of the main problems confronting a particular park.

This has now been set up in the form of the Serengeti research project with a staff of three scientists led by Dr. Verschuren. The main

object of the project is to determine what measures must be taken to conserve, not only the wildlife and its habitat, but also the unique phenomenon of the wildebeest and zebra migrations. Particular attention will be paid to the problems associated with any possible future decision to crop a portion of the herds, a decision which may have to be undertaken on a number of grounds—economic and political as well as purely technical—in view of the passage of the migration over the boundary of the park during several months of the year.

In addition to the main project, we intend to initiate a study into the social behavior of lions, which form such a special feature of the Serengeti and undoubtedly play a major role in the ecology of the ungulates. We hope to extend this study, if we can get the necessary finance, to an investigation into the ecological function of the hyena.

It would not have been possible to mount a research program on this scale had it not been for help from outside sources. We have reason to be especially grateful to David Owen, Chairman of the United Nations Education Technical Aid Program, who, by his personal interest and support, made it possible to start the project with the assistance of FAO. We are greatly indebted, also, to the German Government and to many private individuals from all over the world, who, by their contributions to the Michael Grzimek Memorial Fund, have provided the necessary funds and equipment for the excellent laboratory now built in the Serengeti. It is no longer merely a pipedream to look forward to the day when the Serengeti will become one of the main centers of wildlife research in Africa.

The appointment of research scientists impinges on our remaining main policy objective—the training of Africans to take over the responsibility for running their own parks. One of our parks is already in the charge of an African and other staff are in training. It is difficult, if not impossible, for all of them to have the qualifications necessary to enable them to tackle with confidence the complex problems of park management. But the fact that scientists are now available will be of enormous help in completing their training and also, when the time comes for them to assume full responsibility, they will be able to avail themselves of the scientists' advice on matters affecting the proper development of their areas. The importance of this has already been demonstrated in the Congo.

Mention of the Congo, and the news of the excellent work now being carried out by the Congolese authorities in the Parc Albert leads

me to my conclusion. I would like to reaffirm that we are convinced it is entirely possible to ensure not only that sufficient areas are set aside in this country for the conservation of wildlife but that the wildlife in them will survive in perpetuity. But it will need immediate and vigorous action, if we are to make certain of success, and this action will only be possible if we have the help of the outside world. One of our most heartening aspects of our work today is the growing volume of support reaching us from abroad. Provided it continues to grow, the future is bright indeed.

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Section One

RAPPORTEUR

Richard H. Pough

The discussion indicated general agreement among the participants as to the scientific value of national parks and equivalent reserves as well as the obligation of our generation to pass on to coming generations stocks of every kind of wildlife.

The importance of parks from an aesthetic and recreational point of view to the peoples of countries in the early stages of development was questioned. There was a feeling by many that unless parks could be shown to produce income for these countries, it was going to be difficult to secure local support for them from the governments concerned.

It was agreed, however, that in time the whole world would probably be well fed and in every country men would be turning to parks to glimpse the frontiers of the past and enjoy the richness of their land's wildlife heritage and be uplifted by the beauty of unscarred hills.

The proposal that parks and reserves be divided into strictly enforced zones was looked upon with favor by those who stressed the value of parks as research reserves. They felt that some sort of apportionment into zones of decreasing intensity of use was the only way core areas, reserved exclusively for scientific use, could be safeguarded.

Some felt we were too defensive in our attitudes about the need for parks. Those interested in other fields of human endeavor loudly assert the importance and validity of their programs and readily gain public acceptance for them in these days, when the "man in the street" has to take a great deal on faith. We know these areas are truly precious to the whole future of science and, therefore, mankind; and there is every reason to believe that the world will accept our evaluation, if we believe in it and assert it strongly. It should be accepted as axiomatic that every nation should have national parks.

There was some discussion as to whether visitors should be allowed to hunt any form of wildlife in a national park. It was the consensus of those entering into the discussion that any disturbance of the natural balance by man was undesirable and should only be done as a

matter of absolute necessity, when the population of a species seemed to be threatening the survival of other wildlife. In those cases where control does become necessary, it should be left solely in the hands of those in charge of the administration of the park or reserve. Everyone agreed sports hunting and sports fishing were wholly inconsistent and incompatible with the concept of a national park. It was pointed out that experience in the national parks of the United States demonstrated that sports fishing could have a serious impact on the biotic community of shore areas.

The importance of having national parks in every type of biotic area to be found in a country was stressed by some of the speakers. Parks should not be just beautiful forests and mountains. Deserts, grasslands, and other biotic communities are just as necessary, and in some cases probably more important from a scientific standpoint.

It was pointed out by several speakers that in many parts of the world availability of land was not a problem. In many countries, there is still suitable land for every type of needed reserve. The problem is money to finance the setting up of a park administration and to maintain wardens to protect the wildlife from poachers and the trees from those who would cut them for timber and charcoal. It was made clear that many of the less well developed countries look to such scientifically developed areas as America and Europe to help finance these parks, during the initial stages.

They pointed out that Europeans and Americans have for years come to their countries for animals for their zoos and medical research laboratories, organisms for the biological control of pests, and plant strains to improve their domestic breeds or create new crops. They, therefore, asked why these countries should not now help preserve the native stocks of these living things, so that they can continue to be available in the future to all of the world's scientists.

GENERAL SESSION

Section Two

Scientific, Economic and Cultural Values of National Parks and Equivalent Reserves

Under the chairmanship of Clarence Cottam of the United States of America, Section Two was divided into three groups.

Section Two—A

The first of these groups, with A. Starker Leopold of the United States serving as discussion leader, dealt with this subject: Undisturbed natural conditions in national parks and equivalent reserves are indispensable to scientific research.

Bringing together speakers from four different nations—France, Argentina, the United States, and the United Kingdom—the group emphasized man's dependency on his knowledge of his environment and stressed that this knowledge must come, at least in part, from the study of protected areas, where nature has been allowed to work without outside influences.

Victor H. Cahalane of the United States served as the rapporteur of the first group.

SCIENCE AND PARKS IN THE TROPICS

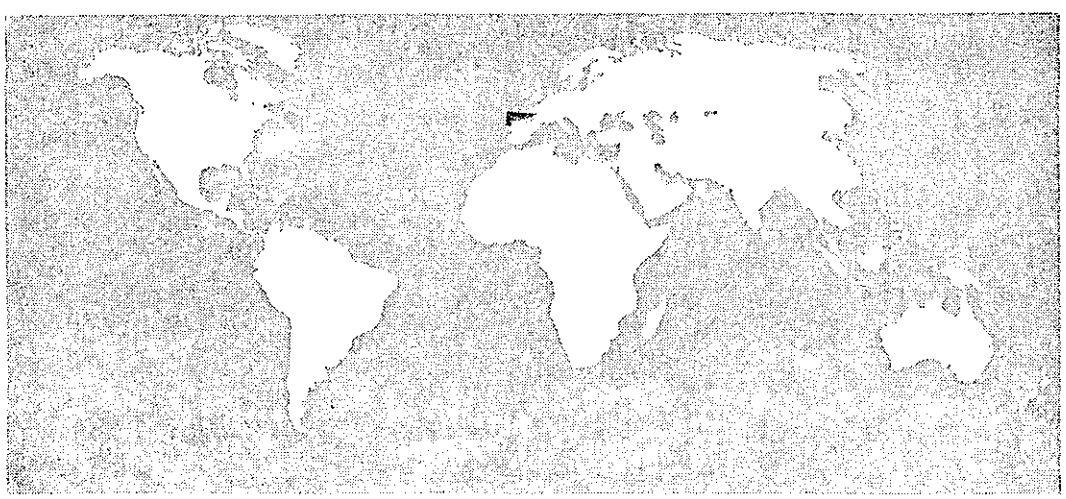
by

F. BOURLIÈRE
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F. Bourlière has, since 1959, served as Professor of Medical Biology at the School of Medicine of the University of Paris. He is Editor of *La Terre et La Vie,* a French quarterly concerned with problems of applied ecology. He is the author of numerous books on ecology, mammalogy, and zoology.

Although he is a resident of Paris, he has taken a special interest in the national parks of the Congo, where he has studied the dynamics of population and the ecology of the larger mammals. In his studies, he has emphasized the high density of wild animals, compared to cattle, that can, with less erosion, be supported on an area of land.

He has worked on land-use problems in tropical countries, especially in Africa, and has taken an important role in France in administering Camargue Reserve. He has traveled in Asia and South America, visiting Vietnam, India, and Colombia, in connection with his work.



AT A TIME when the population explosion requires the speedy and effective improvement of areas heretofore uninhabited or sparsely inhabited, it might seem paradoxical to maintain that the development of a genuine system of national parks and nature reserves is an urgent need. Why should one seek to withdraw from human use important additional segments of virgin land, precisely when it is necessary to enlarge the extent of cultivated ground, increase output, and improve sanitary conditions?

The answer to this question is simple: The national parks of today are different from those of yesterday, and these nature reserves are really envisaged as playing a part of the greatest significance in the setting up of intelligent programs for the improvement of underdeveloped tropical regions. In fact, we are no longer living in the period when the aim of nature protection was essentially to prevent the disappearance of rare or unusual species of animals or plants, or even to preserve for the greatest enjoyment of future generations certain "nature monuments," which are equally as deserving of interest as the masterpieces of past civilizations.

The rapid expansion of the new science of ecology, with its manifold practical applications, has now conferred upon the parks and reserves a second role: that of absolutely irreplaceable outdoor laboratories. It is not, after all, in an ordinary laboratory—be it the most costly phytotron—that the structure and metabolism of the various tropical biotic communities can be studied, the secret of their adaptations to the peculiar conditions of different environments be discovered, or the productivity and "perenniality" of climax-communities be compared with those of artificial communities created by the clearing of land, by drainage, and by the introduction of exotic species of animals and plants. To conduct such investigations successfully, one must be able to draw upon the whole gamut of "standard environments," ranging from multiple climax formations to various stages of plant and animal successions. These habitats, moreover, ought to be studied both qualitatively and quantitatively for many decades, protected from all human intervention. Thus it is only in national parks or in suitable nature reserves that such long-term ecological enquiries can be fruitfully undertaken; hence the importance of the parks and reserves for this type of basic research.

Consequently, it could be asserted without exaggeration that these parks and reserves constitute at present the real laboratory of the

tropical ecologist, the permanent observatory from which it will be possible to follow the evolution of artificial environments in comparison with that of natural environments—the ideal research station, where new techniques of improvement properly adapted to local conditions can be worked out. With the well known complexity, as well as fragility of tropical ecosystems and the enormous floral and faunal wealth of the tropical world, it is obvious that the few parks and reserves actually in existence in Asia, Africa, and Latin America are insufficient or inadequate to handle these multiple tasks. It is therefore urgent to increase their number and to see to it that a complete sampling of the biotic communties of the tropics of both hemispheres is protected for proper study. An operation of this kind cannot, of course, be left to the mercy of local initiative; and coordination, at the very least, will be necessary in order speedily to obtain the best results.

What are the actual conditions to be fulfilled in order that parks and reserves may play fully the part assigned to them by the proper development of tropical ecology? In our opinion, they can be summed up as follows:

1. These "outdoor laboratories" should be equitably distributed among the various continental biomes, with at least one large reserve in each continent entrusted with the preservation for the future of a representative sample of every major ecosystem found there. That is to say, in Africa, for example, it is just as important to set up reserves in the rain forest of the Ivory Coast, Gabon, and the Congo as in the savanna-communities of northern Cameroun, the Lake Edward Basin, and the Serengeti-Mara Plains, or in the mountain-communities of the Ruwenzori, of Kilimanjaro, and of Kenya—or, again, in the Sahelian steppes, the Sudanese "sudd," and the Sahara or Kalahari Deserts. There is, to be sure, no intention of putting all projects on the same footing and of trying to carry them out simultaneously. It is necessary to establish an order of importance and to set up a schedule of priority-environments in each continent in order to bring every effort of the next few years to bear on saving the most vulnerable and most badly threatened ecosystems. But it is essential to avoid going to the opposite extreme and, for instance, under the pretext that the larger animals of the African plains are really in the greatest danger, becoming concerned only with them to the neglect of forest, mountain, or aquatic environments which are of equally great scientific and practical interest. It is well to remember in this connection that the crea-

tion of national parks or equivalent reserves is not the only method open to us for the protection of threatened animal or plant species. Wise management or effective regulations can and should be brought to bear wherever possible.

2. National parks or equivalent reserves should be of sufficient size to be self-supporting should their immediate surroundings subsequently be entirely altered by human interference. A single park of large size will always be preferable to a swarm of "micro-reserves," which can shield only the smallest populations of the plant and animal species to be protected. Small populations are always most vulnerable to accidents or epidemics of various kinds, and it must not be forgotten that they also produce conditions that may further a genetic drift which can quickly modify the hereditary characteristics of the populations.

In the specific case of wetlands and marshes, micro-reserves are totally ineffective right from the start, since the perenniality of the environment is essentially dependent on the stability of the water table in the whole area.

3. National parks and reserves should be effectively equipped in respect to research, so that they may permit the residence and prolonged study necessitated by modern ecological research with its numerous personnel and its scientists of many disciplines. This means that, besides a principal laboratory—whose equipment need not necessarily be magnificent—such a park or reserve should admit of (*a*) field stations where researchers can live and work in direct touch with their subjects of study, and (*b*) a group of suitable vehicles, including light craft should they be necessary.

A reference collection should be set up as quickly as possible; this should always be available to researchers for immediate identification of phanerogams, vascular cryptogams, terrestrial and aquatic vertebrates, and a few groups of invertebrates of specific ecological importance (parasites, arthropod vectors, the ecologically dominant insects, arachnids, and mollusks in the environment being studied).

The preparation of identification manuals to be used in the field should be undertaken immediately wherever possible, along the lines of several particularly successful examples such as the already published floras of Albert and Garamba Parks, and *The Trees and Shrubs* of the Kruger Park.

4. Along with a floral and faunal inventory of each park and nature

reserve, a broad ecological survey should be systematically undertaken as soon as the equipment is in place and a detailed topographic map of the reserve is available. Maps of the soils and the vegetation should be first drawn up. Permanent quadrates and line-transects should be delineated for studying the evolution of the vegetation. A network of meteorological stations should be set up. As soon as possible a quantitative study of the trophic levels of biotic communities should be begun, including periodical censuses of the ecologically dominant vertebrates and invertebrates and estimates of the biomasses and of the fecundity and rate of turnover of the most important specific populations.

All these investigations are necessary to arrive at a final estimate of the "energy budgets" of natural ecosystems and to learn the secrets of their adaptation to local conditions.

Of course, many other studies can and should be carried out alongside these basic steps in learning about the relationships between living beings and their environments. The study of the behavior of different species of animals assumes special importance, particularly for the social species. Where could such a study be undertaken under optimum conditions except in a national park, where the larger animals quickly lose all fear of man and can thus be studied more easily?

There remains a ticklish problem which has at times clouded the relations between ecologists and conservationists—that of experimentation. Ecology, like every science, cannot be satisfied with mere observations, even quantitative ones. Sooner or later experiments have to be made to verify certain hypotheses or prove the validity of certain mechanisms. Now, all interventions tending to alter the natural "balance" have heretofore generally been systematically excluded from national parks and nature reserves—or have only reluctantly been allowed. Such a situation cannot be prolonged indefinitely; and if, in certain cases, conservationists persist in an overly obdurate attitude, there is little doubt that they will eventually prejudice their cause. Experiments must be made to settle disputed questions such as the effects of fires, the exploitation of certain animal species, introductions, and chemical control, or to solve problems of vital importance for the human populations living in intertropical zones—and these experiments will be attempted, at any rate. Would it not, then, be better for them to be carried out under the control of resident ecologists thoroughly acquainted with local conditions rather than under the aegis of "experts" from countries often of quite different ecologies?

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Although there is no question of undertaking—except on a limited scale—such experiments, with their sometimes unforeseeable results, in the interior of the "standard environments" which form the substance of the parks and reserves, it seems desirable for these experiments to be carried out nearby in such a way that valid comparisons can be made between control areas and experimental areas. The buffer zones which often surround parks and reserves could be used advantageously.

Parks and reserves, furthermore, are sometimes the sites of natural experiments on a wide scale, the systematic study of which can have important theoretical and practical effects. Among these experiments are the occurrence of tremendous geological phenomena which could not possibly be reproduced at will. The lava fields of different ages spewed out by the Virunga volcanoes of Albert Park in the Congo afford an opportunity to study, for example, every stage of the recolonization of the "empty places" by plants and animals. The sudden disappearance at the end of 1957 of the crater lake of the island of Narborough in the Galapagos Archipelago offers a similar opportunity. Still other experimental situations are due to the suppression of human influences in the protected zones. Needless to say, the setting aside of a large piece of uninhabited Amazonian or Congolese forest in no way changes the prior state of things; but the prohibition of fires, of hunting, or of grazing in the African savannas, which have been traveled by man for long ages since, creates a new situation to which nature reacts by a rapid modification of flora and fauna. In some cases strict protection has, paradoxically, ended in an extensive modification of the very environment which it was desired to preserve intact; and measures of wildlife management have had to be adopted to establish the prior situation. All these natural or seminatural experiments are extremely interesting and contain the germ of a solution for numerous practical problems. They should be studied with the same care and by the same methods as is the ecology of climax communities.

Such are some of the research opportunities offered the tropical ecologist by national parks and reserves. One might say that they are almost unlimited, and that these natural laboratories are destined to be among the places where the future of the human race is being wrought. Our generation should see to it that a sufficient number of parks and reserves be created in all tropical countries, that they be large enough to be self-supporting entities, that laboratories be set up in them, and that long-term research programs be methodically established.

UNDISTURBED CONDITIONS FOR RESEARCH

by

MARIA BUCHINGER

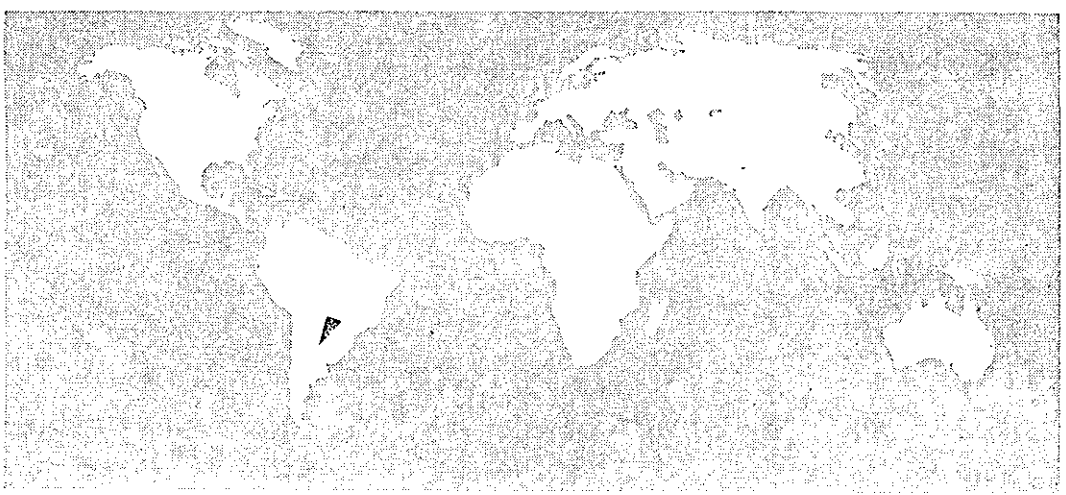
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Maria Buchinger moved to Argentina in 1948, having obtained a doctorate in botany and a certificate as a secondary school teacher of natural science and geography and after having taught in Vienna, Austria. At first, she worked for the Museum of Natural Sciences in Buenos Aires and then became associated with the Argentine Forest Service. She soon was taken by the beauty and magnitude of the Argentine wilderness areas and has worked hard to help preserve them. When the Argentine national parks were threatened with destruction, she took part in forming the Friends of the Argentine National Parks.

In her conservation work, she has been both dedicated and insistent. Even during a political crisis, when no visitors were allowed at the Argentine Congress, Maria Buchinger continued to call on various senators to interest them in her ideas. Her friends say that when it comes to preserving wilderness areas, she has the willfullness of a llama. This, says Maria Buchinger, "is not really a compliment, if you consider that llamas are more stubborn than mules."

Her interest in conservation is not limited to Argentina. She is also concerned with the problem in many other South American countries and in the Antarctic.



A VERY distinguished speaker at the wilderness conference in San Francisco said in 1959: "I have been caught, as many of you have, in what seems to be an untenable position when I have stated that the wilderness must be protected because of its value for scientific research, being unable in a given situation to point to any significant research that has already been done in the wilderness tract under question. One wins no adherents to the side of protection by only being able to say that someday someone will want to study something in the wilderness, that it might be important to do so and that it would be a shameful loss were the wilderness no longer in existence."

Having a similar theme, I am faced with the same problems, and as far as positive data are concerned, there still are no reports of important research done in national parks or reserves. Nevertheless the statement that refers to the loss of wilderness areas can be well illustrated.

Unfortunately, in Latin America there are several dramatic examples of what happens if no undisturbed areas are available for research in phytogeographic regions where the biotic balance was upset; e.g., the most important forest export in Argentina is a tannic matter extracted from the heartwood of the quebracho tree (*Schinopsis quebracho-colorado* and *Schinopsis balansae*). To determine future national and international policy, it would be essential to know if natural regeneration of the quebracho forests takes place or not. But it so happens that the extensive quebracho forests were unscrupulously exploited, and no virgin area exists where studies could be made—not even in the two national parks within the area, the Parque Nacional Pilcomayo (285,000 hectares) and Parque Nacional Chaco (15,000 hectares), created in 1951 and 1954, respectively, which means at a time when, besides forest exploitation, grazing was already preventing the natural regeneration. The creation of the national parks did not improve existing conditions, as the wood felling, grazing, and clandestine hunting continue to transform the original plant associations and to contribute to the extermination of rare animals. Under the given circumstances, the regeneration of the quebracho has to be studied in forest stations, which try to reconstruct the original environmental conditions with the help of costly experiments.

As another illustration of the loss to science resulting from the loss of wilderness areas is a simple plant which has no economic value at all; as a matter of fact, it must be presumed that the species is extinct. Some specimens were collected in 1899 and 1900 in Patagonia and described

by Spegazzini as a new species (*Eriogonum ameghinoi*). A few years ago, I found them in museums and realized that their distinctive characters could be considered as generic. The resulting new genus (*Sanmartinia*) was a "missing link" which made the filogenetic interpretation of a subfamily of the Polygonaceae possible. Naturally I was most interested in obtaining more and fresh material. To my surprise I could get none, in spite of the fact that the type habitat was constantly visited during the last decades by collectors and botanists. A specialist in Patagonian flora explained that the plant in question is only one of many which have disappeared in the past 50 years due to grazing and the invasion of exotic plants, especially weeds. Of course, nobody has ever thought of setting aside an undisturbed area as a national park or reserve in a region which Darwin described as the "devil's land."

The progressive disappearance of the original vegetation in the agricultural zones of the Pampa is also indisputable. Plant breeders looking for drought-resistant plants have a hard time finding them in a zone which a few years ago was covered with one of the most varied grass communities of the world. It is obvious that the work of scientists would be much easier, if an adequate undisturbed area existed, where not only the different species could have survived, but the succession as a whole. Thus it would have been possible, with the help of ecological studies, to interpret plant communities which are apt to resist adverse climatic conditions.

Many similar examples could be given to prove the importance of scientific research to reserve areas under undisturbed environmental conditions. Such areas should exist in all the different phytogeographic regions and their survey made obligatory. One of the objectives of the International Commission on National Parks is to "assist the Secretariat in the furthering of scientific research, especially ecological studies in national parks and reserves on the basis of international and regional cooperation." We feel, however, that apart from such study areas, there should be some which are sanctuaries in the strictest sense of the word.

It is a fact that the park services in all countries offer enthusiastic collaboration with and promote the work of scientists; they and students are allowed to visit, observe, and collect in reserves and sanctuaries. In some collections there are samples which might well be representing the last of their kinds in the area. Even park naturalists are proud of the rare specimens which enrich their museums.

Conservationists often are accused of favoring protection of wilderness areas by locking everybody out. Those in favor of "development" have to be told, over and over again, that the undisturbed parts serve as reservoirs from which the plants and animals repopulate the adjoining areas. Such untouched regions, where nature alone can act, are vital for the preservation of the natural features of every park, and they should be disturbed by no one, not even research workers! There should be an area in every park where plants and animals are safe from collectors and every kind of intruder. It has been shown that even a few humans can upset the biotic balance.

For example, near a small base in the Antarctic all lichens disappeared within a year or two due to air pollution. These lichens, with their high capacity to resist extreme climatic conditions, are valuable phytogeographic indicators, especially in polar regions where no higher plants can be found. The presence of endemic lichens in the Antarctic is the more significant, as they evidently survived the last glacial period. Their evolution could not have taken place in the comparatively short time of 20,000 years which have elapsed since then. It is sad to confess that species that were not destroyed by glacial periods and other cataclysms could not survive a few months of civilization with its byproducts of noxious gases from the stoves and trash and refuse scattered around the tiny settlements.

The Antarctic Continent is an excellent place to observe the anthropogenic influence and modifications on the natural environment. The sole presence of man in a habitat where animals live and reproduce might be perturbing. Man generally does not content himself with observing, but takes direct action, killing animals for profit, for sport, or simply because he considers them harmful, upsetting in this way the biological equilibrium of the area. It was agreed by the representatives of 20 countries to protect the indigenous fauna of the continent and in particular the most threatened endemic birds, but this protection is very inefficient if the habitats of the animals are not protected at the same time. Practically, it means only that the existing individuals cannot be killed, but unless their breeding places are safeguarded as well, the continuance of the species is more than doubtful. Nature in Antarctica produced a wonderful balance, the great flocks of penguins representing the maximum number that the given area can support. Before man's arrival, the animal also had its enemies. But cruel as the skuas, sea leopards, and whales seem to be in killing

seals and penguins for food, they keep the number of their victims in check and do not let them increase beyond the capacity of their food supply. If it were not for them, penguins and seals would starve the same way deer starve in states where they have too few predators.

This ideal balance in Antarctica was spoiled when man arrived. Apart from the inevitable killing of some animals for food or samples for research, there were other and quite unnecessary disturbances. A helicopter flying over a penguin rookery when the young are small, or the eggs unhatched, causes panic among the parents, who crush and stamp on the helpless young, destroying most of them. A ship pumping oily bilge near a rookery may destroy thousands of parent birds returning from the sea with food for their young.

As was stressed, Antarctica is one of the few places in the world where nature's biotic balance was undisturbed by man until very recent times. In other areas which seem to represent genuine wilderness, traces of ancient cultures are frequently found. Even in those parts of the tropical rain forests which were thought to be uninhabited, pieces of pottery and traces of fire show clearly the human intervention. Naturally, the intervention of the primitive populations in a neolithic state cannot be considered in the same way as the highly mechanized and destructive methods of our modern era. This fact has to be kept in mind, as those who are not in favor of national parks, and especially of undisturbed areas, argue that man, being an integral part of nature, has intervened as an ecological factor ever since prehistoric times. This is true, but it has to be remembered that primitive people do not upset the biotic balance.

Indian tribes never fish or hunt more than necessary for their maintenance, they always respect young animals, and where agricultural methods are established they generally are in accord with soil capacity. Thus the climax is not altered and remnants of the climax formation can reinvade their natural habitat after the localities have been abandoned by man.

Modern man cannot be considered part of the biotic circle; he brutally upsets the balance. In countries like those of South America, where an excessive exploitation (or as they call it "development") takes place, the degredation of the climax is irreversible. Cutting, burning, overgrazing, too intensive cultivation without any previous scientific planning, all change the landscape definitely, and together with these changes, the original flora and fauna of the area disappear.

We have been mentioning examples of such vanishing species from Antarctica. It is of course very easy to observe the influence of the human factor on a continent where the flora and fauna elements are not abundant, and where no robust invasive species can take the place of the weak disappearing ones. But it has to be considered that the same alarming destruction of the indigenous plants and animals takes place all over the world. Is it not a fact that there are no lichens in cities or around settlements which infect the air with noxious gases?

Examples of disappearing and vanishing mammals and birds from Africa and America are well known to everyone. The disappearance of plants does not seem to attract the same attention among people in general, perhaps because it is hard to tell when and where a plant disappears. Those considered especially beautiful or of economic value are cultivated, and only when they begin to degenerate, do geneticists worry about where they came from and search for their geocenters. Costly expeditions are organized to find out something about their original habitat. Often it is too late. Man might have already come to the region looking for some special plants and destroying all the others. (E.g., in Latin America very few plant monographs are accompanied by maps which indicate the geographical distribution of the species.) If such a map is given, it shows as the area of distribution, the road system of the region and the surrounding hotels. It so happens that those are the only places where, under present conditions, collecting is possible. Some fortunate naturalists get a chance to visit forests where woodcutters are at work; those are the times when quite a few new species are found.

It is significant that every year, even in our day, trees and shrubs are described which are new to science. The flora of the world is far from being well known. Unfortunately, botanists are not present at every new opening of virgin forests and logging companies do not go in for plant collecting; they look for one or several woody species and fell them, destroying all that hinders the accomplishment of their rationalized work. After extracting the economically valuable trees, the ground is cleared (mostly by fire) and reforestation, agriculture, or erosion follows. How many plant species might have vanished, and are disappearing constantly, which have never been described? According to zoologists, the same fatal diminution in the number of unknown invertebrates takes place.

Nowadays national parks and reserves are the only places where

no destruction of unknown values takes place, or at least such destruction is theoretically avoided. Practically, the species are not safe there either. It is obvious that animals, and also plants, need a certain space for their maintenance and propagation. The area has to be large enough to secure the continuance of all natural features which made it worthy of preservation. The vegetation has to present the typical association, and the animals must have space enough to lead their natural way of life, not being crammed into an inadequately small space like a zoo.

Unfortunately, there are two factors which tend to reduce the space in national parks. One is the excessive demand for development which makes most parts of the park accessible to the ever-growing group of visitors. This is very discouraging, as it would seem that together with the growing interest in wilderness a better understanding would go hand in hand, and some new areas would be added, instead of destroying the supply reservoirs.

The other space-reducing factor is even more alarming, as the first one only reduces the undisturbed areas within the park, but the other tends to reduce the parks themselves. In some countries of Latin America, the number of tourists is not yet alarmingly high; having few visitors, the parks are considered a public burden. In the last few years the idea was voiced that, for reasons of economy, it would be better to have smaller but well administered parks rather than big ones which cannot be controlled. This argument is dangerous, reasonable as it may sound, because it signifies voluntarily giving up wilderness areas which can never be replaced and which within a short time might be the only refuges of wildlife and indigenous flora. It is hoped, therefore, that the participants of this conference can stimulate their respective governments to maintain the existing national parks in their present form (always presuming that the area designated as a national park is in harmony with the park concept), and to add new parks to insure the preservation of all indigenous species. Each park should have an undisturbed part where no human intrusion of any kind is permitted. Around this intangible nucleus a wilderness area should serve the purposes of scientific research.

Although maintenance of these areas would mean no economic sacrifice to the park service, some might consider that leaving two important sectors undeveloped would be to conform to the wishes of naturalists in contrast to the interest of the average park visitor.

It is easy to prove how incorrect such an assumption is. I have discussed only those benefits which scientists obtain by working in national parks and reserves, but it should be stressed that these benefits are mutual. It is well known that the central function of the park service is to provide a contact between visitors and nature. The public is not satisfied with contemplating the scenery. It also shows great interest in natural history; intrigued by plant associations and living habits of animals, it asks for names and facts. To increase understanding, the park service develops interpretive programs, establishes museums and visitor centers, arranges conducted trips, and publishes or encourages the publication of nature guides.

The necessary data for such interpretive programs are seldom obtained by the park service itself, as only a small part of the budget covers research expenses. Most of the results are obtained by naturalists working for other institutions. This means that the park service is dependent on research done in the parks, especially under undisturbed natural conditions. Research in developed areas has a comparatively small value. The consequences of public use always have to be considered. For example, the effects of trampling by visitors or pack animals on ground cover and soil is visible on nature trails. This induces a noticeable change in wayside vegetation, from which all delicate plants disappear, and often the microclimate of the area changes as well. The damage is even greater where highways are improved to cope with increasing public use; some *Sequoia sempervirens* stands of California could not survive microclimatic changes by the building of a new road.

To appreciate such changes and determine the policy of the park service, it is indispensible to possess comparative studies from undeveloped areas. Every working plan in a national park should be based on an adequate survey; unfortunately, such surveys do not exist in most Latin American countries. Although the region's general features are known when the park is established, this knowledge is seldom increased although adequate area management depends on it. It is obvious that no satisfactory interpretive program can be launched where even some of the commonest plants and animals are scientifically unidentified. The selection of sites and the delimitation of parks and reserves depend on previous research.

In conclusion, may I state that not only does progress in the natural sciences depend on research under undisturbed natural conditions, but also that such research is indispensable for national parks and reserves.

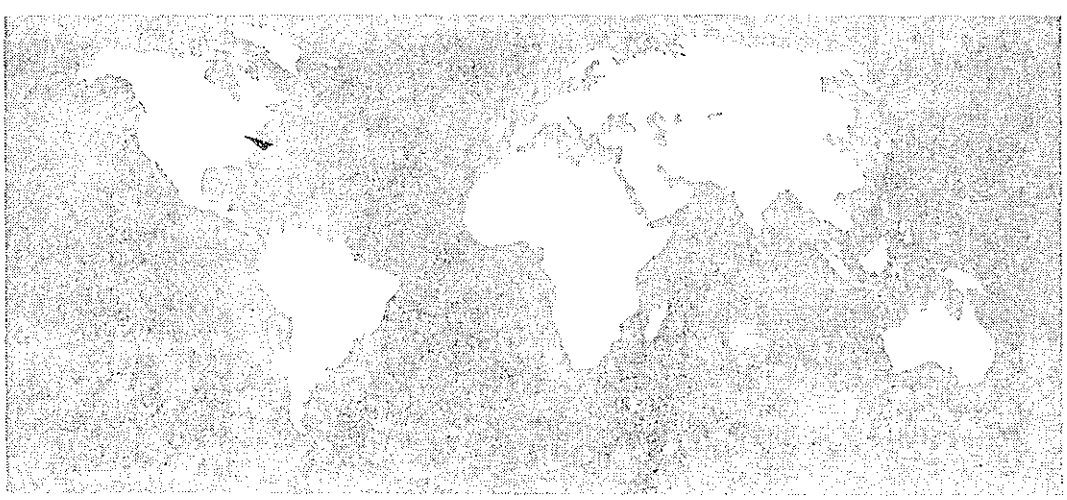
INSHORE MARINE CONSERVATION

by

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In his scientific work, Carleton Ray has two sharply contrasting interests: the tropical coral reefs and life in the Arctic and the Antarctic. He holds a doctorate in zoology from Columbia University in New York City and is associated with the New York Aquarium, which is operated by the New York Zoological Society. He has spent much of his time in studying the relationship between temperature and metabolic rates and is concerned with the ecology and thermo-regulation of marine mammals.

He has explored glaciers, discovered a "snow flea" and has developed highly successful techniques for capturing Arctic mammals.



FOR CENTURIES, the word "sea" has connoted much of the unknown, of adventure, and of exploration. The gigantic expanse of the ocean's 340 million cubic miles of water has seemed bottomless and endless, its resources and mysteries boundless, and it has been an international area of *laissez-faire*.

Today, mankind is at a marine crossroads, faced with a dangerous dilemma. For the centuries-old attitude towards the sea clings on, particularly with regard to the sea's bounty in produce, its assumed endlessness, and the lack of a code to govern our resource activities. Yet we know, in Fairfield Osborn's words,[1] of "the limits of the earth." This also includes the limits of the sea, forseeable limits which in many cases have been reached, in other cases surpassed.

One important cause of our dilemma is that the orientations of man are more or less those of the giant, land animal that he is. Even in conservation, particularly in esthetics and wilderness, our thoughts leap most frequently to mountains, valleys, and big game, seldom to the small or aquatic. Man might better have been a frog—both aquatic and terrestrial, and of middle-size.

If man would exploit the whole earth, as he would do, it would seem that his thoughts would be of the whole earth. They are most often not. The sea has been considered something apart. In many cases it has been little more than man's garbage dump, lately for atomic wastes. Historically speaking, man's present relationship with the sea is still in the hunting-gathering stage that practically disappeared from terrestrial, western culture during the agricultural revolution several millenia B.C. Our modern tools for harvesting the sea—electric fishing gear, fish-finders, the Svend Foyn whaling gun—are all tools of the hunt. Management and fish culture are practiced, but their roles are still relatively minor.

My theme will be the extension of the ideas of land and fresh water conservation to the marine environment with all that this implies—parks, sanctuaries, management, and regulations to control man's behavior in relation to the marine resources. A major subtheme will be the absolute necessity of setting aside unmolested study areas in the sea, "parks" in every sense of the word with all life protected. Man is using the sea at a great rate, polluting it, developing its borders. We have little real idea of the effects of these actions, except that we feel the overall effect is deleterious. How are we going to be able to study these effects, or how are we to be able to study the resources of the sea which

we are coming to depend upon so heavily, unless we have the opportunity to study unmolested? It seems to me, that this is simply a matter of common sense and survival. I made a plea for marine study areas for ecological research previously (1961). Others have done so in principle before, most recently in the Sierra Club publication, "The Meaning of Wilderness to Science."

In 1953, the Committee on the Use and Care of Natural Resources of the NAS–NRC Division of Biology and Agriculture reported the need for strengthening ecological and conservation research, particularly in three special areas—the oceans, grasslands, and the tropics. In Walford's *Living Resources of the Sea*, there are outlined the complex problems of harvesting the sea and how increasingly we will come to depend upon the sea for biological produce. Walford emphasizes research, stating that he does not see how the harvest of the sea can be increased very much by using today's antiquated philosophies and methods.

There is neither time nor space here to consider the sea as a whole. I understand that some problems of conserving polar and international waters will be considered elsewhere at this conference. I will confine most of my remarks to temperate and tropical littoral waters within national boundaries. These littoral areas are of the most pressing concern for they are the areas of the most intensive human use recreationally and for resources. Civilization has grown on land and near the sea, generally in the richest vicinities. Civilization's growth not only leads to the concreting over of some rich farmlands, but also to the decimation of some of the richest waters. Therefore, it is the shallow seas near centers of civilization that are most in need of protection.

Before continuing with this discussion, I would like to outline a few clarifying generalities. First, beginning with the perfectly obvious, the sea is not the same throughout. The most productive areas, the most productive areas on earth in fact, are those of rather shallow water near shore. The estuaries, inlets, bights, and marshes with good circulation have been called the nurseries of the sea. These are also disappearing the fastest through development, filling, drainage, bulkheading, and pollution. In many cases, the development and subsequent ruination of marine habitats of great richness are carried out in the name of marinas, summer homes, and bathing beaches; we might say, rather coldbloodedly, that the areas involved are being flushed down the recreational drainpipe. Productive fisheries are

also found most prominently on the continental shelves (banks) and over steeper bottoms where upwelling occurs, areas which are also usually rather near shore. Other rich areas are the polar seas during the sunlit months. But the sea has huge deserts as well—the central North Atlantic, the eastern mid-Pacific and most deep seas. On the average, it has been estimated that the sea is about as productive as the land, though its arable areas are larger. A fact to remember in this connection, however, is that with present practices of hunting and gathering animals that are usually well up on the food chain, we are not utilizing nearly the full productivity of the richest areas. We are, in fact, wasteful to an extent that could not be tolerated on land.

Second, the sea is not a vast, untouched storehouse of resources and food in every sense, as we so often hear preached by the prophets of panacea. The sea has been harvested intensively for centuries and it, like the land, has its extinct and decimated species. The greatest of all living things, the blue whale, is in serious trouble. Almost all of the large, marine mamals, except those already overhunted, are under great pressure. Only one, the fur seal, is being sensibly managed. Whales are managed, but the evidence is that the management is not sufficient. In the New York Bight, catches of fishes are not as they were in the recent past. The most valued fish there, the menhaden, is not a food species at all and is probably being fished near the maximum. Herring, the most valued food species in the world, may also be fished near the limit in most places. Salmon, of course, have been greatly overfished. It would be dangerous to consider marine resources, under present practices, as the future answer for food after the despoliation of the land is complete. We have already utilized a great deal more of the sea than we would like to admit, which seems strange to us, since the sea is still a wilderness from the standpoint of exploration.

Third, there are arguments as to whether a marine species can be entirely fished out. The answer is almost always a reserved "no." But the question is not the correct one to ask. The negative answer is much desired in some quarters, since it is often used as an excuse to pretend that overfishing does not exist. Actually, extinction is not the point. The fact is that many species can very well be extirpated or seriously reduced in certain areas in the sense that fishing is no longer worthwhile on a commercial or sustained basis. Aquatic, like land, animals produce a certain yield each year, the maximum ultimately

depending upon the carrying capacity of their environment. It is this yield only, like interest from the bank, that can be taken on a continuing basis. The discovery of what that yield may be is still a question for most marine species.

Which brings me to the fourth point: We have a truly abyssmal ignorance of the sea at present. It is almost a question of not knowing what to protect or how to protect it. The sea has much less definite barriers to the distribution of species than the land, the number of species is much greater, and the environment is much more difficult to study, so that it would be difficult to define workable sanctuaries or study areas. We will see, in the next few years, vastly increased efforts in marine science, but there is a long way to go. One serious problem is the shortage of trained biologists and, at present, many laboratories are begging for oceanologists.

Fifth, the sea is a three-dimensional environment, not two-dimensional as is the land. Many marine species never see the sides or bottom of their watery world. Furthermore, water is not inert as is all but city air, but contains various substances, including biochemicals, vital to life. Thus in some cases we might be up against the rather difficult problem of protecting a space without sides or bottom. This seems a bit farfetched, but I would not rule it out. At any rate, we are up against the delimiting of three-dimensional sanctuary areas.

Part of what I have said may not seem to be immediately relevant to the discussion of parks in the narrow sense of the word. Yet this conference is not concerned merely with recreational and scenic areas. If we include sanctuary, buffer, replenishment, and study areas, then I would say that these things are very much to the point.

You will recall that I stated that we are at a marine crossroads and that the areas of most urgent consideration are the shallow seas near centers of civilization. This brings up a phenomenon of recent times that has accelerated and focused marine problems. Since World War II, particularly in the last decade, literally millions of persons the world over have taken up the sport of skindiving and aqualunging (SCUBA diving). We cannot overemphasize the psychological and physical impact of this development. Whereas previously, most men went on the sea in ships or read of it in books, nowadays they can do much more than that—they can see beneath its surface with their own eyes, and they are doing so *en masse*. In turning so many minds to the submarine environment, a new impetus has been given to all

things aquatic. Aquaria and oceanaria are developing at a tremendous rate. Marine science has gained added vistas; in fact the nondiving ichthyologist is often embarrassed to find that the ordinary skin-diver is more familiar, in some ways, with fishes than he is. Skin-diving has built up a new industry, and it has turned men's minds forceably to thoughts of exploring, exploiting, and developing the greatest remaining wilderness on earth. It has also raised serious new problems in conservation.

Skindiving has opened up yet another area, that of sport. This is, of course, the sport of spearfishing which, in my opinion, has traversed the reasonable bounds described by the word "sport." I cannot do better than direct those who are not familiar with this activity to the diving magazines to witness the slaughter of 500-pound basses and 9-foot marlin, for what purpose, I cannot imagine. Spearfishing is an ancient activity, but it has progressed from a kill for food with the Hawaiian sling to a slaughter for the thrill of kill with high-powered, compressed-gas, explosive-head weapons. International contests are held, the criterion of excellence being the greatest poundage of fish killed. The AAU even came within a hair of authorizing this "sport" as one of their contest events, even an Olympic event. One boat company offers one of its products as a prize to the spearfisherman who can run up the most points for killing fish.

We must be on guard to put spearfishing in its proper perspective. Its real effect, to me, has been to accentuate the killing and general decimation of fishes by whatever means. A speared fish or a hooked fish or a netted fish are all dead fish. Many hook-and-line sportsmen make little more use of their catch than spearfishermen do and get just as great a kick from the kill. The competitive arguments between sport fishermen, commercial fishermen, and spear-fishermen leave out one voice—that of the fish. I suspect that it would say: "Fellows, take it easy, give me a chance!" And just how do we give the fish a chance? We must recognize that some sort of control is necessary, not just over the current villain, spearfishing. If spearfishing affects the numbers of fishes, so, too, does hook-and-line fishing; so, too, does commercial dragging. Our conservation efforts must be directed to an examination of the species in question, its environment, and the methods of fishing used to kill it, without bias and with the health of the stock the primary concern, and most of all, with the desire to accept

necessary regulations including sanctuary areas for replenishment and study.

Back to spearfishing, I would like to clarify the real effects it has on fish populations. When fishing certain, homing species, the diver is at a great advantage over the line fisherman, for he can see and spear what the surface angler might not even suspect is there. In the sea, the basses are particularly susceptible to decimation and extirpation. The use of the aqualung should never be permitted when spearfishing, for this allows the hunter to pursue the fish unreasonably, and even the rank amateur can obtain a great kill. High-powered guns are also an unfair advantage, allowing the amateur to wound at a distance when he should have spent his time in more skillful stalking. It would seem to me that if spearfishing is to gain recognition as a real sport, it should be limited to the free-diver with more low-powered artillery, and the areas where fishing is allowed should be regulated with an eye to the stocks of homing species.

Spearfishing has one other real effect, usually not given much attention. It conditions fishes to the fear of man. A speared-over reef is a different place from an untouched reef. In the presence of spearfishing, the study of fish behavior is not possible, at least not on the sport species. In the Bahamas and Bermuda, with which I am most familiar, the use of aqualungs and high-powered guns for the taking of fish is illegal; and there are certain areas where spearing is not permitted for reasons both of safety and of maintaining of sea gardens.

There are glimmers on the horizon that skindivers are tiring of the mere spearing of fish and are turning to photography and marine science. More than a glimmer is the formation of the infant American Littoral Society, a group of divers and scientists under the wing of the U.S. Fish and Wildlife Service, which is involved in fish-watching and coastal fish surveys.

I would now like to recall some proposals for marine parks and regulations made by Ray and Ciampi (1956). In essence, the ideas are not new. They reflect a belief that inshore waters should be managed in much the same way as the land and fresh waters, utilizing sound principles of sanctuary, management, recreation, and fish and game legislation as an alternative to the *laissez-faire* which still largely exists. A plea was made for underwater parks and various areas to be set aside for several purposes: areas for replenishment, for sanctuaries, for esthetic values and recreation, for education, and restricted areas for

study. A plea was also made for the control, not elimination of, spearfishing, involving the principles accepted on land and in fresh waters: establishment of game and nongame species, regulation of catch as to size and bag limit, designation of fishing and nonfishing areas, licensing, and the prohibition of high-powered guns and the aqualung for killing marine species. Today I would extend fishing regulations and licensing to all users of the sea, the proceeds of licensing to be used for conservation and research. Some regulations exist, but most of them are against one group or for another. As I said before, the fish have few spokesmen. There is one big hitch. For the fish to have a spokesman, clear-cut facts will be needed, facts that are rarely known today. Regulation is bound to be a trial-and-error business at first, but that should not put us off for too long.

The existing tropical underwater parks have been reviewed by Wallis (1961). I would like merely to mention them: The first was Fort Jefferson National Monument in the Dry Tortugas. This was followed, in 1959, by the Exuma Cays Land-and-Sea Park managed by the Bahamas National Trust in the central Bahamas. Lately Bucco Reef in Tobago, the Key Largo Coral Reef Preserve in Florida, Phosphorescent Bay in Puerto Rico, Buck Island in the American Virgin Islands, and the St. John Coral Reefs in the American Virgins have come under governmental jurisdiction. Under private management are Grand Cays in the Bahamas. In the Eastern Hemisphere are Green Island in Australia's Great Barrier Reef and the marine reserve in the Eil Malk Pacific Trust Territory. There are several other proposed, and I have no doubt that several of merit have escaped my attention. If so, I would be grateful to hear of them.

Nevertheless, it is significant that a tiny area is covered by these parks. More significant, only in the Green Island sanctuary is all life protected. Commercial and line fishing are allowed in the others, so it is clear that these areas are mostly parks only in name. It is clear, as well, that with the great pressures that already exist on the inshore seas from sport, commercial, and recreational sources, the demand will very soon outstrip the supply. This brings me to another point and a recommendation. If we agree, as we must, that there is no further justification for unrestricted use, then a zoning of our inshore waters and seashores is needed. The U.S. National Park Service has recently issued surveys on the east and west coasts of the United States and these sobering reports point out how little seashore is left in public lands.

But these reports do not really consider the sea as such, only the edge of the sea. Therefore, I would immediately propose that all established and proposed seashores, state and national the world over, make an effort to extend their boundaries over the surface and underwater. In areas adjacent to a continental shelf, the outer boundary might be delimited by a 10 fathom or other appropriate line. In areas of sudden dropoff, the 3 mile limit might be used.

U.S. Interior Secretary Udall, I see by the papers, has made an important step in proposing to the Congress a conservation, land-acquisition program for seashores and marshlands. The extension of this bill seaward might involve difficulties, but it should be done, for we will have to face these difficulties one day very soon. I would also add that, if seashores and marine parks are to be parks in the real sense, every effort should be made to protect all life therein completely. The philosophy should be that governing terrestrial parks, and we do not shoot birds and game or even mice in land parks. Once this philosophy is accepted, it would not be difficult to enforce the appropriate regulations. It is hard to hide one's activities at sea.

In conclusion, let me emphasize the interdependence and oneness of the land and sea, which our society has so far not wholly accepted. On islands, such as those of the Exuma Cays Land-and-Sea Park in the Bahamas, this interdependence is most striking. Where would the land and sea be separated on an oölitic bank, on a tropical marl, or in a mangrove swash? Even in the middle of many Bahamian islands, one can see the tide rising in ocean holes. The esthetic beauty of these cays, beaches, and banks depends upon this interaction and dynamic interplay of land and sea. The beauty would, in fact, be destroyed through man's efforts to separate the two through stabilization by dredging, bulkheading, and development.

In the Bahamas, we have been working, beginning with the efforts of Col. Ilia A. Tolstoy in 1955, on the principle of the indivisibility of land and sea. We are just now beginning the full protection of the two major areas in our domain: the Exuma Cays Land-and-Sea Park and the Flamingo reserve on Inagua. Both areas involve land and sea, the first being mostly sea and the second mostly land. In the Exumas, we are to develop and protect a recreational area with outstanding reefs included. Smaller cays in the park area are to be reserved for the preservation and management of rare and disappearing Bahamian species, some of which will have to be reintroduced. On Inagua, the

major purpose is the protection of the greatest remaining flock of the West Indian flamingo, continuing the work of the Society for the Protection of the Flamingo in the Bahamas and the National Audubon Society. But on Inagua, we also protect waterfowl of many species—spoonbills, reddish egrets, and others—and we will also endeavor to set aside several natural green turtle feeding and breeding areas, one of which will be rehabilitated for turtle growth and culture.

Esthetic values, food, recreation, science, and knowledge, these are our goals by land and sea. The Trust is on a small budget so far, aided by funds set up under the New York Zoological Society, the National Audubon Society, and the International Oceanographic Foundation in Miami; but as opportunity avails, we will expand our efforts and, we hope, set a pattern to be followed throughout the Caribbean region, where conservation and natural resources are life and death matters.

In implementing our aims, I am struck by one fact: I think it is true to point out that not nearly enough conservationists are biologists and not enough biologists are conservationists. This was truer in the past than it is day, and it is more a present problem by sea than by land. We often attempt to protect life without serious biological study which is a bit like going to the village blacksmith to have your teeth out. Living things are adapted to specific environmental conditions. We cannot discover what these conditions are without field study by the trained field biologist. Almost subconsciously, we assume that we can know of life from bottled specimens, from books, or from living specimens in zoos and aquariums. These are but substitutes for nature, for no animal lives in a vacuum without the environment to which it evolved.

In the field of conservation, we need all the aid we can get, but there is little substitute for the professionally trained eye. We need more biologists as conservationists and we need them fast, especially in the marine realm. It is a matter eventually of survival. It is a matter of recalling the conditions from which man himself evolved, for we seem to have forgotten our past in the wilderness.

Perhaps, also, we will recall our debt to the sea which gave the land its life. All lands are islands in the sea. The earth is a unit, and its life is related not only phylogenetically, but ecologically as well. The whole earth, land and sea has absorbed some punishing blows, some from which it will not recover. If we conservationists and

biologists do not think of this planet as one—earth and water—then I ask, who will? If we do not press for marine as well as terrestrial sanctuaries and for regulations over our marine activities, then I ask again, who will? And while we are seeking to know facts and to establish these rules of behavior, let us not forget Joseph Wood Krutch's [2] words: "Conservation is not enough." The final answer rests in our love of nature, not just that which is familiar to us as giant, land animals, but in the extension of ourselves into what is big or small, and from the mountaintops down into our ancient sea-home.

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(1) Contemporary American naturalist.
(2) Contemporary American writer. Author of numerous books on nature.

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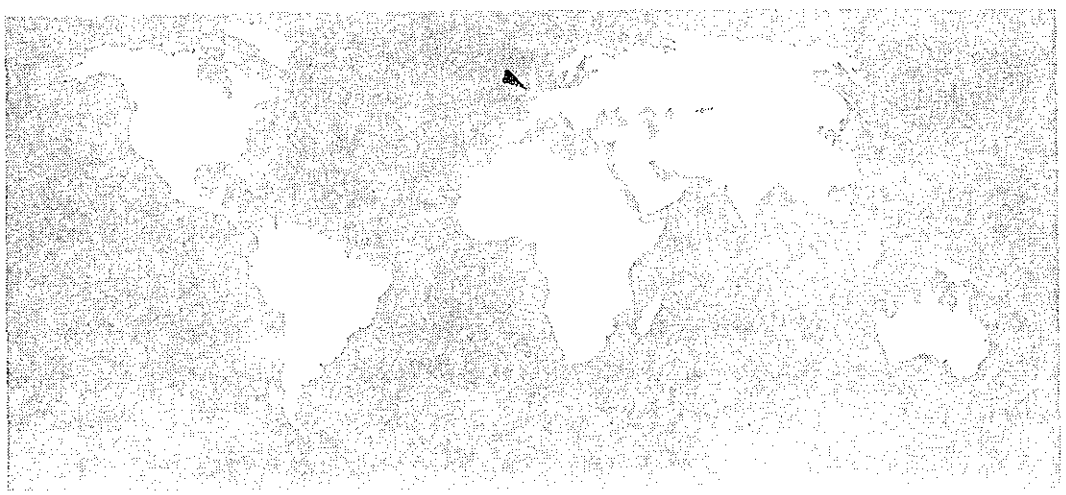
RESEARCH AND NATURAL AREAS

by

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E. M. Nicholson, C.B., first became interested in ornithology, when, as a small boy, he saw the collection of birds' eggs at the British Museum in South Kensington. As an undergraduate at Hertford College, Oxford, he initiated and directed the Oxford Bird Census, the Census of Rookeries of the Oxford District and the National Census of Heronries. When he was 22 years old, he published his first book, *Birds in England*. A second book, *How Birds Live,* followed 1 year later.

During the 1930's he helped to form the independent, nonpartisan organization, PEP (Political and Economic Planning) whose reports have gained an international reputation. During the war years, he joined the Ministry of Shipping, which later became the Ministry of War Tonnage. In his official capacity, he attended the Cairo, Quebec, Yalta and Potsdam Conferences. He has held several other government positions, including the chairmanship of the Official Committee for the Festival of Britain. On his return from Baluchistan, where he headed a United Nations technical mission in 1952, he was appointed Director of The Nature Conservancy, a post that he has held ever since. The Nature Conservancy is concerned with the preservation of natural areas in the United Kingdom.



UNDERSTANDING of the value and functions of national parks and reserves for conservation and for enjoyment is now fairly widespread. Understanding of their use for research and of the problems which this involves is still very limited; it is even difficult to find in the literature serious and concrete discussion of this important aspect. How little it has been thought about may be illustrated in relation to the title assigned to the present discussion. Apart from the well known differences of meaning attached to the term "national parks" and the wide variety of land uses, habitats, and managerial policies exhibited in different areas of this description, there are even more important ambiguities in the expression "undisturbed natural conditions."

At one extreme this might be interpreted as restricting consideration to areas reasonably believed not to have been subject to any serious modifying influences over an indefinite period, such as uninhabited tropical rain-forest. Such an extreme definition would even rule out areas whose fauna and flora had been disturbed by glaciation or more recently by hurricanes, floods, or natural burning. This could be scientifically justified since such areas have been impoverished, and the record of natural processes operating on them has been erased or distorted. It might indeed be more reasonable to make such a distinction than to draw a line between areas which had or had not ever been subject to human impact of any kind, since the recovery from such artificial interference as quarrying or diversion of waterways may be just as "natural" as recovery from spontaneous flooding or landslips.

On a less restrictive view, therefore, "undisturbed natural conditions" might be interpreted as including any areas on which past human interference had ceased long enough ago for a spontaneous recovery to take place. This might bring in a whole range of interesting habitats from prehistoric camps and fields to areas such as the Norfolk Broads in England, which were excavated for fuel largely in the 12th and 13th centuries, coming down to sites now recovering from bombing in the Second World War. It is important to appreciate, therefore, that such a phrase as "undisturbed natural conditions" can be understood in different ways with different implications.

From a scientific standpoint, certain studies may demand the use of areas which have been undisturbed either by natural or by artificial processes for an indefinite period; for other studies as ascertainable record of past disturbance, either natural or artificial, may be no disad-

vantage. It may be a positive asset in providing a natural experiment, contrasting with evolution in other areas not so affected. For some scientific studies the overriding consideration is freedom from disturbance now, especially by badly behaved human visitors who may remove or damage markers, instruments, or other scientific material on the ground, or who may, by disturbing animals, polluting water, or starting fires, compel the writing off of a survey or experiment in progress.

It must also be remembered that scientific research can take many forms, ranging from occasional or short-term visual observations, census, or surveys, through the laying down of transects, exclosures, and traplines to intensive collecting of fauna and flora and deliberate interference by such drastic methods as burning, flooding, or felling of trees.

Not only have these different types of study very different implications in relation to conservation and other values, but some of them may be incompatible with other scientific work. For example, when I was studying ornithology many years ago in the Amazonian Forest in British Guiana, I found it necessary to cut some inconspicuous radial and concentric trails, in order to move swiftly and silently from point to point and to fix accurately the movements, for example, of mixed flocks of forest birds. The expedition's botanists found my trails very convenient for spotting specimens of arboreal vegetation, which led to their felling a considerable number of the neighboring trees, thus blocking my system of communications and drastically modifying the territories of the birds under study, besides detracting from the undisturbed natural character of the study area. As one of them produced a standard work on tropical rain forests and the other made important additions to taxonomy, I am prepared to concede that the sacrifice in this instance was probably worthwhile, but it would have been much more convenient if the implications of the botanical program could have been formulated earlier and if an overlap of these two working areas could have been avoided.

Many similar examples could be given where the presence of other scientists can disturb birds or mammals which are being counted or observed and thus ruin studies of population or ethology. On the other hand, the intervention of ornithologists to provide additional open water or suitable plant foods for ducks can upset vegetation studies and seriously injure the natural ecology of fen or bog areas. It is easy to say that scientific studies on undisturbed natural areas should be strictly limited to those which will not involve disturbances, but this, if strictly

interpreted, can in practice amount very nearly to a total ban on research. For example, many ecological studies require collecting, sometimes on a substantial scale where such problems as biomass are involved. Such collecting, if it has to be repeated, can easily cause permanent modifications of the populations concerned and thus be impervious not only to conservation but to the validity of the study itself. An uninitiated visitor might well class such an area as completely undisturbed; but he would be mistaken, and its impoverishment might well prove permanent.

Great as are the opportunities for the advancement of science by suitable research under undisturbed natural conditions, it must therefore be recognised that the pursuit of such studies involves many dangers and difficulties and that great harm could result from indiscriminate encouragement, under this pretext, of yet another type of injurious human interference with the rapidly dwindling world reserves of long undisturbed natural habitats.

If such opportunities are to be responsibly and intelligently used, organized forethought and supervision are essential. In the first place, a scientific assessment should be made of the potential for scientific research of each area, especially in relation to other types of site and to known study projects. This assessment should be carried on to cover the type of techniques necessary to each type of study and the degree of interference which these may involve, either immediately or in the future. The question of the accommodation, communications, and other facilities needed by scientists and helpers must also be considered, since in modern circumstances there is a tendency for scientists working in the field to call for amenities and services which can be just as destructive to the habitat as if it had been thrown open to visiting. It is particularly important to foresee and avert situations in which much of the value of the study that has perhaps been carried on for several years will be lost, unless permission is given for facilities or interferences which, if presented at the outset, would have led the responsible authority to decide that such use would be inconsistent with their trustee responsibilities for the park or reserve.

In this connection, it is essential that each management authority affected by such scientific requirements should assess the vulnerability of the area in question to scientific activities, the degree of possible conflict as between different scientific uses, or as between scientific and other uses, and the extent to which the implications of scien-

tific use are acceptable. This may well involve the concept of zoning the use of certain areas for scientific research, and it is important that such zones should be properly chosen with the best available scientific advice and that they should not be so small that with continuous or repeated scientific use the habitat and site conditions will deteriorate. It is also necessary to have in mind that, for certain types of study, interference must be accepted on such a scale that the area must virtually be regarded as expandable. In selecting reserves it may indeed be necessary to acquire additional adjoining or neighboring land for this purpose, especially in cases where the main area cannot legally or for other reasons be closed to casual visiting, which might interfere with scientific experiments.

This brief discussion clearly indicates the desirability for expert appraisal not only by rangers, wardens, and managers responsible for a national park or reserve, but equally by ecologists and other scientists familiar with the problems and techniques of field research. Unless scientists of standing are associated with and give their full support to any code of conduct or other limitation on scientific use, there will be a danger of friction between reseachers and managers, which it is important to avoid.

In conclusion, and simply as a basis for discussion, the following points are put forward:

1. Undisturbed natural areas are a scarce resource, and the important opportunities which they offer for scientific studies should always be approached with this in mind.

2. Research, which can reasonably be carried out in more frequent and less valuable types of area, should not be sited in natural areas, which are of exceptional value for fauna, flora, or scenery, especially where it involves a significant degree of disturbance or restriction on other uses.

3. It is important, therefore, to provide convenient natural or semi-natural areas of less exceptional importance on which research requirements can have priority, particularly where research is accompanied by training or other forms of educational activity involving appreciable numbers.

4. So far as possible, research on outstandingly valuable undisturbed areas should be confined to problems which are special to those areas for which the relevant techniques have already been developed elsewhere. Scientists working in such areas should be forewarned that

they cannot expect subsequent agreement to provision of accommodation or facilities incompatible with the object for which such areas are held.

5. Managers of natural areas, where research is done, should receive training in the requirements of research and in methods of servicing research workers; conversely, researchers working on such areas should have training in the conservation background and possibly in a code of conduct. (For example, even a properly authorized scientist can embarrass the park management by doing, in full view when the public are present, something which might lead to public criticism or misunderstanding.)

6. Information and data gathered by research workers can be of the utmost value in revealing problems of future management and should be scrutinized and discussed by those concerned with this work.

7. It is very desirable that in each country where the problem arises, there should be either an informal or a formal body of ecologists keeping such problems under review and keeping contact with those charged with the management of natural areas.

8. Much more should be done to inform the public of the vital importance to future scientists of maintaining adequate suitable undisturbed natural areas, and use should be made of the fact that even scientists accept the need for the utmost self-restraint and avoidance of disturbance or injury to these areas, as an additional argument in educating the general public to a fuller appreciation of their value and vulnerability.

9. Internationally, steps should be taken to insure that the same principles are adopted and, in particular, to discourage scientific expeditions from other countries from adopting as guests standards or practices less responsible than those which they would be expected to observe in their own countries.

Section Two—A

RAPPORTEUR

Victor H. Cahalane

Discussion Leader A. Starker Leopold summarized the values of parks: aesthetic, ethical, historical, scientific, and economic. Because these values will change in time, why try to set rigid values to justify or disqualify any park area now. Undisturbed areas, he said, will increase in value as standards to study despoiled areas.

Dr. Bourlière pointed out that tropical life is still something of an enigma. As an example, note the British groundnut scheme in East Africa. Basic facts can be learned from parks.

What qualities should the areas have to fulfill their function as scientific laboratories? 1. Distribute them among various zones of vegetation, from sub-marina to barren mountaintops. 2. Existing parks should be large enough to be self-contained units. 3. Areas should be placed under systematic research programs running for years. 4. Manipulation should be avoided in order to preserve their conditions and value for research.

Maria Buchinger said parks are so valuable they should not be disturbed even by researchers, if studies require manipulation of the environment. Conditions can be spoilt by rubbish and the effects of civilization—for example, Antarctica. Primitive people do not upset the ecology of their environments. Parks are reservoirs of original flora and fauna that may be destroyed elsewhere before being recognized by science. She hoped this conference would support the maintenance of present parks and creation of new ones of substantial size. Research in undisturbed parks, she said, is necessary to science and to the maintenance of the parks themselves.

Carleton Ray said man is using and mis-using the sea at a great rate, although we have given little attention to its ecology. There are few underwater parks; and these are in the tropics. Seashore parks are now limited to edge of the sea; they should be extended to 3-mile limit or across the continental shelf. "Conservation is not enough"; we must love nature.

E. M. Nicholson stated that researchers are capable of creating great disturbances in the environment. Research must be carefully planned

in advance to prevent damage. Studies requiring disturbance should be carried on outside of the parks or in parks of lesser significance. Students should be trained outside. Researchers should be trained in conservation and ethics.

Dr. Leopold said this had turned into something of a discussion of the destructive aspects of scientific work in parks. Much of value can be done without being destructive, Dr. Buchinger said. Dr. Ray added, carefully define parks and, on the other hand, areas that are research stations. Dr. Bourlière said parks are unique because they are undisturbed. Schaller could make his gorilla study, without firearms, only in Parc Albert. Dr. Buchinger maintained that universities should do as much research as possible outside of parks to avoid disturbance.

No research can be done without cost, Mr. Nicholson said. The researcher must inform park administrators of sacrifices which may be made. Dr. Leopold agreed, but added, if parks are the only undisturbed areas, parts of them should be devoted to research.

A member of the group said research is essential to the great African parks: 1) for management of the great game herds and vegetation, and 2) for knowledge of environments which have been greatly altered. In Queen Elizabeth Park, knowledge is needed of the reproduction of game. George Ruhle commented on Nicholson's paper. He also said American parks are highly attractive to researchers as well as to the public. Roads make research easy and the results may impair natural conditions and reduce enjoyment of visitors.

Section Two—B

The second group in Section Two dealt with the economic aspects and values of national parks and equivalent preserves, a problem that is gaining both in importance and in recognition. Three speakers participated, two from the United States and one from Kenya. Thus they were able to consider the question from the point of view of a country in which national parks have long been established and from the point of view of one that is newly developing.

Joseph Fisher of the United States acted as the discussion leader. M. Graham Netting of the United States substituted for Carl Gustafson as rapporteur.

THE ECONOMICS OF STATE PARKS

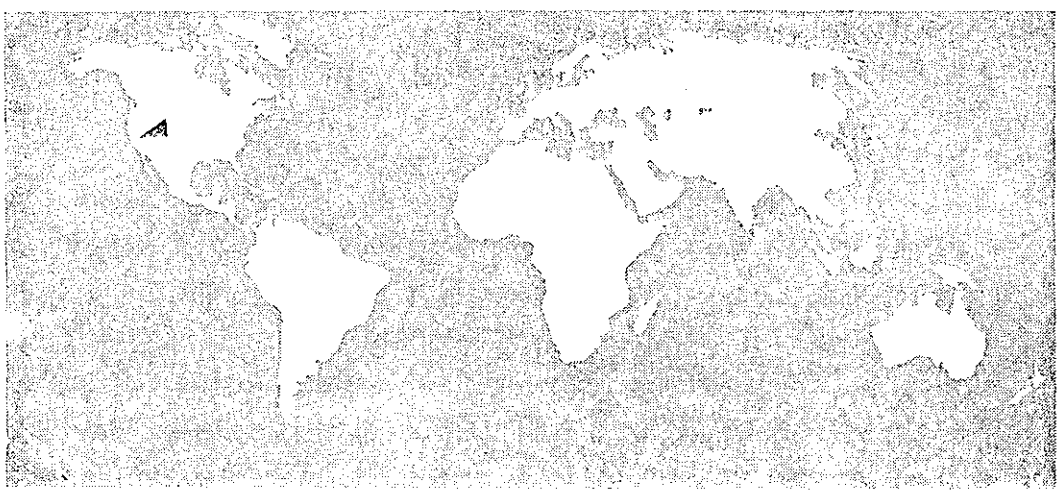
by

CHARLES A. DeTURK
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SACRAMENTO, CALIFORNIA, U.S.A.

As Director of the Department of Parks and Recreation in one of the fastest growing states in the United States, Charles A. DeTurk is greatly concerned with planning for the future. He must establish now a park system capable of supporting a much greater population within the next few years.

Born in Martinsville, Ind., he attended the University of Illinois, where he obtained his degree in landscape architecture in 1930. He then joined the Allegheny County Bureau of Parks in Pittsburgh, Pa. After 2 years, he moved to the Indiana Department of Conservation and then to the Huron-Clinton Metropolitan Authority in Detroit, Mich. In 1950, he was appointed chief planner, Washington State Park and Recreation Commission, Seattle, Wash. He moved to California in 1959 and was appointed to his present position in 1961.

He is a member of many professional organizations and, for his work, has been awarded a medal by the American Scenic and Historic Preservation Society.



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LAST YEAR not less than 26 million persons visited within the California State Park System and somewhere around 40 million visited both the California State Park System and those units of the National Park System which are located in California.

Tourism is thus big business in California, and it is because of parks that it is such a great economic asset. Yosemite, Point Lobos, the Redwoods, the brilliant and rugged California coastline, drew millions to the Golden State long before such commercial spas as Disneyland or movieland were conceived. To the gentlemen from Nebraska and Illinois, the grandeur of the coast and the ocean is the real reason for their visits. The redwoods are exclusive to California—they grow nowhere else in the world with the exception of a small bit just on the other side of the border in Oregon. The lowest desert and, until a couple of years ago, the Nation's tallest mountain added to the attractiveness. These are parks. These are the areas created by God, not man.

Yet there are those who to my knowledge cannot see the forest for the trees. They deny the economic benefit of a park to a community, to an area, to a region, to a state or, indeed, to a nation. The simple fact is that more manifestly in California than elsewhere, the economic benefit of a park is hammered home effectively and obviously.

Even though written for dissemination among friends, I am hopeful that these words will eventually reach those critics who would destroy for predatory and selfish interests our few remaining bits of grandeur. They and they alone must share the awesome responsibility of precluding the recreational well-being, the uplifting of our morals and morale, the rejuvenation of our spirits—which parks provide. In destroying these resources in search of a transient profit, they destroy you and me as well as themselves.

But could they be right and we wrong?

Do parks return in kind?

Do they provide an economic base of substance?

Is the expenditure of public funds in the best economic interest?

Let us use the 26 million persons who visited the California State Park System as our base. If they spend only a single American dollar, the total is far greater than the simple mathematical answer of 26 million times one. The Federal Reserve Bank estimates that the dollar turnover is 29 times before becoming permanently invested. The U.S. Department of Commerce in a recent publication on tourism in the

Pacific, using a somewhat different and more complex factor, estimates the annual turnover of tourist expenditure at four times. But no matter which method is used, the dollar value totals the same.

Where does this turnover begin? It begins for accommodations, for many of our visitors do not stay within the state parks but merely come to an area and visit the parks during the day. It is spent for food and beverage and general purchases. It is spent for sightseeing and transportation. And these funds in turn are spent for such things as commissions to travel agents, interest on investments, taxes, repairs and maintenance, services—such as laundry and glass supplies—and of course on wages, for each dollar spent by one person requires six or seven persons' services.

But the $1 which we used as an example is not the true figure. In California, we believe that each person who visits the State Park System spends not less than $2.08 per day outside of a state park, if he is on a camping trip, and not less than $11 per day, if he is not on a camping trip, but merely uses the park as the reason for visiting an area. Multiply the 26 million by $2.08 and we have an annual expenditure of over $52 million outside of parks and away from home in tourist areas. Multiply this by the U.S. Department of Commerce factor and we come up with $210 million. This is on an annual basis, and I maintain the figure is a low one and should be considerably higher.

Compare this with the total expenditure in California by the U.S. government and by the California State government on park or recreational use of forest properties in the last 10 years. That figure was $277 million. In other words, in 1 year 40 million visitors to state parks and to national parks in California spent an absolute minimum of $320 million, more than the total of both state and national government expenditures in the last 10 years. These expenditures buy gasoline, groceries, novelties, and liquor. They improve the assessed valuation. They provide jobs—hundreds, thousands of jobs—and they are sustaining and will be with us from now on. Why, in California alone last year, passenger car mileage for recreational purposes totaled 18 billion miles; and tourist expenditures are estimated at $850 million.

And in California, where the gas tax totals 10 cents per gallon of gas and allowing for 18 miles to the gallon—which is very high but a good round figure for division—we find that this produced $180 million in tax revenue. If people did not have these places to visit and

use, places they desire to see such as our redwoods, our seacoast, Yosemite, Emerald Bay at Lake Tahoe, there would be that many fewer highways and fewer jobs to maintain and construct those highways. It is a never-ending circle.

The President of the United States recently announced that he would seek reduction in the income tax paid by Americans, and the distinguished and reliable *Wall Street Journal,* in a survey 2 or 3 days later covering several hundred Americans throughout the United States, learned that with these extra dollars the majority had no intention of buying "hard goods"; i.e., refrigerators, TV sets, appliances. They were going to travel to see the beauty and glory of the United States. That beauty and glory is reserved for the most part within the state and national parks and forests. There is a certain amount of beauty to the great canyons of New York City, but this is an exception. The true beauty and majesty of a country is what God created and that which each of us is privileged, in our own countries, to retain against the incursion of man.

I would like to cite some paragraphs from an editorial which appeared in a California newspaper relative to the state acquisition of properties owned by the distinguished Californian, William Randolph Hearst, and which were presented to the state in 1957. These properties were accepted by the state with the gravest misgivings by many as to the economic results within the community and the expense to the State of California.

The editorial follows:

"The full impact of this new state monument upon our community at its doorstep, includes many intangibles that are difficult to assess. For example, the great influx of visitors has presumably been of high character. Unlike other great enterprises of public or private recreational attractions, there has been virtually no attendant problem of public health and safety here. Despite 1 million transients, with some 80,000 staying overnight in the community in each of the four summer seasons, there has been no increase in any of the many types of nefarious criminal activities found elsewhere.

"But perhaps the easiest gage is that of the economy of our town, which has gone through periods of ups and downs geared to dairying, diversified farming, mining, commercial fishing, and real estate promotion. When the bottom fell out from under all of these during and after World War II, the community turned naturally to the

ascending industry of recreation. Hearst's Castle as a state monument, has solidified its position as a prime recreation area of the state.

"For those not disinterested in statistics, the Castle has meant an increase from 9 to 19 motels with from 143 to 389 units; there has been a loss of 12 businesses during the period, but also the establishment of 42 new businesses, for a net gain of 30 that have created many times that number of new jobs, payrolls, goods and services, and added to the tax base of the community. The community lost 4 buildings in this period, but gained 22 new commercial buildings (counting motel complexes as only one each). We have gained the service of a dentist, and a strengthening of the school plants and teaching staffs, the churches, library, bank, highway, post office, and art colony—all predicated on the base of the ever-increasing popularity of the Hearst San Simeon monument.

"There were those in the state legislature 3 years ago who pessimistically viewed San Simeon as a 'white elephant'; there were also some locally who bemoaned the assessment loss on the local tax rolls. As for the latter, the hospital district's assessed evaluation offers a good comparison: in 1957 the figure, including the Castle, was $5.3 million; last year, without the Castle, it was $5.95 million.

"And as for the Castle being a 'white elephant,' to the State of California, it has annually shown a net profit of $300,000 which has been turned over to the beaches and parks general fund for acquiring, developing, maintaining, and improving other state beaches and parks. It is the only state park or monument that has operated profitably to such advantage for the entire state.

"And of the expenses of operation some $265,000 has been in wages and salaries to the 53 permanent and 30 seasonal staff members who, with their families, have become a big part of our community."

We believe that parks are good investments for the public. California has spent $40 million in the acquisition of park lands since 1908. That land today is conservatively valued in dollars at $365 million. This dollar value, of course, does not include the intangible value which must be attributed to it, because it provides the recreational opportunities which would otherwise be lost. Walter Lippmann, a distinguished American columnist, wrote in 1961:

"There is, for example, the notion that the public authorities at any government level never invest. They only spend. On the other hand, private corporations and private individuals not only spend but also

invest. This leads to the blind prejudice that since governments only can spend, whatever money they use tends to be wasted. On the other hand, whenever private corporations or individuals invest, that is a good thing and a public benefit.

"This prejudicial use of words confuses public opinion. The money spent privately to make automobiles is spending. The money to build plants to build a public hospital is spending. But the money to build plants to make the drugs that are dispensed is investment. If a public park is made, that is spending. If a new movie house is built, that is investment.

"This semantic muddle inhibits clear thinking about public questions. The truth is that there is private spending and private investment and some of it is good and some is not so good and some of it is bad. There is also public spending and public investment and some of it is good and some of it is not so good and some of it is bad.

"It takes good judgment to spend and invest wisely, be it publicly or privately. But that kind of judgment cannot be made at all if we react, like Pavlov's dogs, to the prejudiced sound of words."

Wherever a park is acquired, the land around it immediately skyrockets in value. The local jurisdictions, who bewail the point that they are being done out of tax revenues, are hypocritical in failing to acknowledge this fact. In California we have the Folsom Lake State Park. Prior to becoming a park, the land value surrounding this area was negligible, in rare cases possibly as high as $100 per acre. Today, you cannot acquire any land immediately adjacent to the park for less than $5,000 an acre.

Central Park in New York City is a famous example. The land was acquired in 1858, and during the next 15 years, some $14 million was invested in the park. In those same years, contiguous wards saw property values rise eight times, while the values for the rest of the city merely doubled. If any of you visit New York City, you will note that the finest residential buildings and apartments in New York are on or within a block of Central Park.

In California, there is an almost unanimous agreement that an area just north of San Francisco, known as Point Reyes and the place where Sir Francis Drake[1] first viewed New Albion, should be retained in its natural spendor. How this magnificent acreage of some 50,000 acres has remained comparatively free from the incursions and usurpations of man is beyond me. But I am thankful. It is wild. Dunes and

beaches, grassy lowland, wooded upland, bushy slopes, marshes, the rugged coastline, soft Tomales Bay, all are part of the acquisition proposal. The total tax revenue to the county of Marin in the last fiscal year for the area was slightly more than $170,000. If the park becomes a reality, a conservative tax estimate in 5 years is $500,000.

Yet as soon as interest was evinced in this becoming a national park, subdividers started construction of cheap roads—which today are in bad repair less than 1 year later—and some interests begin rechanting the age-old "off the tax roll" argument. I do not know if those of you from nations over the seas face similar arguments. But this particular argument is one which is continually placed upon our back. Yet in area after area, the facts are otherwise: The economic benefit of a park far exceeds any tax revenue for the land as otherwise used. In the redwoods, the lumbermen, their own interests at heart, use the tax argument. Yet because thousands upon thousands of citizens from throughout the world visit the redwoods annually, the number of dollars, tax and otherwise, spent and earned in Humboldt County, exceed in 1 year all of the tax revenue provided by the lumbering interests in 10 or more years.

The assessor in Marin County, where Point Reyes is located, argued before the Board of Supervisors that the economic benefit of the park far outweighed the establishment of subdivisions. The tax assessor stated that though there are residential areas in Marin County which amply carry their load, most subdivisions create a burden on property owners in general. They make demands far in excess of the revenues which their property provides. Yet one motel on 5 acres of land under present Marin County rates would pay $8,000 on an annual basis, plus the income from use, which produces jobs, buys supplies, and so on.

A similar argument was developed in more detail by the Stanford Research Institute in a report of April 1960, on the potential use of watershed lands, then—and still—under the jurisdiction of a municipal utility district. One pertinent paragraph states:

"It is impossible to give a definite figure on the point of value past which residence begins to pay for itself on the tax rolls. The reason for this is that there are too many variables, such as the number of children, veterans' exemptions, cost of all the various services, and assessments. However, on this type of terrain and soils, where road construction costs and maintenance are high . . . where sewer maintenance would

be difficult and expensive, and where school building costs on the hilly terrain would be high, it would take a very high-priced house to support its own way in the community."

Much park land fits this type of description.

In discussing the economic benefit of a park, let us not fail to remember the true value of a park is not measuerd in economics. But despite this fact, the economic arguments offered by the adverse interests force us to defend parks on economic grounds. Let us not forget the plea of the great American, General of the Army Omar Bradley, who on Armed Forces Day in 1959 stated so lucidly the point which far outweighs the apparent economic benefits:

"Each of us has need to escape occasionally from the noisy world which surrounds us and find refreshment in the grandeur of nature. Yet, year after year, our scenic treasures are being plundered by what we call an advancing civilization. If we are not careful, we shall leave our children a legacy of billion dollar roads leading nowhere except to other congested places like those they left behind.

"As the pressures of civilization mount, it would seem to me that we probably have as much need for part-time Thoreaus as we have for full-time nuclear scientists. Since the beginning of mankind, people have always drawn great strength from their nearness and kinship to nature. If we close off this source of strength by plowing under our scenic resources, we may soon find ourselves so baffled by the pressures of urbanization, that we risk damage to our character as a people and therefore to our institutions."

A civilization or culture as foretold by General Bradley has little value to the world, economically or otherwise. Great national and state parks will help to prevent this and will contribute to the world, culture, health, happiness, and wealth.

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(1) English admiral and explorer (1540?–1596).

ECONOMIC VALUES IN PARKS AND PRESERVES

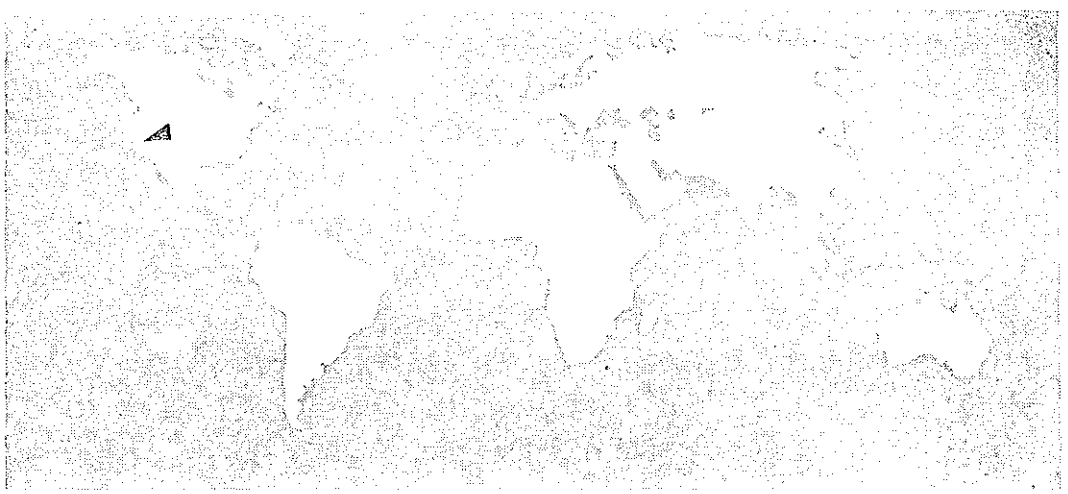
by

HERBERT L. MASON
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Herbert Mason's association with the National Park Service began some 30 years ago, when he was on the staff of the Yosemite Field School of Natural History, one of whose prime purposes was the training of park naturalists. At that time, he was also instrumental in setting aside a part of Yosemite National Park as a reserve area that would remain relatively undisturbed. This area is being studied at the present time with significant results.

In 1958 and 1959, he served as chairman of the California State Senate Subcommittee on the Scenic, Scientific and Educational Values of the Natural Landscape. This report has influenced the future planning of the state.

As professor of botany and director of the Herbarium at the University of California at Berkeley, Calif., Mason's academic interests have included paleobotany, plant geography, ecology, and the philosophy of taxonomy. Recently he has been working on a college textbook as well as collaborating with a group of scientists on a program for improving the teaching of science in elementary and secondary schools.



IT WOULD NOT be surprising if the majority of people gained the impression that the human values inherent in parks and other natural preserves included only those values pertinent to human relaxation in a comfortable aesthetic environment. It shall be my objective to indicate and to exemplify certain real economic values resting in the biology of the natural landscape, whose members serve, first, as the source of improvement of those biological elements now in cultivation or in some ethnological use and, second, as a reservoir of scientific discovery.

Every agriculturally important plant or animal, however long its human use or domestication, had its origin in some wild organism as it occurred in a native habitat. The improvement of these domestic plants and animals has resulted from the selection of superior elements occurring in the natural diversity of these organisms or by inducing this diversity by breeding or hybridization with wild strains or closely related wild strains. The natural wild habitat contains the reservoir of raw materials with which any further improvement can be effected.

Every ethnologically useful plant or animal is probably capable of improvement for human use through genetic or selective methods to improve its quality or increase its yield, or perhaps to extend its habitat requirements so as to enable it to grow in other areas, or to shorten the time of its maturation. However primitive this use may be, if the value is there, the chances are very high that the value can be materially enhanced to the enrichment of its human usefulness. Again, it is the natural landscape that contains the reservoir of raw materials with which this improvement is effected. Some of it awaits human awareness of its possibilities. Some awaits the training of people in the methods of its accomplishment. Some awaits the improvement or development of special techniques to accomplish it.

The continued advancement of our scientific knowledge has brought into cultural use a constant stream of new plants and animals and of new products stemming from them, and resulting from scientific discovery in the search for the new or for new uses and improvements of the old. In its commodity resources for use as food or for use in the crafts and medicine, human culture has been enormously enriched by these operations. We have scarcely scratched the surface of the full economic potential hidden in the natural landscape. Some of these values are in directly usable commodities, reproducible through agricultural methods. Some will constitute a discovery in nature and

the later synthesis of the material artificially. Here the act of discovery is the important value of the natural resource.

The cultural growth of a people will be measured by what it does with what it has to work with. The more it has to work with, the greater the potential growth. The natural park and natural preserves constitute a prime means of preservation of elements of the natural diversity so important to the cultural advancement of a people. It is therefore important to every people that it preserve representative elements of the natural landscape as the source of the scientific advancement of its culture. Discovery in one land may lead to an item of exchange in another that may further broaden the cultural base of the people.

Furthermore, the native vegetation is the proper source of plant materials to use in the reclamation of depleted and wornout lands to start them on the road to natural recovery in the building of new soils and the reestablishment of their water-holding capacity. These plants are already adapted to the local climate. A little experiment in their use would lead to the necessary procedural knowledge in handling them. Furthermore the natural structure of the soil associated with the natural vegetation is so constituted as to provide a high water-holding capacity in its partially decomposed organic constituents, which behave as a sponge. This serves to slow down the forces of erosion and to prolong the availability of its water content.

A few examples should make it clear that these ideas are not just the academic argument of a starry-eyed dreamer. Let me begin with some examples stemming directly from parks and preserves and then look into resource development, stemming from other wild lands such as would be included in parks and preserves.

Some years ago the Canadian Government was concerned with the limited area in Canada that served in the production of beef. The severe continental climate of the north was too rigorous for cattle. A cross of the cattle with an American bison yielded a hybrid that led to a pure breeding race that was much more tolerant of these rigorous northern conditions. This enormously extended the productive capacity of the land and produced an economic resource of very great potential. What is important to my thesis is that someone had had the foresight to set up a preserve for the native American bison, so that it was still available when this experiment was proposed.

The timber resources of the Sierra Nevada in California include at

higher elevations the Jeffrey pine. Much of this area is in national forest. It is plagued with parasites that attack and destroy seedlings and threaten ultimate extermination of this timber resource. The staff of the Institute of Forest Genetics of the U.S. Forest Service produced a hybrid between the Jeffrey pine and the lower elevation Coulter pine that not only tolerates the more rigorous conditions of the higher elevations but is immune to the pests that attack the Jeffrey pine. We may thus continue to produce timber in this high elevation area. From the seed of growth of the seedlings, there is a suggestion that quite a few years will be cut from the time required to mature a log for market.

At this same institute of tree research, a hybrid between the coastal *Pinus radiata* and the interior *Pinus attenuata* produced a marketable log in 20 years. This is much faster than is the time required by either parent. Both of the hybrids mentioned above resulted from parents preserved in national forests or state or national parks. Both produced a resource of high economic potential. Again, when research techniques became available, there was still left in a preserve the raw material with which to work.

The relatives of our cultivated plants that occur in wild lands have been a most valuable source of improving these cultivated plants. A good example is the strawberry. Before America was discovered, Europeans had the very delicious little strawberry native of central Europe that was gathered as a wild crop. When America was discovered, the wild strawberry from Virginia was taken to Europe and a hybrid produced that increased the size of the berry so that it became economically feasible to grow it in kitchen gardens. When the Pacific coast of North and South America was explored, the wild *Fragaria chiloensis* was discovered. It carried the genes for size. The resulting hybrids made the commercial growing of strawberries possible and means a $15 million-a-year industry for California alone, with probably as much for Oregon, Washington, and British Columbia. Furthermore, the strawberry is subject to many diseases that are a constant threat to the industry. The enormous reservoir of genetic diversity in *Fragaria chiloensis,* as it occurs along the Pacific coast of two continents, has enabled us to keep ahead of the diseases with new immune varieties. Again, here is a wild resource to which nobody pays any attention, but whose productive value is enormous. We can expect this resource to be

preserved in those state and national parks that include the shoreline of the Pacific Ocean where *Fragaria chiloensis* occurs.

The cultivated tomato is in high favor for its vitamin content. It has been found that the precise level of vitamin content is subject to genetic manipulation. This has led many institutions to search the natural native habitat of the various wild species for strains with high vitamin content. These, it is hoped, when crossed with the cultivated strains, will produce large fruits with higher vitamin content. Again we search the wild to improve the domestic. We are indeed fortunate that some of the wild still remains for us to work with.

The point of these remarks is that there are economic values in the flora and fauna of the natural landscape as well as in the water-holding capacity of its undisturbed soils. The maintenance of the genetic diversity of organisms genetically related to ethnologically and economically important plants and animals is fundamental to the further development of these resources. The natural landscape constitutes the reservoir of scientific discovery with which a people may work, if it is to continue its cultural advancement. The water-holding capacity of natural undisturbed soils protects the soil layer from erosion by preventing too rapid run-off, as well as by prolonging the availability of soil moisture as it is reflected in the steady flow of streams and springs. To allow the permanent depletion of the natural diversity and the values of cover in such resources is a symptom of a declining culture. To maintain it or to increase it lays the foundation upon which a culture may advance. The conservation of samples of the natural landscape is the most effective practical approach to these problems.

THE ECONOMICS OF PARKS AND TOURISM

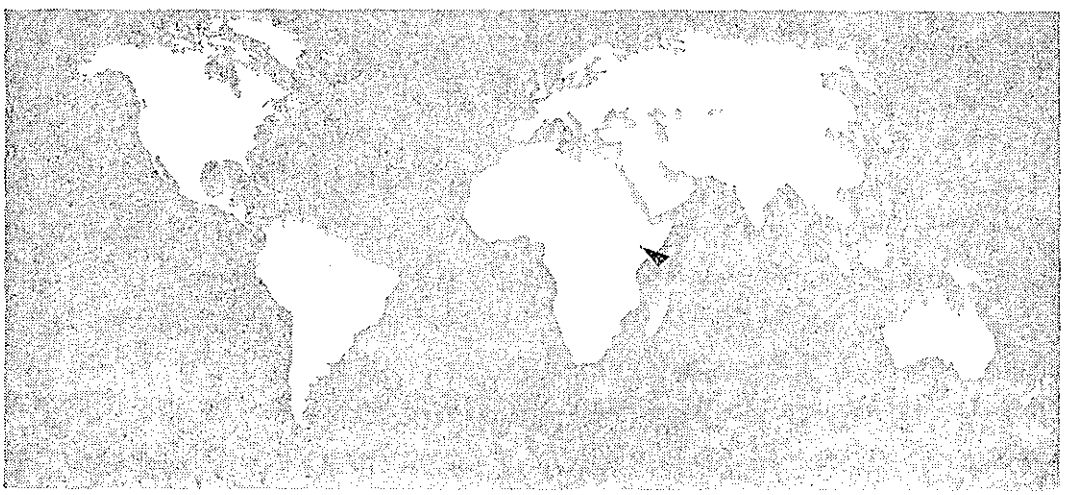
by

D. O. MATHEWS
General Manager, East Africa Tourist Travel Association
NAIROBI, KENYA

D. O. Mathews, O.B.E., F.R.G.S., was born in London in 1901. After completing his education in England, and serving in the Royal Air Force during World War I, he entered the Uganda Survey Department, in which he worked until 1946. In 1947, he was appointed as the Uganda representative on a committee set up by East Africa to study the possibilities of developing tourism. With the establishment of the East African Tourist Travel Association in 1948, he was asked to serve as the association's secretary and deputy general manager. In 1954, he was appointed general manager.

During World War II, he was commissioned in the Royal Engineers. He was awarded the Order of the British Empire in the 1959 New Year's Honors for his services in game conservation and in developing tourism.

He is a member of many professional organizations and has long been concerned with game management. Under his leadership, tourism in East Africa has become the fourth largest industry in the area.



ALTHOUGH I am no economist, I have lived in East Africa for the past 41 years, have traveled widely over the African Continent, have taken a considerable interest in the wildlife situation in Africa, and for the past 14 years have been intimately connected with tourism. As, however, my detailed knowledge only covers that 680,000-square-mile part of the vast continent of Africa which comprises East Africa, I propose to confine the story to the national parks and game reserves of East Africa and to endeavor to show how, despite the negligence of governments, the wanton destruction of game by commercialized poaching, and the dire lack of funds, the three Cinderellas—tourism, national parks, and game departments—have, by their very existence, contributed considerably to the economy of the area.

Although many people may be aware of the background of the wildlife situation in this part of Africa, it will, I think, be of value to look back over the past few years in order that others on the continent of Africa may avoid mistakes which have been made here and may profit from our experience.

When in 1947 the four East African Governments of Kenya, Tanganyika, Uganda, and Zanzibar were compelled by economic necessity to consider ways and means of earning foreign currency, they decided that a tourist industry might be the way of earning such currency; and as funds were extremely short, it would be advisable for all four territories to pool their resources and to sell jointly the many and varied tourist attractions of the whole area. This wise decision has made it possible, although funds have been extremely meager, to put East Africa on the tourist map at little cost and to increase the income earned from visitors, who in 1948 spent less than a £1/4 million sterling (largely on hunting safaris), to a sum which exceeded £8 million in the record year of 1959. This "invisible export" ranked fourth in East Africa's economy, only being exceeded by coffee (£34.5 million), cotton (£24.5 million), and sisal (£20 million). During 1960, and largely owing to the Congo crisis, our tourist income receded to less than £7 million, but in 1961 once again showed a useful rise. In 13 years of operation the total amount spent by our association was a little over £320,000, which includes capital expenditure.

Just as the East Africa Tourist Travel Association was being formed, there came into being—largely owing to the untiring efforts of Mervyn Cowie—the Kenya National Parks Board of Trustees and with it East Africa's first national park, on the very doorstep of Nairobi, which now

attracts no fewer than 150,000 visitors a year of all types. Since that time national parks boards of trustees have been formed in both Tanganyika and Uganda, where game reserves which had existed for many years were only too slowly, and only in some cases, brought within the orbit of the national parks boards. This statement in no way discounts the magnificent and far-seeing work done by Archie Ritchie, first game warden of Kenya, Charles Pitman, first game warden of Uganda, and the late Gerry Swynnerton of Tanganyika, who, together with their successors, fought and struggled—and were frequently frustrated in their efforts—to establish game reserves in areas of little use to agricultural or ranching projects.

By 1954 there were, within the territorial boundaries of the three mainland territories, a dozen national parks and reserves, three boards of trustees of national parks, and a game department for each of the territories. The national parks boards were responsible for the control of an area which exceeded 28,000 square miles and were expected to provide a staff for administration, patroling, construction and maintenance of lodges, roads, general development, publicity, and research. The game departments, responsible for game control over the balance of some 650,000 square miles, were staffed by a loyal team of enthusiasts whose numbers were impossibly small; to cite but one example, Tanganyika had only 14 European game rangers in the field, who were expected to care for an area of about 350,000 square miles. They were, of course, assisted by African game rangers, but these also were in inadequate numbers. The licenses and the sale of trophies (obtained from control measures and capture of illicit ivory and rhino horn) exceeded the gross expenditure of the department by about 50 percent. It is safe to say that every one of the territories was at this time deriving great direct economic benefit from the earnings of the game departments, although those earnings were never ploughed back into their much needed expansion, but went into the general revenue of the state. The national parks were a little more fortunate in that found ivory and other trophies, when sold, were added to their revenue.

It is not surprising that with such a paucity of staff and funds in both parks and game areas, coupled with high prices for ivory, rhino horn, meat, and other trophies, commercial poaching reached astronomic proportions; and it seemed by 1955 more than likely that our game animals would be eliminated in a very few years. Early in the year a game conference was held at Longido, in Tanganyika, between

the game wardens of Tanganyika and Kenya, members of the East African Professional Hunters' Association, some game rangers, and myself. Startling facts were revealed at that meeting, and the publicity given to the deliberations by the East African press after this conference and the three subsequent ones (which gradually widened in scope until they included all directors of national parks, all game wardens, the wildlife societies, and the others previously mentioned) brought forcibly to the attention of the local game-loving public the harsh facts that the poisoned arrow in Kenya, the 70,000 licensed muzzle-loaders in Tanganyika, and the wire snare in Uganda were indiscriminately destroying at least 250,000 head of game a year. This and other information brought about, during this period, the formation of the Kenya and the Tanganyika Wild Life Societies; but we still lacked international recognition of the value of wildlife or the ability to show the African himself that indiscriminate slaughter would mean the end of a valuable meat supply and a considerable loss of revenue from tourism and hunting. Those of us who appreciated the value of wildlife as a national asset also appeared to be unable to convince the governments of its immense potential value to tourism.

Despite the fact that as early as 1947 some control areas had appeared in various parts of Africa, including East Africa, it was not until the period of 1955–58 that game management was seriously pondered by all those—apart from the ardent preservationist—who were seriously concerned with saving our animals, satisfying all reasonable demands for protein by culling, and also permitting a modicum of hunting.

Before the game conference referred to above, it was not realized even by game wardens that the professional hunter—whose very livelihood depended on the presence of good trophy animals—was a keen conservationist, and that the animals shot by hunting safaris were almost invariably males past breeding age and which carried good trophies. An estimate made by game wardens indicated that throughout East Africa fewer than 10,000 head of game were killed by resident and visiting hunters in any one year. The industry earned, however, £500,000 a year for tourism; it was a most expensive sport and therefore appealed to a comparative few. In point of fact, the total number of people going on hunting safaris (including those who did not actually hunt) numbered only about 600 in 1960, or about 1 percent of our total number of visitors. A high percentage of the remainder went on package or individual tours, all of which could be termed

photographic safaris, which we had done our utmost to encourage from the inception of the association.

The first gleam of hope to many of us who were becoming despondent over the possibilities of saving East Africa's game heritage came when the wild life societies were formed, and with their formation the opportunity of producing factual statements backed by public opinion—not only to present to the East African governments but also in order to obtain sympathetic understanding from the outside world. The opportunity was seized, and as a result of these representations, antipoaching teams were set up in Kenya and expert advisers came to East Africa to investigate various wildlife problems in all the territories. At last world interest began to be aroused on what was a really international matter, and the magnificent work done and the reports made by many experts during the period 1957–60 had a most telling effect—mainly in scientific circles.

Nevertheless, commercialized poaching continued, as the risks were small compared to the gain; and no organized approach was made to the 20 million Africans who had—in the main—no appreciation of the vast possibilities of the thing they merely called "Nyama" (meaning meat) which was East Africa's main tourist attraction, its greatest potential source of protein, and therefore its greatest economic asset. The only efforts which were made were by the directors of national parks, who seized every opportunity of inviting groups of Africans—particularly young people—into the parks and reserves, where in the vast majority of cases they saw their animals for the first time. It is noteworthy that Tanganyika National Parks have produced the only film with a Swahili script for circulation to African audiences, and that the Uganda Game Department has established a zoo/orphanage in Entebbe, which is of tremendous value and is most popular.

Thus in 1962 we have to admit that the game of East Africa is still being sadly depleted, but there are definite signs, as African governments are formed, of awakening awareness and interest in the economic value of conservation and management. It seems, therefore, that even now the mistakes of the past may be rectified and that true appreciation of the African heritage will bring in its train a new attitude. African leaders in both Tanganyika and Uganda have made most encouraging statements and have backed up those statements by action. The Tanganyika Game Department, for example, has been provided with about 40 percent more funds during the current finan-

cial year than it has received in the past. It is, in my view, right and proper that the East African governments should provide more funds for their game departments and additional funds for the national parks and reserves, since they are definite money-earners; but it is exceedingly doubtful whether they will be able in the next few years—which are so vital—to find sufficient money to inaugurate game management schemes, take drastic steps against poaching, improve facilities in existing national parks and to provide research teams without external help.

Dr. Petrides and Dr. Swank, Sir Julian Huxley, and Dr. Worthington, all stress that vast areas of the African Continent in general and East Africa in particular were either so tsetse-fly ridden or so arid as to be uneconomic from the agricultural point of view. They point out that domestic stock is not indigenous to tropical Africa and could not live in some of these areas without the aid of drugs, while in others its introduction brought in soil desiccation and degradation, whereas wildlife had lived and thrived in them. Drs. Petrides and Swank in *The Status of Wild Life and Wilderness Areas in East Africa* stated that:

"The income from natural areas in East Africa probably brings a greater economic return per unit of area than would any other use to which the land could be put. And the income may be considered as profit since the low costs involved generally are more than covered by other benefits. Wildlife and tourism thus should be considered one of these nations' most important 'crops,' and national parks may be judged as some of East Africa's most productive acres."

They later stated: "In such areas and in others where managed hunting is deemed not harmful to other values, a meat crop could be harvested which could well exceed that available from livestock."

All these eminent scientists stress the economic benefits of the existence of wildlife and national parks, and Dr. Worthington's statement in *The Wild Resources of East and Central Africa* is, I think, noteworthy. He writes:

"Indeed, in its wildlife Africa has a cultural and scientific asset of priceless value, envied by the rest of the civilized world. . . . This fact is now apparent to economists as well as to scientists following the large and rapidly growing tourist industry which to several of the countries concerned is already estimated in millions of pounds, and to this may be added a smaller though fairly steady direct revenue from

the export of ivory and other wild animal products. More important than the exports is the extensive use to which wild animal products are put within Africa, particularly in providing animal protein food for great numbers of people who would otherwise taste little or none of it."

In the latter half of 1961, Dr. F. Chalmers Wright was appointed by the Colonial Office, with the active cooperation of the territorial governments, to report on the roles played in the economic life of Kenya, Tanganyika, Uganda, and Zanzibar by visiting tourists and by the tourist industry. He was asked to make recommendations for any action that could be taken by public authorities and private bodies to develop local tourism and tourist services for the benefit of the territorial economies, having due regard to the maintenance of a proper economic balance between game utilization for tourist purposes and the conservation of wild fauna resources. Dr. Wright arrived in East Africa in August 1961, and shortly afterwards attended the IUCN Arusha Conference. He subsequently toured all the East African territories, on which task he was engaged until early December. His report, which may have a profound effect on our problems, is unfortunately at the time of writing not available, but it is eagerly awaited.

In Tanganyika, since September 1961, a separate survey of opportunities for the development of tourism is being undertaken by C. Kuipers, head of the Netherlands Tourism Department. The survey, which comes under the United Nations Expanded Program for Technical Assistance, will last for a year, but it is known that he has already presented recommendations to the Tanganyika Government which, while acceptable to the Minister for Commerce and Industry, have yet to be agreed by the government itself.

Both these experts were provided with all the available statistical data which the East African Statistical Department and our association were able to supply, and although this information was by no means as complete as we would have liked, it at least gave reasonably reliable background information.

It will be appreciated that as Kenya, Tanganyika, Uganda, and Zanzibar developed tourism for East Africa and had been mainly concerned with obtaining visitors to all their national parks, scenic areas, beaches, and mountains, every endeavor had been made to prevent the introduction of any frontier formalities between the four territories. This simplification was much appreciated by visitors, but it did make

it very difficult to assess the comparative value of the tourist industry until recently, when discussions with the East African Statistical Department showed a way of arriving at a reasonably reliable analysis—utilizing data obtained from visitors on departure. Thus for 1959 and 1960 and from a 65-percent sample of all departing visitors, it was shown that of their known average length of stay of 20 days, 70 percent of their time was spent in Kenya, 19 percent in Tanganyika, 10 percent in Uganda, and only 1 percent in Zanzibar.

It is reasonable to suppose that visitors' expenditure in each country is in the same proportion as their length of stay, and by means of checks on expenditure, we have accepted a mean of £6 per day as being on the low side, but fair. This figure indicates that the average visitor spends £120 during his 20-day stay and that the direct tourist income to each of the territories, as averaged in round figures during 1959 and 1960, was: Kenya £4,650,000; Tanganyika £1,255,000; Uganda £670,000; Zanzibar £67,000. This is by no means all the tourist income, for undocumented in-transit sea passengers, who spend as much as 10 days in the ports of East Africa, are permitted to make tours to national parks and scenic areas, as are the crews of vessels and aircraft; and we estimate that between £500,000 and £750,000 is expended by these people. This, of course, raises the tourist income of Kenya, Tanganyika, and Zanzibar, but has little effect on Uganda.

It is of interest now to examine the other side of the balance sheet and to note that Uganda, in order to develop its tourist industry, has invested more than £500,000 in a chain of hotels and safari lodges and plans to build two additional lodges; it has also spent about £50,000 a year on the recurrent expenditure needed for its two splendid parks (plus, of course, capital expenditure of about £10,000 a year). It has in project a new wildlife scheme in Karamoja and a new national park in that area. Furthermore, the game department is receiving encouragement and, from the last figures available, had a sum of about £62,000 for recurrent expenditure. The total area of Uganda, including water, is about 94,000 square miles. In Tanganyika, which is nearly four times the area of Uganda and where the tourist and wildlife possibilities are enormous, there have been recently most heartening signs. Possibly the most encouraging statement made was to the IUCN Conference, when a manifesto was sent which emanated from the Prime Minister's Office. It stated:

"Survival of our wildlife is a matter of grave concern to all of us in

Africa. These wild creatures amid the wild places they inhabit are not only important as a source of wonder and inspiration but are an integral part of our natural resources and our future livelihood and well-being. In accepting trusteeship of our wildlife we solemnly declare that we will do everything in our power to make sure that our children's grandchildren will be able to enjoy this rich and precious inheritance. The conservation of wildlife and wild places calls for specialist knowledge, trained manpower and money, and we look to other nations to cooperate in this important task—success or failure of which not only affects the Continent of Africa but the rest of the world as well."

This statement, coupled with the practical, financial help given to both the game departments and the national parks, the establishment of one new national park, and the promise of yet another in the Rufiji area, is encouragement indeed. Independent Tanganyika appears to have set its course in the right direction, although it will need considerable financial and technical aid in augmenting its plans.

Turning next to the 225,000 square miles of Kenya, we have the only territory in East Africa possessing a Ministry of Tourism, Forests, and Wild Life and also the one which derives by far the greatest benefit from tourism, as it has both the largest international airport at Nairobi and East Africa's most important seaport at Mombasa. Here is the very heart and center of the tourist industry, for the major transporters, safari firms, and the headquarters of our association are all based in Kenya's capital, and most tours radiate from it. The picture here is somber, for not only was the subvention to the national parks cut by £10,000 for the current year, but the Marsabit National Reserve was abolished, and the Ngulia Safari Lodge in Tsavo National Park has ceased to exist. At least £16,000 is needed to repair flood damage to existing tracks. The game department has been forced by financial stringency to withdraw no less than three field stations; and, finally, the Ministry's tourist publicity vote was also cut by about 25 percent.

The only highlights in this otherwise gloomy picture are the construction of a safari lodge of high standard, operated by a commercial firm, at Kilaguni in Tsavo National Park; the construction by a hotelier of a second game observation hotel; the hope of the construction of a safari lodge at Egelok in the Mara area; and the establishment of Masai Wild Life Reserves at Mara and at Amboseli, which will supplement the already firmly established Meru African District

Council Wild Life Reserve. The provision of the Egelok lodge and the roads leading to it is of particular importance, as this will make possible a new tourist loop route which will run Nairobi/Amboseli/Manyara/Ngorongoro/Seronera/Egelok/Nairobi, and vice versa, whereas in the past it has been necessary (unless supplied with Land Rovers and full camping equipment) to backtrack by the same route, having motored to Seronera.

The world is aware of the dire financial position in Kenya, but it would seem that the country is neglecting completely not only the tourist industry but its wildlife resource on which tourism greatly depends. It appears to be doing its best to throw away its own income and, in doing so, to render ineffective the efforts of its near neighbors.

I estimate that approximately 80 percent of the revenue derived from tourism in East Africa (or approximately £6 million a year at our present rate of visitor traffic) is due to the presence of wildlife and the fact that we can show people a country of magnificent contrasts with a living landscape. Were the animals to be eliminated, we would continue to obtain visitors to our coasts, our mountains, and our fishing areas, but they would be a fraction of the numbers now coming. Moreover, by establishing more safari lodges reasonably far apart and never larger than about 60 beds per lodge, we could at least double, if not treble, the number of visitors to our national parks and reserves within the next 3 to 5 years and could be earning, in new money, at least £15 to £20 million. This, of course, does not take into consideration the much needed increase in national parks and reserves, where new lodges would have to be established.

Bearing in mind (*a*) the vital necessity of preserving wildlife areas for both the future citizens of Africa and the whole world, (*b*) that every one of the areas now set aside is incapable of supporting agricultural schemes or domestic animals without serious soil deterioration or at enormous expense, and (*c*) that the tourist industry is already an important factor in the economy of East Africa and can be made even more important, I recommend that—

(1) Each government in East Africa should investigate the needs of its National Parks Board of Trustees in regard to the provision of trained personnel, good tracks, and general development; and as it is unlikely that it will be able to provide the funds from its own resources, it should then seek financial and technical aid from without the territory.

(2) The Kenya Government should survey the very real needs of its game department and should find the necessary funds for its effective, efficient working. This department has a little over £100,000 for recurrent expenditure during the present financial year but earns £45,000 for licenses and £30,000 on sale of trophies.

(3) The Kenya and Tanganyika Governments both set up an organization similar to the Uganda Development Corporation and do their utmost to provide it with capital in order that it may develop lodges, motels, or hotels both within and on the perimeter of national parks. Alternatively, a hotel bank be set up in both territories so that hotels can be improved or new ones built from funds supplied at low interest rates.

(4) Lodges in national parks should not have a bed capacity of less than 50 or more than 60 as large lodges can produce dangerous radial lines which drive wildlife away from their precincts, and small ones are not only bypassed by large group tour transporters, but also cannot be operated economically as full catering units.

(5) The Kenya Government should establish national parks at Uaso Nyiro, at Marsabit, and on the Kenya coast, and at least reserves in the Mathews and Ndoto Mountains in order to preserve these vital catchment areas.

(6) The Tanganyika Government should establish possibly two national parks in the Selous Game Sanctuary and should surround them with either a national reserve or a carefully controlled hunting zone. In addition an observation lodge should be built at Ngurdoto.

(7) Hunting in all territories be permitted as at present, but that charges be kept at their present very high level with (as at present) extra charges being levied for supplementary licenses for rare fauna. Wherever possible these hunting areas should surround wildlife areas and should act as buffer zones between cultivation and wild areas.

(8) Every possible effort be made to educate the African on the value to him of his animals by means of films, lectures, posters, and literature, and that also every possible means be used to put down commercialized poaching, particularly at the "receiving" end.

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(9) Consideration be given, if an East African Federation is contemplated, to the setting up of both an East African National Parks Board and an East African Wild Life Department, as such bodies could effect economies in overall administration.

(10) Adequate funds be provided to the official travel organization (EATTA) for publicity work outside East Africa, so that it can effectively sell the many tourist attractions of East Africa in the world's markets.

(11) A wildlife management plan be drawn up for the whole of East Africa, so that not only shall wild areas be properly conserved but also a steady and much needed supply of protein be supplied to the populace.

In conclusion I do not think I can do better than to quote from Drs. Petrides and Swank:

"It is recognized that public budgets in East Africa are necessarily unpretentious. Financing, however, to a considerable degree is a matter of priorities. In this case it involves not so much the spending of money as it does the perpetuation of income. . . .

"The spectacular herds of wildlife are cultural treasures far more valuable and irreplaceable than manmade objects. The few remaining truly wild areas and the African and world communities which would benefit from them deserve broad and progressive planning for the perpetuation of a unique and useful asset. It is a resource for which future generations of East Africans could give thanks to far-seeing and courageous planners now in responsible positions if they act in time. Someone, regardless of race, is needed to step forward and become the leader—the Theodore Roosevelt,[1] if you will—of a movement to manage East Africa's natural resources on a sustained, and hence on a sustaining basis."

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(1) American statesman, conservationist, and 26th President of the United States (1859–1919).

Section Two—B

RAPPORTEUR

M. Graham Netting

Discussion leader Joseph Fisher opened the session by defining economics as "the dismal science," but established rapprochement with the audience by adding that the word "ecology" derives from the same root as "economics." He mentioned that, although lovers of parks may shy away from putting a dollar value on such areas, there are ways in which economics may be helpful in gaining support for parks. Economics may provide a calculus for comparing present and future value. It may be helpful in linking income and expenditures and in other fashions.

In summarizing the panel discussion, Dr. Fisher iterated some of the important points presented: that parks bring dollar-circulating tourists who may be annoying at times, but who are not nefarious criminals; that parks increase tax benefits and are sound investments; that great future advantages may result from maintaining the diversity of natural environments; that in the United States scenery attracts tourists, whereas in Africa animals are the most important element of the scenery; and that African leaders recognize that the multiple values of parks are tied in with wise land use and sound development and can contribute importantly to local revenues and other benefits.

In the discussion period that followed Chief Sapi of Tanganyika complimented the Peace Corps but suggested that Peace Corps volunteers acquainted with park procedures and game management would be a great additional help. Charles DeTurk mentioned underwater parks in Florida and the Virgin Islands and stated that studies of the southern California coast were under way. E. M. Nicholson of the United Kingdom supported Mr. DeTurk's point that parks are often a better investment than housing developments, since they offer "protection against a community being let in for uneconomic spending." Dr. Fisher concurred in this. H. E. Tucker of Sierra Leone stressed the necessity of controlling destructive animals, such as monkeys, that may wreak havoc beyond park boundaries. He also

regretted that the film industry often presents the wrong image of Africa. D. O. Mathews replied that research on the first problem was urgently needed, as D. P. S. Wasawo of Uganda had indicated earlier. When too many leopards were shot for coats in some areas, baboons and wild pigs became a nuisance. Even now the elephant population in the Tsavo is too large; research, control measures and licensed hunters are needed. Mr. Mathews replied to a question by testifying that he had seen fewer snakes in Africa than in the United Kingdom.

Dr. Netting alluded briefly to many of the stimulating ideas contributed by the panelists and amplified in the discussion. He assured one delegate that it was cold comfort, but none the less true, that Hollywood often presents the wrong image of the United States also. He mentioned that the many allusions to revenue derived from visitors reminded him of the eastern mountaineer who had also learned that guests were the best paying crop on his thin forest soil, and phrased it forthrightly by stating: "One hunter or fisherman as a boarder is equal to a patch of potatoes and a damn sight easier picking!"

Section Two—C

The third group of Section Two discussed the cultural aspects of national parks and equivalent reserves. The discussion leader was Mervyn Cowie of Kenya, and the three speakers came from Thailand, Scotland, and Uganda. Each of them was able to treat the subject from the background of his own country's cultural needs and aspirations. Thus one was able to show the significance of natural areas to the teachings of Buddha. Another drew for his speech on the cultural traditions of Europe, and the third was able to show the role that the parks play in Africa. While each had his own point of view, they concurred in the importance of parks to cultural growth.

The rapporteur was Don Greame Kelley of the United States.

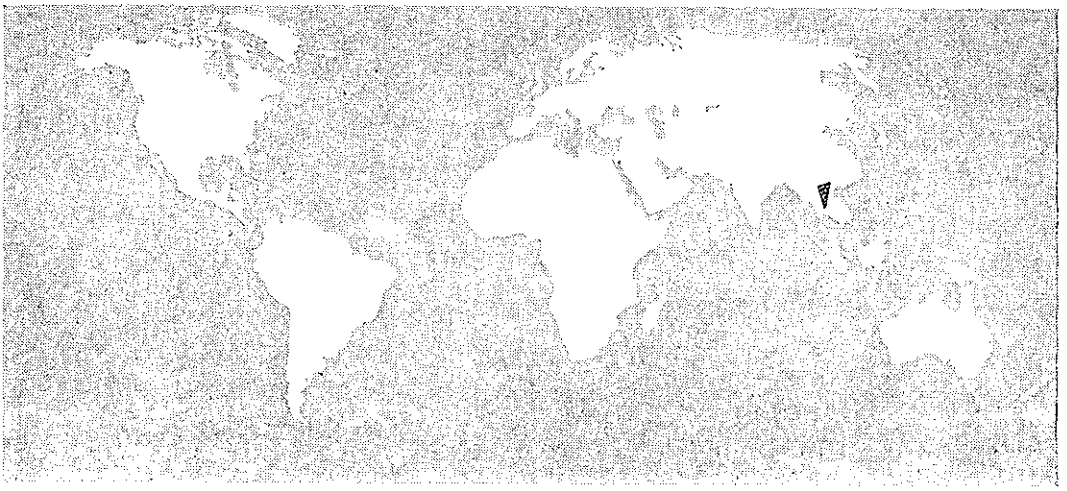
THE CULTURAL VALUE OF NATIONAL PARKS

by

BOONSONG LEKAGUL
Association for Conservation of Wildlife
Bangkok, Thailand

In spite of the heavy demands made on him by his medical practice, Dr. Boonsong is an active conservationist. After World War II, he noticed the decline in wildlife and, giving up his hobby of big game hunting, became one of the founders of the Association for the Conservation of Wildlife. In 1962, Thailand passed a game law and a national park law, both of which Dr. Boonsong had been urging the government to enact for more than 15 years. At present, he serves as a member of the committee to supervise the game law.

While he has a keen interest in natural history generally, his special concern is mammals and birds. He has a good collection of the skins of local species as well as a representative collection of amphibians, reptiles, and seashells. As Thailand has not yet established a natural history museum, Dr. Boonsong's collection is frequently used by students and other interested people. A fine photographer, he has made films of the national parks in the United States and of wildlife in Tanganyika, Uganda, and Kenya. He also gives lectures on wildlife in Thailand's schools and colleges and writes articles on conservation for the country's newspapers. At the present time, he is Coordinating Secretary of the Regional Working Group on Conservation of Nature and Natural Resources in Tropical Southeast Asia.



IT HAS BEEN generally accepted for some time that national parks are of immense value to the peoples and countries in the main fields of science, recreation, and economics. These three values have been understood, discussed and written about very often, but more recently it has been felt that national parks can also be of benefit in the spiritual, ethical, and cultural fields These benefits can be defined under the common heading of "cultural value." So far, little has been said about the cultural value of national parks, as it is a fairly new idea and therefore all the more interesting. It is significant that this conference considers it important enough to put it on the agenda as one of the main topics for discussion.

First, let me define culture as I understand it. Culture is development or refining of the moral or intellectual faculties through education, discipline, or training. It is enlightenment acquired by being in contact with the best achievements of civilization.

How then can we obtain cultural value from such simple things as national parks? How can they be of use to man intellectually and aesthetically?

The aesthetic value to be gained from national parks may be more easily seen than the intellectual value, for who can deny the obvious beauty of national parks? National parks offer chances for the appreciation of the beauty and wonders of nature, which in turn can be an inspiration for the arts. Many a great composer, artist or writer has turned out masterpieces which had their first inspiration from nature. The tiniest ripple in a cool stream, sunlight weaving a shimmering pattern on the leaves, have become melodious symphonies. Scenic splendors have guided the brushes of artists, and the majestic mountains and deep valleys have compelled authors to write works of everlasting art.

Those who have been in national parks will have experienced the changes that can be wrought by the beauty of nature. Unspoiled nature is able to draw out the inherent beauty in man and make him a better individual. The urge for destruction can be overcome, and the base elements of the human character are discarded like the old skin of a snake. As most of you know, many hunters, through constant contact with nature, have become preservers.

National parks can teach people to appreciate the beauty to be found in their own countries and instill pride and patriotism in their homelands. They teach us reverence for nature and help us not to pollute

it but to preserve its pristine state. Thus the beauty of national parks can teach us to be considerate of our surroundings.

It is natural for us to desire to possess that which pleases us; but those who have visited national parks will have an additional feeling of appreciation for the areas which have been preserved for the common use of the public and will feel the responsibility for preserving this national heritage and passing it on to later generations, thus enhancing the cultural value within the progress of civilization.

National parks can teach people their responsibility for not taking advantage of society. Lessons in discipline, tidiness, adherence to rules, and consideration for the feelings of others can be taught in national parks. People can be disciplined not to litter national parks with empty bottles, scraps of food, and paper; they may be instructed to use only the paths permitted to them, not to pick flowers and not trap birds and animals for their selfish pleasure. These are all important practical exercises in social responsibility that may be carried over and expanded in other fields of everyday life to the overall improvement of the individual, the community, and the people.

Another great cultural value of national parks is that they help to instill independence and self-reliance in people. The simple life in the wilderness, far from the ease and comfort of the mechanized world or the pampering by hired servants, can develop the character remarkably.

Many great leaders and founders of religion have found enlightenment through withdrawing into the wilderness. The peace and beauty around them have helped them to meditate and find peace of mind.

My work has taken me to many countries, and I have noticed that the people in the countryside are more relaxed and friendly than most people who are caught up in the tensions of the city. National parks can be a wonderful counterbalance to the ravages of civilization that play havoc with the health, work efficiency, and peace of mind of the city dweller. The lure of nature is the salvation of man brought up in and bound by civilization. It gives man the opportunity to stand the stress of civilization. This, at first, may seem like an encroachment on the recreational value of national parks, but let me assure you that good health and adequate recreation contribute greatly to producing a well-balanced person, free of stress, more able to fulfill his part in the community, physically, intellectually, and morally.

In Thailand particularly, where the people believe in Buddhism, national parks promote the teaching of religion. The people are able

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to witness wild animals contentedly leading their lives freely in natural surroundings. This atmosphere expounds one of the most important precepts of Buddhism: not to take life. This may become an example to non-Buddhist countries, too. The admirable effect on the people of this country can spread to other countries the world over.

All these examples show how national parks can be of cultural value to the people by advancing the mind through intellectual and aesthetic training. National parks can teach people to look at nature as something sacred. By teaching people to appreciate the beauty of nature, national parks can be considered shrines where people can worship nature, meditate, find peace of mind, and draw inspiration.

National parks are nature's library, open to all to draw knowledge from and to advance all cultural pursuits. Scholars can learn from them and find infinite resources from this living store of knowledge. The material available for study can never be replaced once it is extinct. Thus we have to preserve it carefully and pass it on to future generations, so that they also may benefit and gain cultural value from the national parks.

CULTURE AND PARKS

by

JAMES MACAULAY

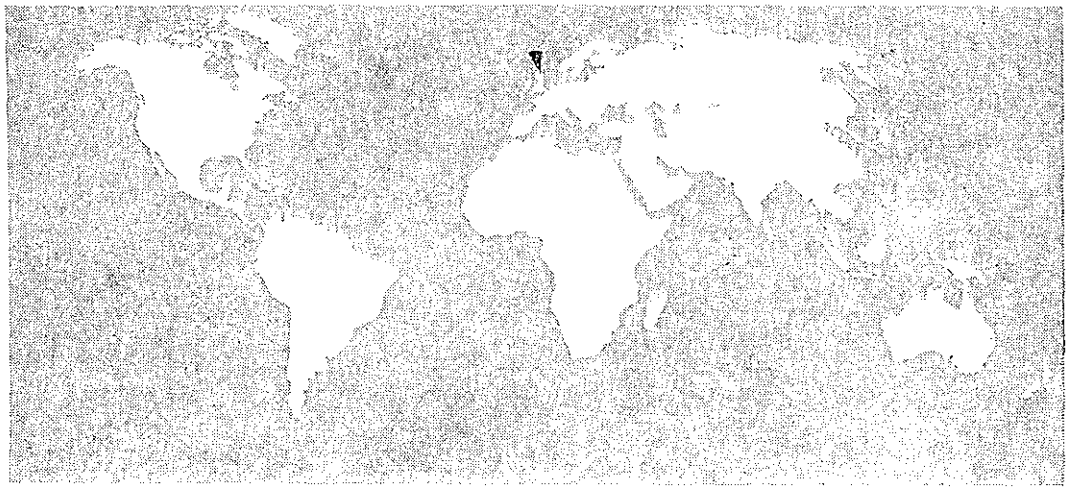
President, Executive Committee, The Scottish Council for National Parks

GLASGOW, SCOTLAND

A member of the Institute of Registered Architects and a fellow of the Royal Institute of Chartered Surveyors, James Macaulay, M.B.E., has long been active in encouraging the formation of national parks in Scotland. Before World War I, he was elected to the National Parks Committee to represent the Scottish Branch of the Town Planning Institute and the Town and Country Planning Association. The committee conducted surveys of selected areas and reported its recommendations to the Secretary of State for Scotland. The outbreak of war, however, prevented further progress.

Additional studies were made between World War I and World War II, and in 1946, the present Scottish Council for National Parks was formed to prepare an exhaustive study of the subject. The change of government in 1946, however, made further work impractical and regular meetings of the council were discontinued. The council was reactivated in 1956 and is now working with the government in the hope of establishing a park system.

James Macaulay is also president of the Glasgow Civic Society and vice president of the Town and Country Planning Association, Scottish Section.



THE FOCUS of this paper is upon the central sentence of the declared purpose of this conference: "They [national parks] are indispensable to the cultural, scientific, recreational, and economic needs of all nations."

As a representative of a country which has no national parks, but for 20 years has been pressing the government to legislate for them, the opinions expressed are the result of visiting parks in Africa, Australia, New Zealand, the United States, and Europe. That experience has convinced the author of the truth of exemplary views on parks expressed by the promoters of this conference.

It may therefore be advantageous to consider these indispensable yet necessary features relative to national parks from the standpoint of a country endeavoring to establish them.

There are national forest parks in Scotland, but public access to them is strictly limited because of fire hazards and because facilities for public use are necessarily circumscribed, since the growing of timber for marketing is the primary reason for their existence.

In the absence of national parks with their attendant organization and legislation, the ever-increasing number of people who invade the countryside are without proper guidance and control; and they leave litter, destroy property, and misbehave generally—a natural corollary.

Where the law of the land permits anyone to enter and cross a private estate in order to gain access to and to climb a mountain beyond—so long as no damage is done to the private property in doing so—the result is liable to be a lack of tolerance, sometimes culminating in sheer enmity between owner and mountaineer. Where estate and mountain are within the bounds of a national park, the rights of both parties would be defined and the discipline of control by the park authority would be observed in mutual trust, respect, and good behavior.

> "The multitude which is not brought to act as unity is confusion. That unity which has not its origin in the multitude is tyranny." —Pascal [1]

Three-quarters of the populace of Scotland are concentrated on one-seventh of the area of the country. These urban dwellers are in great need of free access to the best of the countryside. The remainder of the country, particularly the Highlands, is the natural highly suitable location for use as parks, so that the multitude can enjoy beauty, relaxation, inspiration, and recreation.

Public opinion, expressed through some 30 organizations, supports the efforts to establish national parks; and the government, 20 years ago, designated five suitable areas.

The selected areas include the most beautiful parts of the country, such as mountains, rivers, lochs, villages, farms, forests, seashores, flora, fauna, world-famous gardens, nature reserves, the feathered fraternity from humble sparrow to mighty golden eagle—and last, but not least, the people of the area, who by virtue of their knowledge and experience over the years are capable of enhancing such splendid assets.

> "Cultivation is as necessary to the mind as food is to the body." —Cicero [2]

A cultured man is a well educated man. So, too, a well educated nation is cultured.

Unfortunately, a well educated nation has far too long been considered as one grounded in reading, writing, and arithmetic, and the tendency in this modern space age is to advance through the medium of science with the ultimate view of concentrating upon industry and commerce as the goal in life and, after that, perhaps, sparing a fleeting thought for culture in the higher sense.

> "Education is the chief defence of nations." —Burke [3]

Were Burke alive today, would he uphold this principle or would he subscribe to the current emphasis on modern world-destroying weapons? Certainly not! Civilization depends on man's education towards the peaceful use of all such assets as are found in national parks, bringing fruits of understanding of the good life to a people or peoples whose only alternative is either chaos or annihilation.

> "Public instruction should be the first object of government." —Napoleon [4]

Government is charged with the duty of providing education for everyone. Schools, colleges, and universities are established wherever the student desires to study and learn. The cultural side of life is provided for him in the various faculties and classes. The national park, as envisaged, however, is "nature's university," open to all law-abiding inquirers and ready to advance all cultural pursuits with the infinite resources available for study.

The cultural aspects of a park begin with discipline of the public and the public's respect and appreciation of all its attributes through

the sympathetic guidance of competent wardens and distribution of appropriate instructive literature.

From discipline to real interest in one or other of the park resources, the people step forward towards a rich, stimulating, and self-rewarding culture. The various resources encompassed within national parks provide the cultural facilities of "nature's university."

> "The best and most important part of every man's education is that which he gives himself." —Gibbon [5]

> "The farmers are the founders of civilization."
> —Daniel Webster [6]

Forests and farmlands are essential units of the countryside and, when comprised in national parks, should give the basic character to the landscape and enhance it.

Unfortunately, farms and forestry have too often been developed as separate units to the detriment of both.

Their complementary nature can best be visualised in a national park, where the site for each is carefully selected, and the progress and development of the one can be made to contribute to the improvement and well-being of the other.

> "In the woods *too*, a man casts off his years, as the snake his slough, and at what period soever of life, is always a child. In the woods is perpetual youth. Within these plantations of God a decorum and sanctity reign, a perennial festival is dressed, and the guest sees not how he should tire of them in a thousand years. In the woods we return to reason and faith."
> —Emerson [7]

Thus the laws of nature can become evident to the observer, their values become spiritual as well as cultural, and the highest order is beauty.

> "[Beauty is] the fringe of the garment of the Lord."
> —H. T. Bailey [8]

With the architecture of the mountains, valleys and wolds and the peace of the lake what music can match the ear and satisfy the heart compared with the songs of the birds, the murmur of the stream, and the thunder of the waterfall?

> "The architect must understand not only drawing but music."
> —Vitruvius [9]

> "It is certain that a serious attention to the sciences and liberal arts softens and humanises the temper and cherishes those fine emotions of which true virtue and honour consist. It rarely, very rarely, happens that a man of taste and learning is not, at least, an honest man, whatever frailties may attend him."
>
> —Hume [10]

As a training ground in natural science coupled with personal stamina, Mount Cook National Park, New Zealand, provided an excellent medium for the preparation of the personnel who conquered Mount Everest and took part in the scientific expedition to the South Polar regions.

Great as these examples may be, the greater contribution to man lies in the science of living, the knowledge of life in its fullness, and the appreciation of nature to be studied and enjoyed through the existence of national parks.

Man's need in these respects is nationwide and endless while life lasts.

Recreation is so often related only to the body.

> "Recreation is intended to the mind as whetting is to the scythe, to sharpen the edge of it, which otherwise would grow dull and blunt—as good no scythe as no edge."
>
> —Bishop J. Hall [11]

With regard to recreation, practically every form of sport is available from quiet, lazy holidaying to skiing, rambling, swimming, fishing, yachting, golf, tennis, pony trekking, and mountaineering.

National park areas can be embellished with all the facilities to suit public comfort and convenience and with guidance and instructions in their proper use.

The facilities for relaxation and restoration of the body are provided while enjoying the blessings of nature.

Interpreted aright, the national park provides the facilities, or universal media, for the liberal education which produces the culture embodied in the improvement of the whole man.

Finally, there is the economic factor upon which national parks depend—the land.

Two years ago the Scottish Council (Development and Industry) conducted a Symposium on Natural Resources in Scotland. The 3-day survey ranged over such subjects as land, water, minerals, power, flora,

fauna, and humans, with a view to using these resources to the best advantage esthetically, scientifically, and economically.

The first report of the committee lays stress upon the need to consider carefully the multiple use of each resource and, particularly, that of land. In this respect, for instance, farming, forestry, and water as a unit must be considered relative to the economics of the proposed development. Similarly, it will be evident that the allocation of land for national parks is one of the best examples of multiple use for cultural purposes as well as economic reasons.

The culture of a nation cannot be measured in money, unless it is termed priceless. The cost of parks, some people maintain, is too high to permit their inauguration; but once established, they could and should be made a source of considerable revenue. Their value to the community in providing employment is evident and in producing revenue from thriving tourism, beyond calculation. Tourism attracts revenue not only from the home country but also from overseas, with ever-increasing compound interest in an ever-swelling amount.

Truly national parks can be the hallmark of every nation's economy and progress. They are essential to its cultural, scientific, recreational, and economic life due to their all-embracing appeal to all people.

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(1) French mathematician and philosopher (1623–62).
(2) Roman orator and statesman (106 B.C.–43 B.C.).
(3) British statesman (1729–97).
(4) French statesman and general (1769–1821).
(5) British historian (1734–94).
(6) American statesman (1782–1852).
(7) American essayist and philosopher (1803–82).
(8) English poet (1816–1902).
(9) Roman architect of the first century B.C.
(10) Scotch historian and philosopher (1711–76).
(11) English divine (1574–1656).

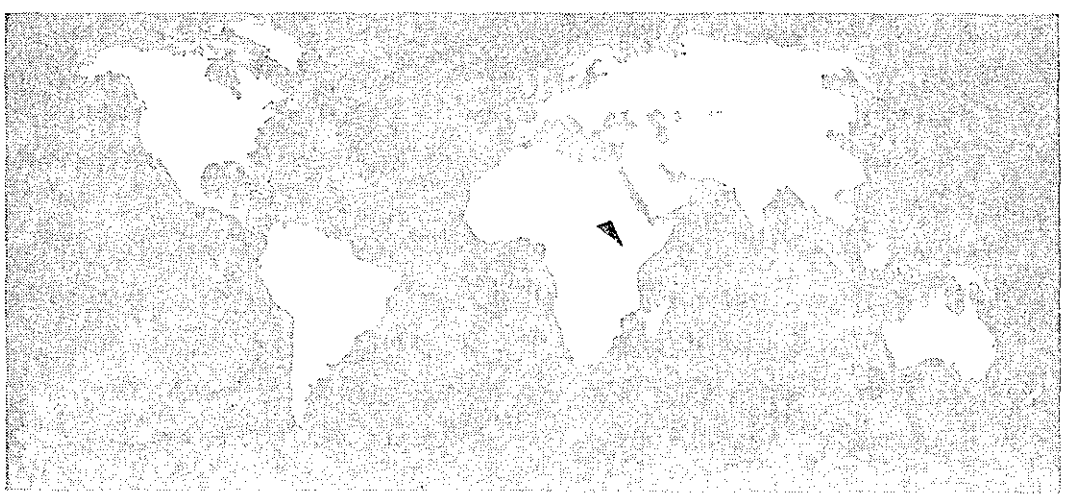
AFRICAN CULTURE AND AFRICAN PARKS

by

DAVID P. S. WASAWO
Makerere University College
KAMPALA, UGANDA

David P. S. Wasawo was born and raised in Kenya, and studied for 2½ years at Makerere College in Uganda. He then went to Oxford, England, where he read honors in zoology, played association football for his college and developed a taste for classical music. Whenever possible, he took trips through Europe; and when he returned to Africa, he had visited some 10 European countries.

In 1953, he joined the staff of Makerere College, where he now holds the post of senior lecturer in zoology. He has traveled widely in the Orient and visited Hawaii. His research interest is in fishes, particularly lungfish, and in Oligochaetes, such as earthworms and swampworms.



IN DISCUSSING the cultural aspects of national parks and equivalent reserves in Africa, I do not intend to confine myself only to those areas that have up to now been so designated. I hope also to draw attention to others that one would hope would be so considered and even demarcated as such in the future.

It seems to me that wild animals have, up to now, played a predominant role in the thinking of people in Africa as far as national parks and equivalent reserves are concerned. This is as it should be. Africa is the only place left in the world where a wide variety of wild animals can still be found in their natural settings. The great variety of antelopes in the plains, their numbers and their beauty, are to be found nowhere else in the world. There are types which are unique to Africa, such as the giraffe and the chimpanzee. There are others that are in danger of extinction, if not properly protected, such as the rhinoceros and the gorilla. It is proper that this unique fauna should be conserved for profit, for the enjoyment of humanity, and for posterity.

There are, however, other things that, to my mind, should equally well occupy our thoughts, when we consider the place of national parks in the culture of a people. I shall illustrate these by reference to three examples from my personal experience.

During a trip to Karamoja, one of the most remote areas in Uganda (bordering Kenya and Sudan), one of the things that impressed me most and has always remained in my mind was the color of the countryside, including its mountains, its hills, and its plains. It is difficult to convey the coloration in words except to say that it had a touch of a most beautiful greenish-gray that I usually recall with pleasure and gratitude. The complete nakedness of the Karamojong men rather surprised me at first, although I had read about them. This surprise, however, was momentary. I soon got used to them. The nakedness of the men did not touch my soul at all or influence it in the way that the color of that countryside had done and still does, whenever I recall it.

Two years ago, I had the privilege of visiting the Ngorongoro Crater for the first time. I remember well the feeling I had when, getting out of the Land Rover, we climbed a few steps to the edge and beheld that vast creation of nature. It was not so much the detail that impressed me—one could at that distance only make out the outlines of the game animals on the floor. It was rather the totality of the scene before me that was so elevating and that will remain in my mind for a long time.

Lastly, I wish to give an account of an experience I had which, although not in Africa, yet serves just as well to illustrate what I am trying to say. In the summer of 1951, a friend of mine and I, while visiting various places in Switzerland, called on that delightful little town of Zermatt in the Swiss Alps. We arrived in the early part of the afternoon, saw the Matterhorn and visited various parts in the neighhood. It was not, however, until 4 o'clock the next morning that I had an experience which imprinted itself in my mind and which always makes me remember that day. We woke up at that hour of the morning to behold the face of the Matterhorn bathed in moonlight—the soft rays of the moonlight reflected from the snowy face of that massif, jutting out of the countryside with a clear early-morning sky forming a suitable background. This was indeed a beautiful sight to behold.

I give these three examples here—the colors of the countryside in Karamoja, the Ngorongoro Crater in Tanganyika and the face of the Matterhorn in Switzerland—to highlight the fact that, much as the wild animals are of importance in the consideration of national parks in Africa from a cultural point of view, there are other things as well: the mountains, with their snows and peculiar vegetation; the rivers and their waterfalls; the vast plains; the forests. These can, and do indeed in some cases, form parts of national parks and affect the mind of man in ways which, as we shall see, can be considered as contributing to his culture.

Africa is at present in a turmoil. Its great political movements and troubles are common knowledge to the rest of the world. What is not so obvious is the fact that we in Africa are also faced with what I might refer to as a crisis of the soul. Society is changing, not only in its basic beliefs, but also in its structure. The number of people dependent entirely on wage-earning is increasing; the number that have left the countryside and are living permanently in towns is increasing also. There is an ever-increasing tribal mixture, an urge to look beyond local boundaries, a desire to exchange ideas with new and strange people. There is indeed a cultural development going on—a development based initially on tribal culture, but seasoned by what is coming in from outside. It is also known that tribal culture has been developed, not only out of the reactions between man and man, but also out of the reactions between man and nature. The healthy development of a national culture requires as its foundation, not only the acquisition of and reflection upon known knowledge,

but equally significantly on opportunities to see for oneself, reflect on and study the beauties of nature—an opportunity to go out and "breathe the fresh air." These sorts of opportunities can no longer be had just anywhere in Africa. National parks and equivalent reserves, properly developed and managed, can play an important part in this.

You cannot have culture unless people's stomachs are filled—unless the economy of the country is such that people are not so preoccupied with the mere business of existence but do in fact, so to speak, have time off to reflect, to assimilate, to practice the good things of life. In another section of this conference, people better qualified than I will be dealing with the economic and gustatory benefits that can accrue from national parks. The only point I want to make here is that national parks, properly managed, can contribute tangibly to these basic needs, without which one does not even begin talking about culture.

In the developments that are going on in Africa today, leisure is going to be an important consideration. Workers are rightly demanding it, and they are going to continue to demand it. There are already people who have it. The proper use of leisure in any society is one of the measures of their cultural achievement. National parks can and should be used to give people an opportunity of employing this leisure properly—of enabling them to go out into the fresh air to gaze at the beautiful scenery; to contemplate the ways of animals, birds, and plants; and to meet their fellow humans in pleasant, healthy surroundings that are conducive to fruitful exchange of ideas. Leisure, so used, may provide the material that ennobles the human spirit; similarly, the proper enjoyment and contemplation of such surroundings may furnish an inspiration for creative work. This has happened before in other lands; Africa should not be an exception.

Africa is faced with a number of fundamental problems in education. The continent is extremely short of manpower for all sorts of professions. Under such conditions, it has been asked whether our educational system should not be geared entirely to the production of technicians and professional men as soon as possible without paying much attention to the building up of the individual, to presenting him with the fundamental challenges of life as they affect persons and societies, and to making it possible, at least, for him to try to relate his own discipline to the general stream of knowledge and

of existence at large. These are questions which can be considered in greater detail in another context. I draw attention to them here, because I believe that the national parks can offer to our educational system something very worthwhile in broadening its basis. I refer here to the benefits that would be derived from properly conducted tours of students, from school boys and girls up to university students, under the leadership of a properly qualified resident naturalist. The students would be introduced to the wonderful workings of nature, both animate and inanimate. They would be stimulated to inquire into these workings on their own. Their thirst for knowledge would thus be increased. They would be acquiring a tradition of natural history. They would, in short, be better educated and better cultured people. This would apply not only to school boys and girls and to university students; opportunities would be offered for working adults to take advantage of such tours, because they would gain just as much in knowledge—and in the stimulation of the spirit of inquiry—as the students.

A resident naturalist, however, can do much more than merely imparting knowledge and developing the spirit of objective inquiry. One of the fundamental qualities that require development in any cultured society is the proper sense of beauty. As indicated above, we have beautiful animals, mountains, rivers, and even plains and forests. All these can be presented in such a way that a proper appreciation of their beauty is inculcated. A parallel can be drawn here with the sort of thing guides in Europe do in presenting cathedrals and other historical monuments.

A proper appreciation of the beauties of the environment is bound to lead to the development of a healthy pride—the pride of possessing something good in terms of humanity at large, the pride of achievement in establishing it and protecting it. I believe this sort of pride is necessary in any society in terms of the proper development of personality. In Africa, and in terms of national parks, this pride will be particularly important because it will be allied to that other great quality—humility—humility in the face of the great achievements of nature.

Tropical environments in Africa present opportunities for research that cannot be matched elsewhere, because the various fields are still relatively unworked. National parks and equivalent reserves can provide facilities here that would be impossible in the more settled

areas. Furthermore, opportunities for research can lead to a most fruitful collaboration between the scientists in Africa and those coming from abroad. This personal contact is important in other planes than the purely scientific, as we shall see in dealing with tourism.

It can be said that the majority of tourists that come, at least to East Africa, come because of the prospects of seeing game. Most of this game is presentable much more easily in national parks and equivalent reserves. The economics of tourism are discussed in another section of this conference. Here, the concern is with their cultural aspects. The meeting between people from different cultures and climes on an equal basis is in itself a very stimulating experience. The people of Africa are thus able to learn about other lands and peoples and to feel that they are not cut off from the rest of the world. This is particularly important in the newly independent countries of Africa and in those that will soon be independent. I may be wrong here, but I have a feeling, from admittedly limited experience, that the commercial man coming to Africa to sell his wares usually has a different personal approach from that of the man who comes out to see the beauties of Africa, which he cannot see anywhere else in the world. Tourists normally ask questions—and sometimes questions that we would never have thought of; and asking questions is the surest way of stimulating thought. They learn much about our countries from first-hand experience and, if they are honest with their consciences, are thus able to correct some of the misplaced ideas about Africa.

Finally, domestic tourism is just as important in this exchange of ideas and the stimulation of thought as foreign tourism. We cannot hope to build viable nations unless people have a common sense of belonging; and this sense cannot be developed unless people meet together and take part in a common effort toward something, be it discussion, the acquisition of knowledge or the mere enjoyment of beauty. In this connection national parks must be developed in such a way that they are not the preserve of the rich. Facilities must be developed so that the common man can visit them and enjoy them.

What has been discussed here about the cultural aspects of national parks in Africa, I believe, can be applicable elsewhere in the world. My contention, however, is that these basic human problems are much more urgent and pressing in Africa, and this article is an attempt to draw attention to them.

Section Two—C

RAPPORTEUR

Don Greame Kelley

Clarence Cottam of the U.S.A. opened the session with introductions of discussion leader, panelists, and rapporteur.

The discussion leader, Mervyn Cowie, Director of Royal National Parks, Kenya, set the stage for the papers to follow, with a thought-provoking analysis of the problems and considerations of park development in a nation in transition. In particular he emphasized the role of game animals as the attractive element—far more important than superlative scenery—in drawing foreign tourists to Kenya's national parks. Here is probably the world's outstanding example of animal life, representing a high cultural value affecting the thoughts and emotions of numbers of people.

Boonsong Lekagul of Bangkok reemphasized the benefits of parks in the spiritual, ethical, and cultural fields. The park idea is all the more interesting because it is a fairly new idea. Whereas wild nature was often regarded, in the past, as inimical to man, it is now understood that unspoiled nature is able to draw out the inherent beauty in man and make him a better individual. A reverence for the original state of nature helps man overcome his tendency to destructiveness. At the same time, they instill in people the higher feelings of independence and self-reliance by contributing to the sense of belonging to nature.

Parks and such wild areas have inspired great religious and philosophical leaders and can give like inspiration to those who follow them. They can advance the mind through intellectual and esthetic stimulus. Of highest importance in our time is the counterbalance these areas afford to the ravages of modern mechanized civilization.

In the second presentation, James Macaulay pointed to the fact that Scotland is still a country without national parks, but with national forests. This is partly a result of Scotland's peculiar legal structure affecting the ownership of land. Varying cultural values in the nations of the world dictate a variety of approaches to the park idea, with regard to both practical and philosophical considerations. The park

idea is very much alive in Scotland. People make the fullest use of all available wild places, for the same purposes that national parks serve elsewhere, and feel that theirs is an inherent right to such uses, whether ownership of the land is public or private. There is strong popular sentiment for national parks, and their establishment is under study now.

The third panelist, David P. S. Wasawo enlarged upon the contributions of national parks to the development of society as a whole, drawing upon the example of East African nations, where social change is now in rapid progress. He has seen in their influences a widening of cultural horizons as they are channeled into the processes of social growth such as personal contact, self-development, education, tourism, and even economic stimuli.

Parks provide meeting places, not only for nationals and foreign visitors, but for nationals from different parts of the same country. The exchange of ideas is an immediate factor of cultural growth. There is also a personal growth benefit, as visitors to parks see new things themselves, think, and do things for themselves.

In conclusion, those present agreed cultural values in national parks and comparable areas appear to be non-controversial. Discussion and questions from the floor were largely in the spirit of the presentations themselves. They helped to emphasize the cultural diversity among the world's peoples.

The rapporteur, Don Greame Kelley of The Nature Conservancy, U.S.A., attempted a distillation of the ideas, both spoken and unspoken. We may disagree, he said, over scientific methodology and economic applications, but in the park idea we have united to move towards the peaks. The *summum bonum* of this idea, indeed, may be its meaning in the cultural life of mankind.

Appreciation of landscape beauty comes late in man's progress from the primitive to the civilized state, just as it comes to an individual at a stage beyond early childhood. Once started in a person or society, this appreciation grows and ultimately becomes identified with the innermost responses of a national consciousness or an individual soul. It thus may enter the realm of religion. In parts of China, the surviving remnants of the primeval forest are the surrounding of temples. Nikko's cryptomeria groves are Japan's way of saying "thus far and no farther" to the negation of cultural values in the economic exploration of a superlative landscape.

D. P. S. Wasawo spoke feelingly of wider horizons. National parks represent the high peaks—the ultimate horizons of the natural world. As economic advance in region after region of the earth permits leisure for reflection—in Africa, in tropical Asia—more people will see the fresh sights, will reawaken to the beauty in wild nature on which all finally agree—if this conference is indicative—despite their diverse origins and dissimilar cultural heritages.

GENERAL SESSION

Section Three

Optimum Use of National Parks and Equivalent Reserves

E. M. Nicholson of the United Kingdom served as general chairman of section three, which dealt with this question: How to obtain optimum use of national parks and equivalent reserves. The speakers discussed the experiences of several countries, all with different backgrounds, traditions and natural environments. One speaker, for example, pointed out the special problem existing in Australia, where wildlife has had relatively little time to adjust to mankind. The speaker from South Africa particularly emphasized the need for controlling visitors to the parks, because, as he said: "Man cannot create, man cannot even re-create, man can only conserve." In the United States, the challenge lies in preserving the fundamental purposes for which the parks were established and, at the same time, handling the large numbers of people that now wish to visit them.

The discussion leader was David R. Brower and the rapporteur was Richard M. Leonard, both of the United States.

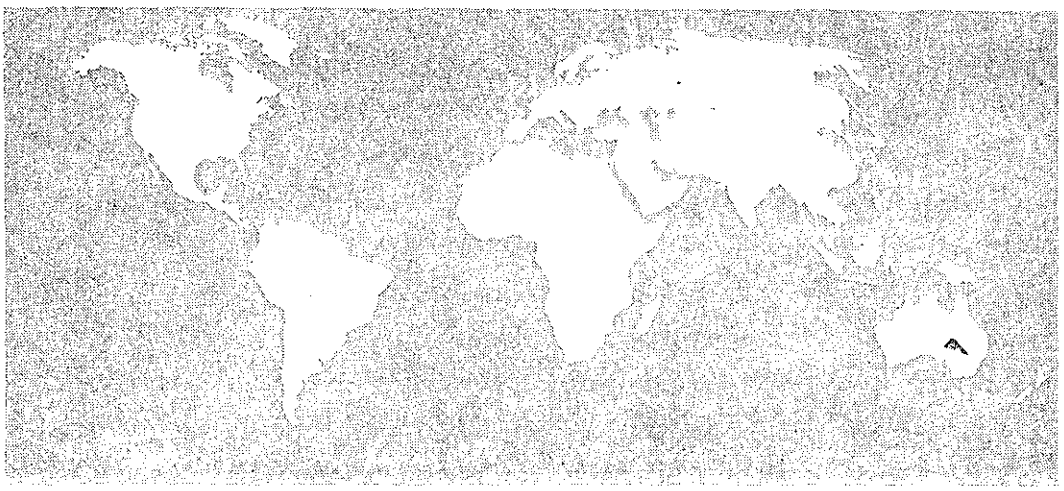
PRESERVATION VERSUS CONCENTRATED VISITOR USE

by

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M. F. Day graduated from Sydney University with a degree in science in 1937. He then came to the United States, where he earned a doctorate from Harvard University in 1941. In 1956, he was elected a fellow of the Australian Academy of Science. At the present time, he is a member of the Division of Entomology of the Commonwealth Scientific and Industrial Research Organization in Canberra. He is working on virus transmission by insects.

His early training in entomology gave him a lasting interest in the Australian bushland. Since its inception, he has been chairman of the Academy of Science Committee on National Parks. This committee is responsible for bringing together information about the national parks in Australia.



WE WOULD have wished that the title of this session might have been "Preservation *and* Concentrated Visitor Use." Preservation is a necessity if a park is worthy of it. Visitors are a necessity, for parks are meaningless without them. The more visitors, the more important is preservation.

The question then becomes one of the best means of deploying visitors, so that they gain the maximum advantage with the least disturbance.

One could discuss the merits of roads, hostels, zoning of park lands, education programs, and the changes in the behavior of animals resulting from visitor attention. But the aim of this paper will be to mention a few of the general problems arising from a consideration of this topic in relation to the Australian situation and briefly to attempt to see how these problems may appear in the future.

The essential feature of a biological environment is its change. It is generally true that the rate of change is slow, but it may be surprisingly rapid and would be so even in the absence of man. To discern whether changes are man made and in the direction of deterioration may require considerable ecological knowledge and certainly requires a detailed understanding of preexisting conditions.

One might imagine that geologic and geomorphic features are impervious to damage, but at least two important fossil sites in Australia have been ruined by excessive collecting; and mining has damaged areas at Wombeyan Caves, Bungonia Gorge, and Bouddi National Park, to mention only three in the State of New South Wales.

But it is the Australian fauna and flora that is so peculiarly vulnerable to alien influences of many subtle kinds. Marlow (1958) has suggested that many species of marsupial have become extinct in recent years in New South Wales. Calaby (1960) has shown that some of these continue to exist elsewhere in the Commonwealth, but the fact remains that no national park is designed to preserve Australian mammals. Birds seem to be less subject to extinction, for none of the 650 species are known to have become extinct because of man (Carrick and Costin, 1959). It is often thought that marine forms are relatively immune to destruction, but areas of the Great Barrier Reef have been greatly damaged by the search for living things and, with the advent of skindiving, this trend will be accentuated.

It is apparent that habitat preservation should be the aim, and there are strong scientific reasons for protecting a variety of habitats.

It is well to appreciate that, in Australia as in many other nations, few park administrators have given more than passing thought to the subject of this symposium. Whereas many fine parks have been established, in general they are maintained inadequately. The main aim has been to encourage more visitors, with little realization that the increasing numbers are now destroying the very things that people come to enjoy. The funds available to national parks are not only hopelessly inadequate, but what money is available is generally spent in giving better access, so that damage is being done more rapidly. In several states there is not even an administrative framework upon which the equivalent of a local "Mission 66" [1] could operate.

Many of us consider that the scientific reasons for the preservation of specified tracts of land are the overriding ones, largely because we believe that there will be enormous questions of ecological adjustment between man and his environment, and that reference areas may well provide essential leads in the future for wise planning of land use. But to the majority of state governments in Australia today, it is generally the economics of the tourist trade which make the use of land for national parks commend itself.

For these reasons the visitor pressures in Australia have assumed a role far more important than might be considered likely on the basis of a population of 10 million.

No data are available for the numbers of visitors to the majority of parks in Australia. In Queensland, there are said to be one-half million visitors annually. Scattered data for other states are as follows:

In New South Wales.

Jenolan Caves had 115,000 visitors in 1960.

Minnamurra Falls had 80,000 visitors in 1960. Parking fees amounted to £13,000 for the Royal National Park, and a larger sum for Kuringai Chase.

In Victoria.

Kinglake National Park recorded 16,000 visitors in 1960; Fern Tree Gully, 65,000; Wilson's Promontory, 27,000; Mount Buffalo, 36,000; and Tarra Valley and Bulga Parks about 30,000.

In South Australia.

Over 10,000 were camping in Wilpena Pound on the Labor Day weekend in October 1960, and Belair National Park has about one-half million visitors annually.

These figures serve to indicate that about one person in every eight visits a national park each year, in contrast to a figure of about one in two to three in the United States of America, Canada, or Japan.

Carrick and Costin (1959) have estimated that an area of 0.2 percent of the 2.9 million square miles of the Commonwealth of Australia is dedicated as national park land, giving an area of 0.33 acre per person. But the uneven distribution of population and of parks makes an assessment of such figures difficult.

A second reason for the seriousness of visitor pressure results from the inherent instability of the Australian environment; for the impact of man on what we consider to be the ecological balance varies from one environment to another. In Europe and North America, man has been part of the environment for so long that the present associations are adapted to his presence. But in Australia it is thought that aboriginal man first arrived only some 25,000 years ago, and he never numbered more than 400,000 in a land area equivalent to that of continental United States (less Alaska). Furthermore, he was nomadic, had no agriculture and kept no herds. His impact on the environment was not great, and some of his customs were designed to keep it so. Parenthetically, it should be stressed that some authors (e.g., Tindale, 1959), give good reasons for believing that man-kindled fires did, in fact, markedly alter great tracts of land. But it is nevertheless true that the coming of the European has had, relative to his numbers, an effect on this environment far greater than that seen in the Northern Hemisphere. The effect is often indirect. The importation of the rabbit and the sheep has probably had the greatest impact of any factor in altering the Australian environment. Vast areas will never recover from these introductions. Feral cats, alien weeds, and similar agents have also had their effects.

The necessity for study of the effects of pressure of use on parks is therefore greater in Australia than in many other areas.

Perhaps the most extreme example of the effects of relatively few visitors is seen in the Antarctic on the breeding population of birds and seals. Here special international agreements have been designed to curtail the effects of men and their dogs.

It should not be inferred, however, that it is the complexity of an ecological association that determines its stability, for a tropical rain forest may regenerate as a savanna woodland following a single fire.

In many Australian environments, the effects of fire are devastating.

Some, like the Hawkesbury sandstone near Sydney, are susceptible but regenerate quickly. But in Bulga Park in Victoria, the once magnificent mountain ash (*Eucalyptus regnans*) was being removed 20 years later as a direct result of damage suffered in the devastating fires of 1939. (Victorian NPA, 1959.) Special precautions against fires originating from the difficulties of controlling large numbers of visitors must therefore be incorporated in any developmental plans for Australian parks.

The national parks of Canada, India, Africa, the United States, and some other nations are large tracts of land. This is an obvious necessity if the aim is to support large vertebrates or a fauna of a migratory species. In Australia most of the parks are measured in acres rather than in square miles. Some small ones may be of great interest and importance when they are, for example, islands of the Great Barrier Reef or southern remnants of tropical rain forest. But it is doubtful whether some of the smaller parks are self-perpetuating units. Effort is therefore being dissipated in attempts to maintain too many too small areas, and I suspect this to be true of some nations other than Australia.

In these small areas, visitor pressures are much more significant than they are in large areas with adequate "buffers." For it is from these buffer areas that regeneration of damaged areas can proceed.

In the Australian states the national parks are not the concern of the Commonwealth government. The land and the parks in it are the concern of the six individual states. Each state has a different system of park management, and so we can see in one continent the effects of these different systems of park use. In Queensland the parks are under the jurisdiction of the Department of Forestry. There are over 60 parks and 171 scenic areas (arbitrarily defined as areas less than 1,000 acres in extent), and a population of 1.3 million (1954). Many of these parks are islands in the Great Barrier Reef. Many mainland ones are rain forest remnants, scenically attractive, botanically rich, but rather remarkably lacking in mammals. Notable exceptions are the remarkable Canarvon Gorge (66,480 acres), and Eungella (119,000 acres). No roads enter Queensland parks. Access is by graded walking tracks, of which 250 miles have been constructed. At the entrance to many parks are parking facilities, shelters, and fireplaces. Well over one-half million visitors a year have been reported in the last few years, but the total amount spent

by the forestry department since the parks were established has been just over £650,000—a few shillings per visitor. But visitor pressures are greatly lessened by the fact that all visitors enter the parks on foot.

In New South Wales, parks came under the Department of Lands. Following dedication, a trust is appointed of citizens concerned with the area. The trusts are provided with inadequate funds (a total of £74,000 for 1959–60 to cover 21 areas) and so there have been strong incentives to seek to raise funds by inappropriate means, for example the sale of timber. There have been permissive occupancies for grazing, and even mining has been permitted. On the other hand some trusts, composed of public-spirited members, demonstrate that it is possible to develop the areas under their control along appropriate lines.

Sydney is a unique city of 2 million people. It has superb recreational facilities of many kinds and two national parks, each over 30,000 acres within 15 miles of the city to the north and to the south. Naturally these are under considerable user pressure and they have suffered accordingly. The Royal National Park is the oldest park in Australia, having been dedicated in 1886. It has an electric railway running to it, and thousands arrive by car. The spread of visitors over the park has been aided by a network of roads, in some cases forced upon the trust to give access to alienated land within the obvious natural boundaries of the park. There has been no attempt to develop areas of maximum usage, so as to preserve major wilderness blocks. Indeed the trusts have attempted to exploit every natural charm of the area far beyond the capacity of the land to recover. No attempts are made to educate visitors. Kuring-gai Chase to the north has been partly saved from the same extensive destruction due to the highly dissected terrain, but its previous immunity will not withstand modern roadmaking methods, which will allow the opening up of previously inaccessible areas.

Some of the more distant parks are not so damaged, and it is to be hoped that the enactment of legislation currently under consideration will allow proper development of these areas before they are damaged beyond repair. But under the present administration by trusts, preservation can be adequate only in exceptional situations.

In Victoria the National Parks Authority is attempting to provide facilities for an increasing number of visitors to the 17 areas under its control. The annual expenditure is now about £80,000. Substantial

increases in the program of works are proposed, and they are necessary to provide minimum facilities for increasing numbers of visitors, to discourage vandalism and to insure adequate protection. The significance of the latter can be appreciated from the result of the November 1959, bush fire in Wyperfeld National Park. This destroyed 57,000 acres of bushland and left damage from which, it is thought, the area will take 20 years to recover.

Tasmania offers an illustration of a rare situation in which the absence of any significant conflict between preservation and visitor use is due to the ample national park provision in relation to the small size of the demand and the lack of funds for development. This small island state has 120 park and reserve units, occupying over half a million acres (4 percent of the total land area of Tasmania), giving an area of 1.9 acres per person. The greater part of this is contained in eight national parks, the largest of which has an area of 333,000 acres. The parks are mainly high mountain areas, established to protect general scenic features and are administered by the Scenery Preservation Board. The funds at the disposal of the board are too small to enable it to accomplish effective control over all its many scattered reserves. The policy adopted by the board has been to provide such essential facilities as tracks, shelter huts, and a ranger service and to invite other agencies to create additional facilities. Thus in recent years staff plans for an interpretative service, park chalets, and other major facilities have been rejected or deferred by the board on the grounds that they are outside the scope of its authority.

No commercial venture has yet succeeded in a national park, although there have been several attempts. The number of visitors to national parks is still small. In 1959–60 the most popular park—Mount Field National Park—had an estimated 35,000 visitors; and the Cradle Mount-Lake St. Clair National Park had about 20,000 visitors. However, during the last few years the number of visitors and the demand for park facilities have increased significantly, disclosing that the existing legislation and the administrative system is not capable of dealing effectively with the new situation.

I hope to be excused for discussing only local examples, but my aim is to point out that perusal of a list such as that issued by UNESCO is liable to give a misleading impression. In this report Australia occupies 26 pages and the United States 27 pages. Australian parks have, perhaps, a million visitors annually, those of the United States, 80 times

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this figure. But the details such as security of tenure, the facilities provided, interpretative programs and so forth are simply of a different kind. If Australian parks were submitted to the visitor pressure seen in the United States, they would be ruined beyond retrieval in a very short time. We have time to preserve many superb areas, if only adequate legislation and funds will permit. But effective action cannot be delayed for long.

Brief reference should be made to the preservation of relics of Australia's original inhabitants. The rock engravings in the Sydney-Hawkesbury district "are not excelled in size, range of subject and imaginative conception by any series of outline engravings in the world" (McCarthy, 1958). Over 4,000 figures are known in between 400 and 500 galleries, the largest covering an acre or more. No instrument has been found to make these petroglyphs, and no white man witnessed the process. Many of them are life size with whales up to 60 feet in length and kangaroos larger than life, 24-feet long.

Vandalism has been so widespread that many are protected now only by inaccessibility and secrecy, even within national parks.

Although biologists particularly see the need for the reservation of a variety of habitats not now included in the park systems of any of the states, it is apparent that better methods of preservation of available parks is the most urgent problem in Australia. The prime necessity is an adequate ranger service, backed by adequate legislation. A second great need is for better interpretative services.

The majority of visitors are sightseers. They come to stand, to look and to go away feeling that the visit was worthwhile. But their enjoyment is greatly enhanced, if they have a deeper knowledge of the features they are observing. The popularity of interpretative efforts is ample demonstration. Not everyone can identify a rare bird in the parks or can appreciate or even see a significant glaciological feature. Yet the appreciation of these things makes a visit so much more meaningful and, in the long run, will do more to insure preservation than legislative actions.

A few of the rangers in Australian parks are keen naturalists, but it should be noted that concerted efforts on interpretative services have not been made in any Australian park. For a few parks, brochures are available describing some features, but much more effort of a high standard is needed.

In each of the states where national park associations and similar

bodies exist, this lack may be made good by the presence of enthusiastic naturalists on many excursions. Thus, many university and other scientists are keen members of these bodies and are generally anxious to share their knowledge and experience with others. But there is an obvious limit to what they can do.

I cannot speak too highly of the education programs of the U.S. National Park Service. To portray the parks to packed audiences by films, talks, or exhibits is surely the best way to bring their wonders to the people. Other nations can only envy the funds and facilities that make such an operation possible. As with so many of the topics which we have discussed, we need in this area studies on the problem of what visitors want, and what are the sources of enjoyment in the national parks. Knowing these details we can plan more intelligently how to provide for them.

The question before this session poses a real dilemma. A national park without man is without significance to man, but man by his presence alters the attributes we wish to preserve. Compromise is the obvious necessity, and where the line of compromise is drawn will depend only upon the knowledge and wisdom of the interpreter. How to compromise for the greatest good for the largest number and for the longest time is the question to be answered by parks administrators.

Even more difficult will be the decisions in the future. "Economic necessity" has too often taken precedence in the past and will do so more in the future. It is safe to say that if a payable oil field were found in any park of Australia, its exploitation would take precedence over every other form of land use. What looks to us as a reasonable or even essential form of land use will look very different indeed to our successors two generations hence.

How is the compromise to be effected? By varying the administration with knowledge based on experience and experiment. In Australia, as indeed elsewhere, the greatest need is a study of the problems and, then, intelligent administration based on this study.

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(1) A program to develop and improve the national parks of the United States. Completion is scheduled for 1966, hence the name.

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SCIENTIFIC AND POPULAR USE: A CONFLICT

by

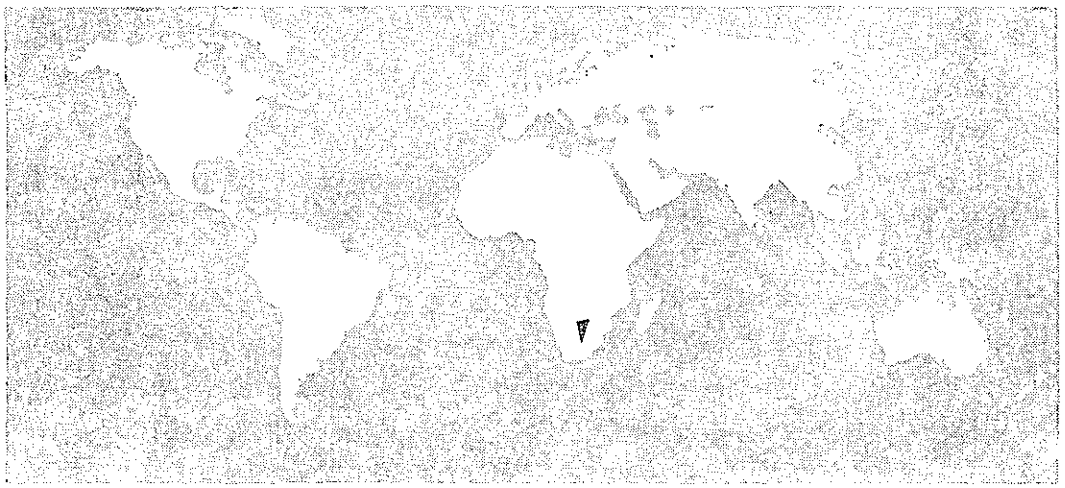
ROCCO KNOBEL

Director of National Parks, Republic of South Africa

JOHANNESBURG, REPUBLIC OF SOUTH AFRICA

Rocco Knobel, whose parents were missionaries, was born in 1914 in Bechuanaland Protectorate. Until he went away to boarding school at the age of 10, he grew up among wild animals and far away from all civilization. After graduating from school, he studied at the Universities of Witwatersrand, Johannesburg, and Stellenbosch. From the latter, he obtained a master's degree in social science. For 2 years, he worked as a probation officer and then became assistant director of the Johannesburg Municipal Welfare Department. After that, he took charge of the social work of the Dutch Reformed Church in the Transvaal, a province of the Republic of South Africa.

In April, 1953, he was appointed director of the National Parks Board. This placed him directly in charge of all the national parks of the Republic of South Africa, including Kruger National Park, Addo Elephant National Park, Kalahari Gemsbok National Park, Mountain Zebra National Park, and Bontebok National Park. Altogether, the park system covers 15,000 square miles. At Kruger National Park alone, visitors spend annually up to 20,000,000 hours.



A NATIONAL PARK is an area set aside for the protection, propagation, and preservation of wild animal life and wild vegetation and for the preservation of objects of aesthetic, geologic, prehistoric, archeologic, or other scientific interest for the benefit, advantage, and enjoyment of mankind.

Conservationists, especially national parks administrators, must take cognizance of the two main duties placed squarely on their shoulders:

(*a*) Conservation, which implies and demands the act of preserving in a natural state, and

(*b*) For the benefit, advantage, and enjoyment of humanity which implies access to these areas.

The work of the park administrator is therefore quite obvious—conservation for man and not protection against man. For this very reason the IUCN changed its name from International Union for the Protection of Nature to the International Union for the Conservation of Nature and Natural Resources.

Looking at the issue from short range it would appear that it should be much easier to protect against man than to conserve for man. It sounds relatively easy to make laws prohibiting people to enter certain areas, to build strong fences or walls around such areas, to refuse to build roads to, and in, such areas and virtually to provide complete protection against man. In certain areas, where the population pressure has not reached the same point as in Asia, Europe, or America, this may still be possible. In areas such as are still found in certain parts of Africa, the need for national parks is not yet manifest. People living in such areas still have places where they can commune with nature. In other parts of the world, including parts of Africa, where the population explosion has been such that only the most privileged can still find seclusion in his own domain, it is extremely difficult, if not impossible, to protect against man.

Man as the supreme creation has had all other forms of life made subservient to him. No authority can hope to protect against man anything that is of no benefit to man. At this stage of population pressure it becomes necessary to conserve for man. Conservation for man is a far more difficult and scientific task than protection against man, but when properly undertaken it can and will succeed, while protection against man has no hope of success. Man will, however, conserve for himself and in conserving for himself also protect against certain acts of man.

I wish to state emphatically that in my view no conservationist who does not accept that nature may be used has any hope of success. Park administrators therefore accept that nature must be used, but never misused, and the reply to the question why national parks must be used is that only through their use will their future be ensured.

It is not my object to give a full account of all the uses to which national parks may be put. It is, however, very necessary in discussing the use of such areas to determine the main purpose of national parks, as only then will it be possible to determine their optimum use.

For many generations people have held the belief that nature should be protected for nature's sake. In the first few paragraphs I tried to prove that such a policy is unwise and is virtually impossible. So here are some of the other reasons for protecting nature in national parks.

A section of public opinion, for example, maintains that national parks and reserves are established for their scientific value. A strong case can be made out for this line of thought and its advocates generally hold that such areas must be kept as free as possible from human interference.

The scientific values of national parks are innumerable and must be recognized. All our scientific advancement is built on the knowledge derived from nature. It is, however, highly improbable that any country could afford to set aside solely for scientific use vast tracts of land totaling many millions of acres, as is the case today in many countries of the world, including the Republic of South Africa. National parks and reserves must be used for scientific research, and to this I shall return a little later, but I can definitely state that the scientific value of a national park is not its most important value.

The economic value of national parks and reserves is also an important reason for their existence. When dealing with legislative councils, it is often necessary to stress this aspect very forceably, and it is not a dishonest approach, as national parks have a very definite economic value. Tourism is today regarded as one of the major industries of the world, being responsible for large foreign exchange earnings in those countries which are able to attract tourists. The advantage of a natural tourist attraction as a source of exchange is that, although it can be rated with exportable goods in earning foreign currency, it is inexhaustible if properly used and need therefore not be exploited as a wasting asset. Generally speaking, the natural beauty of any country is a major item of invisible trade, which is never exported in

the way other goods are exported. It is, however, exported in the form of good will and appreciation of that country.

The economic value of national parks and reserves as measured in monetary terms is difficult to determine. A certain amount of money changes hands in a national park, and that amount is easy to determine. It is very difficult, however, to determine the value of the tourism created by national parks on a wider scale, as most people are prompted by a number of reasons for undertaking a tour or visiting a country or part of a country. This factor, although not easily determined, is a very important value of a national park, but again not its most important. To this must be added the increasing value of wild animals as a source of protein, where animals have to be harvested in managing a park to protect their habitat from overgrazing.

The cultural values of national parks are also of the utmost importance. In the parks, the old and the new meet; the parks remain, in many instances, the only places where the present generation can look back and plan its future by experiences which have been the guiding lights of the past. It is in places like this that one can commune with nature, where the theologian and the philosopher, the artist and the poet, the preacher and the author, the tradesman and the teacher, the housewife and the child, the musician and the scientist—in brief all normal humans—can find inspiration for their various careers, and where balanced personalities and characters may be formed.

Today the complaint is often heard that modern youth are not avocation conscious, that they are superficial and their appreciation of values is disappointing. The capacity for achievement and originality appears to belong to earlier generations. Several sociologists and psychologists have pointed out that most leaders originate from the country folk (rural areas), and that the psychotic conditions which prevail and the large numbers of suicides are attributable to the tension of the rushed and artificial mode of city life. The primary disadvantage of densely populated areas is the unnatural way of life. Everything is man made; and persons born and reared under these circumstances, many of whom have to struggle continually to exist, often cannot rise above a mundane and materialistic life. Our national parks give us the opportunity to escape from ourselves and from the artificial and sophisticated surroundings, so that we can react normally to the stimulation of creation.

The most important value of a national park, therefore, appears to

be the re-creational value, not in the narrow sense of physical recreation, but in the true sense of the word which includes spiritual, intellectual, and physical renewal.

If we are agreed, as I sincerely trust we are, on the real value and function of our national parks, it is then necessary for the park's administrator to try and find some formula for the ideal number of visitors that may be allowed per acre of park or reserve. How I wish I could give an answer to this question, or even tell you that research is being conducted and that there is hope that such a formula may be expected soon—a formula like those used by agriculturalists to determine the number of head of cattle that may be carried per acre in a specific area. It is true that research is being undertaken in certain parks on the effects of tourism on animal movements, reproduction rate, and behavior. The emphasis is, however, on the effects tourism has on nature, including animals and vegetation. I am not aware, however, of any research being undertaken on the possible effects that the density of visitors may have on the visitor himself. Our aim should be to determine the effect a visit has on nature and on the visitor himself. A visit should not be detrimental to nature and should at the same time be beneficial to the visitor; otherwise it is of no avail.

I can hold out little hope of a general formula ever being arrived at that can be used in different parks or reserves. I am inclined to the opinion that such a formula may never be found, as there is too great a diversity of parks, and there is too great a variation in what humans regard as enjoyable.

Let me try to explain by quoting a few examples. In a desert park like Gemsbok National Park in South Africa or Big Bend National Park in the United States, the presence of a moving object can be observed up to a mile or even farther away, while in a forest area it may not be noticed even 10 yards away. In a park inhabited by such animals as the elephant, rhino, buffalo, or lion, it is vitally necessary to have sufficient space for the visitor (who in most cases will be traveling by car) to be able to make a quick getaway should he be charged, while in an area inhabited only by antelope this factor is completely absent.

Then again there is the vast difference between a park where the wild animal is the major attraction and a park where a geological wonder is the main attraction. The same applies to scenic parks. There is a great difference between the density of visitors that may be

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allowed, looking at it purely from the visitors' point of view, of an area like the Grand Canyon, where most observers wish to have complete silence to perceive the omnipotence of God and the insignificance of man, or the visitor watching the unparalleled grandeur of the Victoria waterfalls, where complete silence is forced upon you by the thunderous sound of the water. I find it impossible to try to describe my own emotions when watching the sunset over the Painted Desert or a volcano or geyser in eruption. In the one instance, the presence of people is disturbing, while in the other their presence is comforting.

After all I have tried to convey to you, you are entitled to deduce that I have no solution to offer. This is only partly true. I certainly have no general formula that will meet all cases, or even a reasonable proportion of cases. But there are certain guiding principles that should be observed and adapted to the specific set of circumstances prevailing in the park or reserve to be administered.

These principles will be enumerated briefly:

The first principle is that of scientific research in such an area. It is vitally necessary to have a sound knowledge of what we are trying to conserve. This applies to every type of park or reserve. The optimum use of such an area can be determined only when the facts about what we have set ourselves to conserve are known. In game parks, the administration must know which animals inhabit the park and their requirements. They need food, water, shelter, and protection. A study of the animals, their habits, reproduction, food and water needs, is essential, but equally essential is a study of their habitat and their influence on the vegetation. These ecological studies are necessary if we are to have the optimum use of our parks. The same, however, applies to the nongame parks, e.g., indigenous forest parks and geological formations like caves, geysers, volcanoes, canyons, and mountains, and to coastal parks where intertidal life is conserved. In very few areas can we still refer to unspoiled nature and sound ecological units. Natural preserves have been interfered with to such an extent that balanced ecological units are very rare. We must therefore accept the fact that we have to manage our parks on a scientific basis and cannot rely on nature to keep a natural balance, as too many extraneous factors are present. The mere presence of modern man, who requires highways, automobiles, and airplanes for his transport and no longer relies on his two feet for his mobility, is proof thereof.

Scientific management of the parks and reserves is therefore a prerequisite of the optimum use of these areas.

But it is equally important that all visitor amenities be controlled by the same body. I shall list a few of the major activities and point out how essential it is that they should be managed properly.

1. It is essential that the controlling body should have the right to limit the number of visitors to a park. In my introductory remarks, I have tried to convince you that the most important purpose of a national park is to afford the visitor an opportunity to commune with nature and again become conscious of the beauty of nature and the tremendous forces that operate in nature, thus becoming mentally and spiritually recreated. To allow so many persons into a natural area that the visitor becomes more conscious of the large number of people surrounding him than of nature itself defeats the whole object of such a park. It is impossible for me to give any idea of what number of visitors should be allowed. As I have tried to point out earlier, this is largely determined by the type of park. The most practical method of determining this number is to have questionnaires filled in periodically by the visitors, the answers to which will give the administering authority a very good indication as to whether the number of persons visiting a given park is irksome to most visitors or not. If there is any doubt, let us rather err on the conservative side.

Park authorities should have jurisdiction over all visitors, and should be able to enforce regulations with the least possible formality. When a visitor enters a national park, he must be made to realize that he has to comply with all rules and regulations, not only for nature's sake, but also for his own enjoyment. This task of making him realize the necessity of complying with regulations is one for the educational, information, or interpretive service.

2. The planning and siting of camps or visitor accommodation areas must be the responsibility and prerogative of the administering body. The continued interference caused to nature by a tourist camp or any large gathering of people for whatever purpose must be kept to a minimum. Visitor accommodation areas must be so sited as to cause the least interference with wildlife or do the least damage to the natural beauty of the area. In game parks, camps should not be located in areas most frequented by game. When a park is proclaimed, the authorities often are tempted to select the best game areas for the visitor's accommodation with a view to attracting visitors. This is a

very shortsighted policy, and may lead to such an area being completely lost to the fauna of the park. Camps should be built where game need not be deprived of water in order to have an adequate supply for humans.

I firmly believe that nothing can surpass unspoiled nature as a source of inspiration. Visitor accommodations should in no way detract from nature, and certainly should not try to compete with nature as a drawing card to any national park or reserve. Visitor accommodations should be simple and not luxurious. It should be such that it does not, in what it offers, attract visitors to the area who do not primarily wish to visit the area to be re-created through their contact with nature. On the other hand, it should not be so primitive as not to meet the basic needs of man, and I especially refer to hygienic conditions.

Camps or visitor areas afford an excellent opportunity for showing visitors the beauty of the indigenous trees and shrubs. Prominent specimens of these should be marked in such a way that everyone is able to identify them. The atmosphere of the camp should be peaceful and in keeping with nature. There are many who advocate luxury hotels, dance halls, and sporting grounds, and they argue that these will in no way jeopardize the work of nature conservation outside the visitor areas. I believe that this is creating exactly the conditions from which persons who wish to visit natural areas wish to get away from; if not, they should rather go to purely recreational areas and leave the national parks to nature lovers. I fully endorse the views of Robert L. Wood, who once said: "National parks are created to preserve outstanding scenic displays for the enjoyment of this and future generations; they are not playgrounds where artificial amusement devices are to be installed." [1]

I hold the view that when visitors start demanding entertainment in visitor accommodation areas it is a sure sign that concentration is too large and that citylike conditions have been created. Such conditions call for entertainment to allow an escape from reality. This is not in keeping with the purpose of a visit to a natural area.

I am strongly in favor of the park authority being responsible for all accommodations in parks. This will obviate the erection of buildings that are too large but which allow for greater profits as a result of lower unit costs on overheads. Such structures, however, destroy the atmosphere in a park. Where for good reasons it is not feasible for the park authority to be responsible for the accommodation, it should at

least have the right of determining the number to be accommodated, the type of accommodation supplied, and the siting thereof. The amenities in such camps or villages also must be provided or controlled by the park authority. Apart from entrance fees, the only other income available in a park is derived from trading in such a park; i.e., the letting of accommodations and the sale of meals, foodstuffs, refreshments, souvenirs, films, and petrol. It is only fair that profits derived from such activities should be available to the park authority for use in conserving that which has brought the visitors to that area.

Camps and villages should be planned so as to allow naturalists and educationists to use them as "lecture rooms" to demonstrate the values of nature conservation and also to impart a basic knowledge of natural sciences, which is so essential for the love of nature.

3. Roads in a park or reserve must be under the direct control of the park authority, and the planning and routing of the roads must be done by this authority. The guiding principle must be the conservation of nature and not the principles generally governing the construction of roads such as cost, safety, etc. Even though a specific area may lend itself well to road construction, it should not be used, if traffic in that area is likely to interfere with the general welfare of the game population, or if it is likely to destroy the natural beauty of the area. In game parks, roads should be planned in such a way as to cause the least interference with game movements. In certain parks, including Kruger National Park, roads are often constructed on both sides of a river. Such a position should be avoided, if at all possible, as game find themselves hedged in by cars. Approaches to drinking places should be well planned, so as not to cut off the natural exit of animals; and stopping places should not be too near the actual drinking places, as game animals coming to drink water are extremely nervous and cautious. Moving objects and foreign noises tend to upset them and may cause them to leave that area.

It is not possible to plan roads in such a way that they do not interfere with game movements at all, but interference should be limited, and routes encircling an area especially favored by game should be avoided. It is essential to have areas where wildlife can exist completely undisturbed. Any park or reserve should have sanctuaries or wilderness areas where no visitors are allowed.

The cost of roads in a park should not necessarily be the responsi-

bility of the park authority, but should be borne by the authority collecting taxes or levies especially imposed for road construction.

In considering the optimum use of a national park or equivalent reserve, we are faced with the conflict between the objectives of conservation and the objectives of tourism; but in spite of the conflict we agree with Lothar Machura, of Austria, when he once said: "Nature conservation depends on the knowledge and love of nature in contemporary mankind, and, in finding this rather meagre, acknowledges in tourism a means of arousing it." [2] Nature must be used, if it is to be conserved, but must never be misused. As I explained earlier, there is no ready formula to indicate to what extent nature can be used without being misused. The park administrator has, besides the principles already mentioned of scientific management, control of visitors, camp roads, etc., one major tool at his disposal to minimize the evil effects tourism might have and, at the same time, to enhance and increase the re-creational value of a visit to a park or reserve—this tool is the educational information or interpretive service. When considering the optimum use of parks, it is vitally necessary for each visitor to have nature interpreted to him, since through a knowledge of nature we acquire a love for nature. It is a known fact that 100 visitors to a natural area who have no knowledge of or love for such such an area may cause more harm than 1,000 who know and love nature; it is therefore not the numbers alone that should be controlled; it is the ignorance that should be eliminated. Then the possible ill effects of tourism will be reduced greatly.

In conclusion, I wish to state that research into the effects of tourism on nature and on the visitor himself is vitally necessary and should be undertaken by naturalists and sociologists; our task of conservation is an important, difficult, but grand one. We as conservationists must tackle it with all the means and knowledge at our disposal, for the destruction of any species of animal, tree, shrub, or any natural beauty or phenomenon is final and irreparable. If we are to err in the use of our parks, let us rather err on the conservative side; man cannot create, man cannot even re-create that which he has destroyed in nature; man can only conserve.

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(1) "Keep this Wilderness" by Robert L. Wood. *National Parks Magazine,* April–June 1949.

(2) Lothar Machura made this statement when he was President of the Austrian Institute for the Protection of Nature.

PROBLEMS OF VISITATION AND PRESERVATION

by

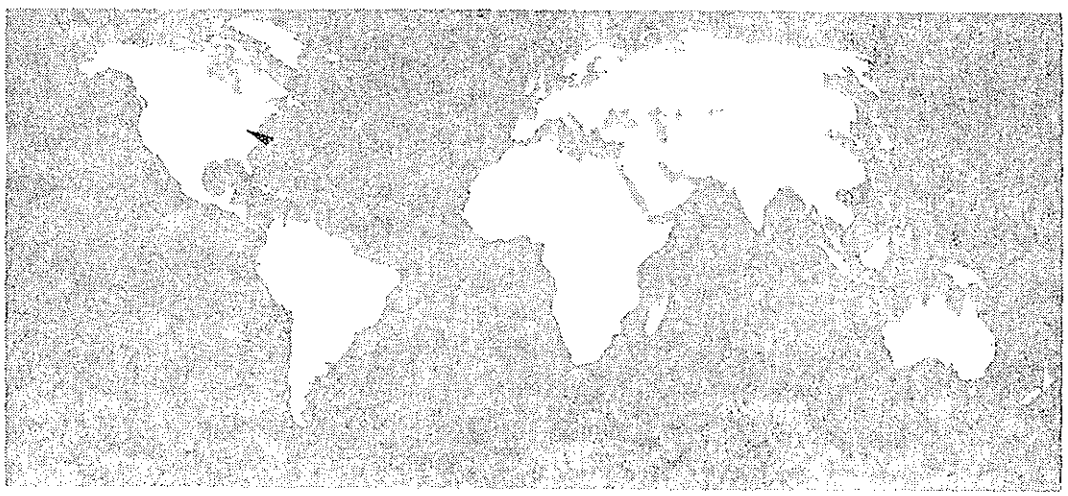
ANTHONY WAYNE SMITH

Executive Secretary and General Counsel, National Parks Association

WASHINGTON, D.C., U.S.A.

Anthony Wayne Smith started his career as a lawyer, obtaining a law degree from Yale University after completing his undergraduate work at the University of Pittsburgh. From 1937 to 1956, he served as assistant general counsel to the Congress of Industrial Organizations, which is one of the leading labor unions in the United States. During this period he also served as executive secretary of the organization's committee on conservation. In this capacity, he was instrumental in developing programs of forestry, river basin management, soil conservation, wildlife management, and park protection.

He was secretary to Gifford Pinchot, one of America's outstanding conservationists, during Pinchot's second term as Governor of the Commonwealth of Pennsylvania. Mr. Smith worked on the introduction of Federal forestry legislation and was also one of the earliest opponents of the Echo Park dam in the Dinosaur National Monument. He participated in organizing the first National Watershed Congress. In August 1958, he became executive secretary and general counsel of the National Parks Association.



THE DILEMMA which constitutes the topic of this and two other papers in the section on "Optimum Use of National Parks" is a deep-seated problem which is related to the basic purposes of the parks.

Perhaps the key policy words of the National Parks Act of the United States express this dilemma as well as any other language:

> ". . . the fundamental purpose of the . . . parks . . . is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations."

Perhaps at the time these words were written, the persons concerned with park preservation were just beginning to understand the serious nature of the dangers the parks would encounter. However, we have gone through some 45 years of rapid expansion west of the Mississippi River since then, and the expansion has been accompanied by vast destruction. The destruction and exploitation were so great that one reserve after another in the nature of national parks and national forests had to be established.

The purpose of the national forests from the beginning was to prevent destructive logging and preserve watersheds; their management has always been keyed to the sustained yield production of timber and wood products; and secondarily to regulated hunting, a measure of grazing and even mining, and outdoor recreational use, which in some cases is of a rather concentrated kind.

The policies which have become part of our legislative and administrative traditions with respect to our national parks and monuments and similar reservations have been of a basically different nature. Here the problem has been one of conserving the scenery, natural historic objects, wildlife and vegetation, and leaving them unimpaired for the enjoyment of future generations, while at the same time providing for enjoyment in the present day and age.

The last 15 or 20 years, roughly since the end of World War II, have seen a rapid and unforseen rise in the population of the United States, a vast increase in the mobility of the Nation by means of the automobile and the extension of surfaced roads, and an unprecedented expansion in leisure time and material standards of living, making it possible for vast numbers of people to visit very remote areas.

Perhaps one should add that the growth of unlivable metropolitan

centers has made it seem urgently necessary to hundreds of thousands that they escape from the cities, at least during their vacations, in an effort to rediscover a natural environment even though at great distances.

The end of this explosion of overcrowding is not in sight. In the order of the day are, if not a continuously rising level of material wealth, certainly more people, more free time (if only in the form of unemployment), and improved transportation facilities.

The question is whether and to what extent it will be possible to preserve unimpaired any substantial remnant of the original natural continent for the balance of the lives of present generations, not to speak of future generations. These relatively small areas which we call national parks and monuments are fragile and quite finite in size. The crowds which are descending upon them and promise to descend in greater and greater concentrations verge on the infinite.

Part of the tragedy is that most of the people who come to the parks do so in the hope of escaping the crowds they must live with most of the year in the cities. As they make the long trek across the continent for a brief vacation, they visualize an opportunity to get back to nature as it was before the continent was settled; instead, they find themselves far too often crowded shoulder to shoulder with other escapees from other big cities.

It seems clear that protective measures of some kind must be taken within the parks, if visitors are to find the natural beauty there which is the very reason for their visit.

The nature of the necessary protective measures is not difficult to outline; they are commonsense measures, based on the knowledge that the parks are limited in size and cannot accommodate unlimited visitation; hence, the proposition that the number of visitors must be limited and that one way to do so is to limit the key accommodations which are provided, including roads, lodges and even campgrounds.

Roughly paraphrasing official policy statements of the National Parks Association, the controls might be as follows:

(1) A definite limit must be placed on the number of lodges, cabins, campgrounds, and picnic areas. A necessary corollary is that visitors must be confined to the existing facilities.

(2) A reasonable number of lodges and cabin communities should be retained in the parks; unless this is done, all visitation tends to become daily automobile travel, with much traffic in and out. There is a subordinate dilemma here. Some think that all lodges should be

excluded from the parks; it seems preferable to permit a few, modest in size and of an architecture which blends with the setting.

(3) A reasonable time limit should be placed on the length of stay at any lodge, cabin, or campground. Some such period as 2 weeks might be reasonable. This policy will conflict with efforts to get people to settle down in one park, instead of driving frantically from park to park, if they have more than 2 weeks vacation; but it will increase the number who can visit any given park, and yet provide for a reasonable stay.

(4) In situations of heavy visitation, reservations should be required in advance for people desiring to use any facilities. Reservations are customary at most private recreational developments. Deposits probably should be used to confirm the reservation.

(5) There seems to be little disagreement that seasonal and overnight accommodations operated by private enterprise should be encouraged in communities near the parks. Lodges located on public lands outside the parks, managed by concessionaires, might be one form of private enterprise; but completely independent businesses can also be encouraged.

(6) Park entrances should be arranged in such a manner as to provide means of control over the total number of visitors admitted to and present in, any park or monument at one time; and limitations should be established. We do not allow more than a certain number of people in crowded restaurants or theaters; under present circumstances, we must explain to the public the need for applying similar methods within the park system. Sometimes through roads traverse the parks; in such cases, checkpoints should be established on side roads, and parking and turnoffs along main roads should be patrolled.

(7) The construction of through roads and circuit roads should be avoided. People who come to enjoy the specific experience which the parks have to offer will be happy to drive to a dead end and a turn-around; it is the speeders, dashing in and out, who like the through roads. This means that the agencies of government, who build commercial highways and fast intercity connections, must be required to bypass the parks.

(8) Resorts with recreational facilities such as dude ranches, horse rentals, and the like, operating under permit or concession, must be limited to the capacity of the parks; for example, the number of horses

operating for riding in a park must be kept down in the interest of the comfort of pedestrians and in the interest of park visitation.

(9) Entertainment facilities must be excluded from the parks, that is, all facilities that are not necessary for the enjoyment of the natural beauty of the parks; tennis courts, swimming pools, golf courses, and the like, are incompatible with the parks and can be enjoyed elsewhere.

(10) Luxury and ostentatious construction must be avoided. If people are required to "rough" it, the number of people who visit the parks will automatically be limited to some extent.

(11) Where overuse of portions of the parks results in serious disturbance to ecological balances or other impairment of natural values, specific measures must be taken to reduce or eliminate visitation in such areas, whether by foot, horse, or otherwise, until recovery has occurred; and the areas then should be opened on a limited basis only.

(12) Systems of public transportation by the use of quiet, well-designed small motor coaches can be established in some places to reduce private automobile travel; the result would be to reduce traffic congestion and the need for destructive road systems.

(13) Referral systems should be established at park entrances to assist visitors turned away from the parks by reason of the limitation on numbers. Lists of privately owned accommodations at nearby communities can be provided. In the United States, people can be referred to campgrounds in national forests, outside national parks.

(14) Invasion of park waters by motorboats is becoming a very serious problem in the United States. The National Park Service and the Interior Department have executed several woeful retreats on this score during the last year. Yellowstone Lake was zoned early in 1961 to protect portions from motorboats; the zoning was dropped later that year under pressure from commercial interests; no decision has been reached, following hearings on the question of reestablishing the zoning. Meanwhile, the National Park Service has delegated to its superintendents the responsibility of issuing permits for the launching of motorboats into lakes not accessible by road. Unless violent uproar is to replace the quietudes of our park lakes, these trends must be reversed in the United States. Our experience should be a warning to others.

(15) Among the invaders of our national forests, and potentially our national parks, are motor-scooters and jeeps, which are permitted now to travel at will off established roads in national forests. This is

a case where very strict control must be exercised, if the forest experience itself is not to be destroyed; motorized vehicles should be limited to the roads; if people are not interested enough in wilderness to walk or ride horseback from the end of the road, they will not suffer greatly in being deprived of that experience.

(16) Limitation should not be achieved by the imposition of high entrance fees or high prices for food and lodging at accommodations. Such policies will result in discrimination on the basis of ability to pay. Reasonable entrance fees, in the nature of a small tax for operations, well within the reach of nearly everyone, are not objectionable. It seems probable that the cost of accommodations in the United States in general has been much too high, and that an effort should be made to reduce prices all along the line; control of visitation should be achieved on an egalitarian basis.

(17) The long-range plans for park management should reflect these policies of limited access. The construction of roads, trails, and other facilities in the parks should be keyed to limited visitation.

These comments with respect to the limitation of visitation and use are made on the assumption that certain more fundamental policies of management are now in effect, and that they are now understood: that wilderness protection throughout most of the parks is basic; that commercial uses of all kinds, except concessions required by visitors, are excluded; that wildlife is undisturbed, except as may be necessary to keep it within the carrying capacity of the area, and therefore that recreational hunting is completely excluded; that wildlife populations are managed by park personnel, and not by outside hunters; that all parks are guarded carefully against vandalism. These basic principles are assumed in this discussion, and the problem of park use is considered against the background of this assumption.

Most of the measures which I have suggested have in fact been used at one time or another, and in one park or monument or another, by the National Park Service. Its efforts at limitation, however, have been rather tentative, reflecting the normal pressures of a democratic society. It may be stated with considerable confidence that the National Park Service will find itself obliged to tighten its measures against overcrowding, and gradually invoke more and more of the suggested actions. At least, if it does not do so, it will find itself unable to protect the natural beauty of the parks, which was the purpose of

their establishment and which is the real objective most visitors have in mind.

These recommendations are set against the background of our experience in the United States. Where parks have been largely game preserves and heavy visitation has not been assumed, the starting point for management will be quite different; however, if the large game-preserve-type park is to survive, it seems likely that it will have to provide for considerable public support and that it can obtain such support only by permitting visitation. And so, in the end, the two dissimilar situations are really alike.

A quite different type of management problem is obviously present in parks like those of Great Britain, where nature preservation and recreational visitation have been superimposed on an agricultural and community settlement. Here one begins with heavier and more generalized visitation than we have in the wilderness areas of our great national parks and monuments in the United States, yet there can be no great difference in the methods necessary for control, nor any doubt as to the need for some kind of control.

In the end, the need is for a well-informed and mature public opinion, which is determined to preserve some part of each country in as pristine a condition as possible. Fortunately, as more and more people experience the deadliness of an urban life that is completely deprived of contact with nature, a strong sentiment seems to develop for the protection of wilderness. We may be witnessing the emergence of a rather powerful feeling of this kind in the United States, and we may hope that similar trends will develop on a worldwide basis.

Section Three

RAPPORTEUR

Richard M. Leonard

Nearly all of the participants at the First World Conference on National Parks recognized that a serious dilemma was implied in the title "Optimum Use of National Parks and Equivalent Reserves." The possible conflict between "preservation" and "use" was referred to by the very first speaker at the conference, Conrad L. Wirth, Director of the National Park Service of the United States. He pointed out that the dilemma is phrased very well in the basic National Park Act of the United States adopted in 1916. There it is stated ". . . the fundamental purpose of the . . . parks . . . is to conserve the scenery and the natural and historic objects and the wildlife therein, and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations."

How to provide for such "enjoyment" and still conserve the values "unimpaired" for future generations constitutes the great challange to park planners and administrators.

An excellent discussion of this dilemma was furnished by one of the panel speakers, Rocco Knobel. He discussed both sides of the question in powerful terms. He stated that national parks and equivalent reserves must be used to ensure their future. There is, however, a definite danger in the usage of national parks because of the conflict between the aims and principles of conservation and the aims and principles of tourism. On account of this conflict, it is necessary to determine the major values of national parks and only then can their optimum use be established. To insure optimum use without misuse, park administrators must manage the national parks and equivalent reserves on a scientific basis. Research is required into the needs of what is being preserved and the needs of the visitor himself. This will vary from park to park and no general formula can be prescribed.

The next panel speaker, Anthony Wayne Smith, gave a list of "commonsense measures, based on the knowledge that the parks are limited in size and cannot accommodate unlimited visitation." Some of his recommendations may be summarized briefly as follows:

A quota must be placed on the number of lodges, cabins, campgrounds, and picnic areas, with visitors limited to existing facilities.

A reasonable time limit should be placed on the length of stay.

Accommodations outside the parks should be encouraged.

Resorts outside the park, but operating within the park, must be limited in those operations to the capacities of the park.

Entertainment facilities must be excluded from the parks.

Where damage to the ecological environment is serious, measures must be taken to reduce or eliminate visitation in such areas.

Public transportation should be considered, to reduce automobile traffic within the park area.

Use of park waters by motorboats must be fully regulated.

Motorized vehicles must be restricted to established roads, and not be permitted to travel on trails or through wild country.

M. F. Day, of Australia, illustrated many of the above problems by actual experience in Australian parks. He pointed out effectively the need in such parks to preserve natural changes in the area. He agreed with Jacques Verschuren, former biologist of the National Parks of the Congo and Ruanda-Urundi, that it is clear that ecological areas are constantly evolving, and it is this dynamism that gives them their value as well as spontaneity. The changes of natural evolution are fascinating and important to observe, and should not be interfered with, even though management may be necessary in certain national parks. Col. Mervyn Cowie of the Royal National Parks of Kenya suggested the need for an international charter for national parks to state such fundamental principles of preservation of natural values.

Throughout the conference the dilemma of "optimum" use of the national parks troubled speaker after speaker. Knobel stated:

> "Man as the supreme creation has had all other forms of life made subservient to him. No authority can hope to protect against man anything that is of no benefit to man. At this stage of population pressure it becomes necessary to conserve *for* man. Conservation *for* man is a far more difficult and scientific task than protection *against* man, but when properly undertaken it can and will succeed, while protection against man has no hope of success. Man will, however, conserve for himself and in conserving for himself also protect against certain acts of man."

Some speakers reluctantly reached the conclusion that, in the long run, protection against the acts of man was politically impossible.

GENERAL SESSION

Section Four

Administration of National Parks and Equivalent Reserves

Under the chairmanship of Newton B. Drury of the United States, this section was divided into three groups.

Section Four—A

The first of the groups dealt with practical experience gained from establishing policies and planning practices in national parks and reserves. One speaker described the problem in Venezuela, "where a bare 7 million people live in a territory of almost a million square kilometers" and where "emphasis is increasingly put on the immediate tangible values of nature." Another discussed the problem from the point of view of Europe, where the population density is so much greater. The third drew on his experiences at Yellowstone, one of the best known parks in the United States.

The discussion leader was Jack Vincent of South Africa. The rapporteur was D. B. Turner of Canada.

PLANNING FOR USE

by

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Arturo Eichler left Germany 30 years ago for a visit to South America and has devoted much of his life ever since to South American conservation. He is a citizen of Ecuador and professor of natural resources conservation at the University of the Andes in Mérida, Venezuela. His special interest is the study of the intricate natural resources problems in the tropics.

He was an early pioneer in the development of the Galapagos National Park idea and has worked for many years with the Venezuelan government on regional planning. He is responsible for Venezuela's vast project of some 60 national parks, wildlife refuges, and similar reserves. He has participated in several expeditions to the High Andes and on the Orinoco and Amazon Rivers. He has also written several books on geography, conservation education, and other subjects.



WE VENEZUELANS consider the establishment of national parks and other reserves as part of the overall problem of renewable natural resources. In some tropical regions, this problem has dramatic overtones.

The creation of these reserves in harmony with sound standards of land use sounds simple and logical and seems the more feasible because, in our part of the world, for example, there is still no demographic pressure on a national scale.

But the use of land and resources for conservation purposes is, as we all know, subject to factors that carry great weight among underdeveloped countries. Together with the fact that planning for the resources of water, soil, forests, wildlife, and aesthetic natural resources is just beginning, there is, in general, insufficient and inadequate technical and administrative training for those who are to carry such plans forward to useful goals.

Furthermore, all these resources are privately owned. In Venezuela, although there are no real estate data, it is not hard to prove that most of the land is in the hands of a few individuals; an exception may perhaps be made of distant forested regions that are difficult to penetrate, such as those lying south of the Orinoco River.

According to an FAO survey made in 1959, of the 30 million hectares of forest and farmlands included in the census, as little as 1 million were distributed among 80 percent of individual owners. From this can be seen another fact of significance for primary resources, which is stated in a recent publication, *Reforma Agraria y Conservación* (Agrarian Reform and Conservation), by the Comisión Nacional de Recursos Naturales Renovables (National Commission on Renewable Natural Resources), of Venezuela:

"It is unanimously accepted that the latifundium, as an agrarian feature of the country, is one cause of the evil. Latifundiumism works simply: by preventing the countryman from taking root on his own land, it turns him into a bad farmer . . . The forced nomadic life of the farmworker entails the destruction of enormous areas of woodlands annually. Egged on by his systematic uprootings, the countryman . . . has migrated to the slopes and peaks of the mountain ranges there to set up his dwelling and his plot of land."

This system has brought about the gradual destruction of the hydrographic basins. It is a well-known fact that mountain terrain, espe-

cially in the tropics, is the site *par excellence,* almost of necessity, on which to establish national parks and other reserves.

Many fully informed experts have in the past diagnosed the situation conclusively. For several decades, they pointed out the need for conservation plans, in order to reestablish normal conditions between peoples and natural resources.

However much it might be needed, we cannot pretend to give a detailed report on the multiple problems that curb the development in our country of national parks and reserves, the direct and indirect benefits of which are so vital to countries. Let us cite just two opinions uttered in quite different periods, the first by the Frenchman Berthellot in 1841: "Here prodigal nature has scattered from full hands all the beauties of creation. Each valley has its watercourse, and the primeval forests that cover the neighboring slopes have never heard the axe of the woodcutter resound through their ancient shady depths."

In 1946, W. Vogt said, in his report *The Population of Venezuela and its Natural Resources:* "In few parts of the hemisphere have the land and the resources derived from it—soils, water, forests, grasslands, fauna and other flora—been so drastically mishandled . . . There are few countries in the world, and probably none in the hemisphere, with more exaggerated concentrated erosion."

The luxuriant and sparsely populated tropical regions are reputed to be still especially able to produce high-level national parks, wildlife refuges, and other reserves and to have their natural resources available in the finest form. The real prospect, which is of interest not only to those of us who live in these regions but to the whole world, can be appraised only in the light of existing conditions. If we are truthful, we can only admire and even envy the results that have been attained with respect to parks in many countries not so richly endowed as ours.

It is believed that national park standards are related to the objectives sought, the possibilities that nature offers in the region, and, naturally, the official policy adopted.

Logically, it would be incumbent upon the national parks of still "virgin" regions to maintain a very high standard and to create a reputation capable of attracting visitors from other regions to admire and study values and unusual forms of life. South America would be a part of the world *par excellence* in which to exhibit, in their natural

state and unadorned splendor, areas free from exploitation, set apart for conservation, protection, research, public use, and world tourism.

If such precious bits of what has happened in our earthly home are not preserved in the regions where they still exist, what other hope is there for safeguarding an inheritance and a bequest whose value increases from generation to generation? This is true of some of our forests and their fascinating tropical flora and also of the species of flora and fauna in the Galapagos Islands, the marvelous and noble African fauna whose future is so uncertain and so many other superlative treasures threatened by the imminent assult of economy-minded man.

In South America, government foresight in the past gave the continent and the world such outstanding parks as Iguassu (205,000 hectares) in Brazil, Nahuel Huapi (785,000 hectares) and Los Glaciares (670,000 hectares) in Argentina, those of the Galapagos Archipelago where we hope protection will be effective. Venezuela too began well with its "Henry Pittier (Rancho Grando)" and "Sierra Nevada" parks, created by decree 25 years and 10 years ago, respectively, but the standards have not been maintained; and recently a national park, having no standing or national significance, was decreed, as well as some others a hundred times smaller than the earlier ones.

The selection of new areas for national parks, chosen because of their type and their intrinsic values to man—scientific, inspirational, and educational—and their accessibility to the general public, seems nowadays a difficult thing for us to achieve. Individuals with a sense of responsibility or a feeling for the genuine values of nature are not happy at this turn of events.

In recent years, groups of technical experts were concerned over having a natural resources policy formulated in Venezuela. Brilliant statements came out of this concern, but the ideas still vary widely. These "friendly battles" between groups of professionals are perhaps why there is a certain reserve in high quarters, when it comes to adopting a definite conservation policy.

There are those with influence who have gone so far as to declare that protecting nature, for its inherent human values—that is, the noncommercial—is out of style; they deliberately set a misplaced fictitious romanticism against a practical constructive utilitarianism.

Even in a country like Venezuela, where a bare 7 million people live in a territory of almost a million square kilometers and which enjoys

well-known prosperity because of its mineral wealth, conservation planning suffers from pressures of various kinds. Emphasis is increasingly put on the immediate tangible values of nature. The land distribution now under way (agrarian reform) makes the mistake of going on the assumption that there is still enough land left to establish adequate areas for division among the growing population. The policy of "conservation is utilization" (i.e., exploitation) is the one that prevails.

In 1959, the National Parks and Reserves Advisory Commission of the Ministry of Agriculture and Animal Husbandry drew up the basis for the establishment, use and management of national parks and equivalent reserves in Venezuela. With respect to policy, the document contemplates the following, among other points:

"The National Parks System should be developed in coordination with a general policy on the protection of the basic natural resources, in harmony with the principles of the multiple utilization and adequate use of the parks.

"The concomitant of the economic necessity of establishing reserve zones for the conservation of vital renewable resources is the country's need and obligation to set apart expansion zones and zones for popular low-cost recreation by creating national parks and equivalent zones to ensure the best standard of living and the social and cultural well-being of all the people, now and in the future.

"In order to develop a National Parks System that will effectively fulfill this mission, a specific directing agency should be created, with the necessary technical and administrative services for the organization, management and appropriate use of the areas.

"Together with measures for conservation and recreational use, observation and scientific research should be encouraged in such a way that it will give practical results applicable to programs of interpretation of and information about the system, to benefit society and enhance the prestige of the country." (Other points of administration and legislation follow.)

Later, another advisory commission of the same ministry (the National Commission on Renewable Natural Resources) issued a study on national policy on renewable resources; in its statement of reasons, it says:

"The conditions that prevail in the country . . . are quite the same as those in other insufficiently developed countries. What have had

the most decisive influence in Venezuela are: the cultural backwardness of the people, an inadequate agrarian structure, incomplete legislation, insufficient technical personnel, and lack of a definite policy . . . the adoption of which has been delayed because of a long-standing apathy, among other things, and governmental failure to take an interest in those official programs that do not have a direct and immediate bearing on the country's economic development and progress, programs which it does not find attractive because of their low political potentialities . . . The inertia and ignorance of the people and the lack of initiative on the part of the professionals in the field can also be counted among the causes of this state of affairs."

With respect to the people's attitude, it should be noted that, according to the 1960 census, more than 70 percent of the population lives in cities, in an atmosphere divorced from nature. The remaining 30 percent lives scattered in environments generally hard and hostile, because of the precariousness of their livelihoods, lack of water, and poor soils. Both sectors could do little or nothing to change the situation; and the people wait for official initiative in planning, providing adequate financing, and performing promptly the important conservation tasks that are pending.

Moreover, there is the belief among the rural population and organized labor that "nature protection is for the rich." Perhaps this suspicion, current in a human environment of bitter social contrasts, has its origin in the recent past, when some influential individuals found the creation of national parks advantageous for their private recreation. But the objective truth is that meeting the needs of thousands of rural dwellers, who used these same parks for farming, hunting, and woodcutting, was far more harmful than those camouflaged and "secret" abuses.

The best, if not the only, hope at present for the development of national parks and reserves lies in coordination with other soil and water conservation programs. Such a procedure is urgently needed, although so far it is only in the gestation stage.

On the basis of such an overall planning policy, the National Town and Country Planning Commission put forward in recent years a plan of national parks, natural monuments, wildlife refuges and bird sanctuaries, and national forests, which would raise the total protection and recreation areas to 5 percent, and national forest (multiple use)

areas to 7 percent of the country's surface (the grand total at present in existence is about 1.5 percent).

This planning was an attempt to combine conservation of renewable resources, having direct economic usefulness, with the creation of an adequate and complete national park system, following the distinguished example set by the United States.

The three main aspects that were considered to be fundamental were: (1) water, soil, and wildlife conservation by the strategic location of protecting zones in the important hydrographic basins by anticipating probable dam and pond construction for irrigation purposes and human use; (2) future provision of forest products; and (3) the need for broad recreational areas, which are reasonably accessible to crowded urban communities and to growing industrial ones. In its preliminary form, the plan laid the basis for rational land use, calling for changes to provide for the conservation of a great deal of the land in the region.

At the end of a few years, the plan was postponed; the probability that it will be implemented does not seem brighter now. A new concept that has arisen considers "agrarian reform" or land distribution to be the vehicle for solving all resources matters; and therein some technical experts see new and great dangers.

And, of course, there are always those who call national parks "idle lands." In practice their philosophy has found expression in the belief that "country folk must be taught to live in the national parks." According to official data, the fabulous rate of population growth will double the number of inhabitants of Venezuela in less than 20 years. The existing communities within national parks will increase at that rate or even faster, if migration to their desirable areas continues. This will create insoluble problems for future collective interests in both human and economic aspects.

In sum, we could not say that the responsible echelons were not aware of the problems raised; not at all. Foresighted planning, in regions where there is a state of underdevelopment together with the often haphazard material progress that is a concomitant of the modern technological age, presents administrators and technical experts with very complex problems. Many countries are at the crossroads.

Implicit in the euphoria of the supposed inexhaustibility of the good things of nature that is so strong in many young countries, is the danger of belated reflection. The regional conferences in Washington, D.C. (1940), and Denver, Colo. (1948), did, in their time, contribute a great

deal to clarify our ideas and to spur responsible technical experts to propose new measures. Nevertheless, the time that has elapsed between then and now is too long, if we look at the feverish development our countries are going through and see how quickly many good proposals are forgotten. At a time when some of our fellow men circle the globe in a matter of minutes, there is need for more frequent international contacts that will find expression in concrete programs and in aid to whoever needs it. As for the first, the proposed boundary parks in Europe give us a magnificent example. With respect to the second, the countries that are now going through what is perhaps the most difficult development phase in their whole history need technical assistance the way they need bread.

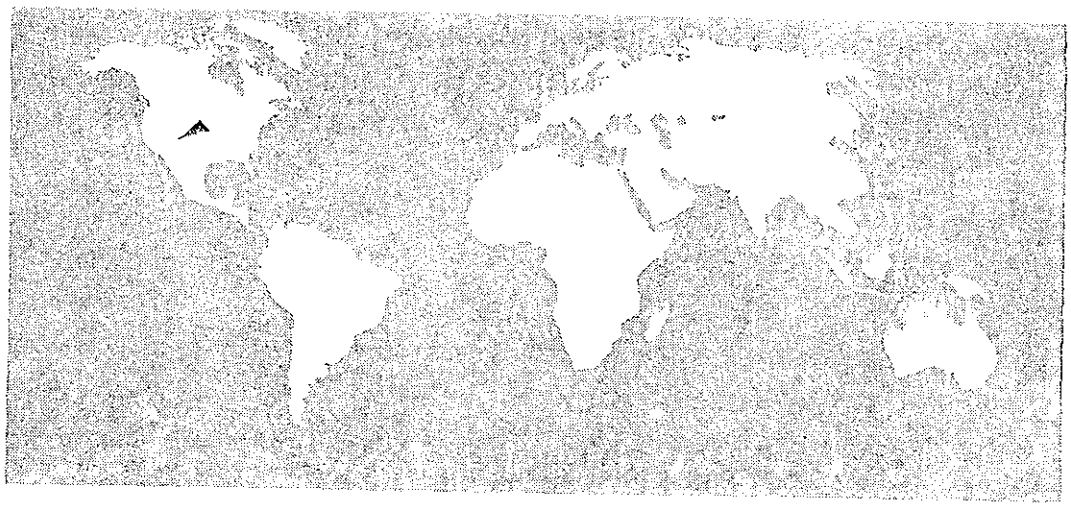
PRACTICAL EXPERIENCE IN STANDARDS, POLICIES AND PLANNING

by

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Lemuel A. Garrison has had more than 30 years of experience with the National Park Service of the United States of America. After graduating from Stanford University, where he earned his degree in psychology, he became a park ranger, information specialist, and an assistant superintendent. He is now superintendent of Yellowstone National Park, a post that he has held since 1956.

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STANDARDS FOR judging the quality of proposed national park areas for inclusion in the system are well established and generally understood. The simplest definition is that national parks must contain features of truly national significance. This one measurement of excellence of natural beauty, scenery, or scientific interest identifies national parks. It is the stamp of superlative attraction.

This standard is not easily attained. Well-meaning friends may be carried away by emotions of local pride and sentiment and seriously propose parks of substandard character. Or, conversely, we may find adverse local reaction to either existing or proposed parks, usually because of desires to exploit for immediate gain the significant resources and value that, under national park preservation, will be held for the good of the entire public for all time. In either case, application of the standard of national significance will point to the correct decision.

Over the 90 years since Yellowstone became the first national park, our policy for park management has gradually evolved, until today we attempt to keep the national parks primarily as wilderness with modifications to provide for human use. This derives from the basic legislation creating the National Park Service, and while it appears contradictory, this contradiction contains two most important criteria by which a manager may judge programs. First, provision for perpetual preservation of the significant features and rare qualities of the park for the benefit and enjoyment of future generations. Second, provision for developments for use by people today.

Modern living patterns in the United States make such a dual set of objectives difficult to administer. Parks have been almost loved to death by hordes of visitors. This situation is not impossible, however, for the problem carries with it the clue to the solution. Since park visitors are citizens, it should be possible to convert their desire for park experience into public and, eventually, to political support. This has been done in one instance through the Mission 66 program for development, park protection, and enhanced public enjoyment of national parks, of which more will be said later.

The matter of standards applies not only to creating parks, but also in major degree to park management and operation. As a practical tool of management, we have, for example, established standards throughout the national park system for personnel. Park rangers, park naturalists, engineers, archeologists, accountants—each must

meet established and accepted national standards. This permits ready transfer of men between parks.

Other standards include safety codes to guide planning for fire control systems, electrical work, and practically all phases of construction and maintenance work. Standard plans apply to various types of signs and markers within national parks. These reduce the need for constant design work and help visitors, as certain shapes or insignia develop particular meaning through repetition.

Other examples include dress- or work-uniform standards to identify park rangers to visitors; road standards to create dependability of construction throughout the system; recordkeeping on a uniform basis throughout all parks so that accounting, even to the counting of visitors, is done the same everywhere.

All of these standards and many others are published as guidelines for administrators.

To supplement these statements of operating standards, sound administration requires clear-cut policy statements on almost every phase of operations, since there is usually a geographic separation between park field administrators and headquarters offices. Accordingly, delegation of authority to field men is extensive. This, in turn, depends on common understanding of approved policy on many subjects. Examples of existing policy statements include: fisheries, wildlife, wilderness, boating, predatory animals, saddle horses, trail use, and concessions. This list may actually extend from aircraft through the alphabet to zoning. Field administrators must be able to speak with authority on any of these subjects in community relationships and have assurance of central office backing; they must also judge properly their own and their subordinates' actions. Hence, policy handbooks are essential guides.

Since visitor use is the major reason for national parks, policy questions inevitably arise as to acceptable kinds of use. Because national parks are tax-supported, our policy recognizes an obligation to pattern public use to fit the demonstrated interests of all park visitors without impairment of major park features. Consequently, the list of visitor activities represents a compromise between extreme and complete preservation and a concentrated playground type of activity.

By far the most popular interests of park visitors are the simple pleasures of sightseeing, photography of scenic views, bird watching, short walks on pleasant paths, or just resting in the quiet of the wood-

land environment. All of these are more or less indigenous to the park itself.

Conspicuously absent in the national parks of the United States are great areas for amusement types of recreation which can be pursued elsewhere. In the parks, emphasis is on the quiet enjoyment of the natural resources of woods, water, meadows, mountains, clean air, wildlife, and flowers. More and more visitors ask for one additional service—they seek to know and understand the processes of nature, which created each wonder of scenery or shaped the environment. For them, we offer interpretive services and nature libraries.

In large natural parks, the opportunity for full visitor enjoyment may require places to stay overnight. The variety of services then offered runs the whole scale of visitor affluence from the free campgrounds to deluxe rooms in some of the major hotels.

Campgrounds are increasingly popular in the United States in all outdoor recreational areas. In national parks, the postwar leap in the popularity of these campgrounds, including use of house trailers, has been in the nature of an explosion. However, we can set no one standard for such campgrounds. They vary from primitive sites with drinking water from a lake or stream, pit toilets for sanitation, and a ring of rocks for a fireplace, to campgrounds with paved roads, convenient water faucets, comfort stations, and prepared fireplaces and tables. These services are free in Yellowstone, and overnight camper populations sometimes number 8,000 persons in this one park alone.

Other overnight accommodations and related services are offered by private concessioners under government contract. Sincere effort is made to have available services to suit every visitor's purse, ranging from simple shelter cabins to a few deluxe hotel rooms. To provide a measure of size of these operations, Yellowstone Park hotels, lodges, and cabins can accommodate as many as 9,000 people a night at costs ranging from $2.75 to $14 a couple.

Then there is need for stores for supplies, food, and equipment. Photographic film, post cards, curios, gasoline—all are essential for park visitors, as are bus tours, boats for rent, and saddle horses for trail trips. This complex package of services is provided by private capital under government contract to assure strict government control of quality, rates, and seasons. The nature and scope of services offered by approved concessioners are limited by the contract of essential services required for public enjoyment of the park.

In national parks, we find planning constitutes one of the most effective management tools available. This is generally implemented on the basis of land-use plans, called master plans. For each park, a broad management plan for the preservation and public use of resources is prepared, combining graphic representations such as maps, charts, and drawings, together with narrative documentation. This shows the relationships of various factors to each other and insures that in scheduling development, sacred or highly scenic areas are protected, and gaps or overlapping from piecemeal planning are avoided. This plan is flexible and periodically revised to reflect changed conditions or thinking on all aspects of park resource use.

The master plan is introduced with large-scale maps showing broad interrelationships. These are supplemented with detailed development area maps, which in turn are augmented with specific-use maps showing, for example, a campground within a development area of the park. Finally, the complete master plan contains working drawings of various detailed elements of development such as roads or water systems. This procedure ensures thoughtful planning and permits selection of development sites for public use near, but not within, major scenic resources.

Through master planning, the paradox between public use and preservation is resolved. Proper development provides for both visitor enjoyment and park protection. This approach to planning facilitates the first and ensures the latter. Yosemite National Park offers an excellent example of this principle in the development of an adequate and improved road system in Yosemite Valley. Fifty years ago, the roads in Yosemite Valley were unpaved and extremely dusty. Wagons, carriages, and stagecoaches drove at will anywhere on the flat valley floor. To avoid dust, coach drivers would drive beside the existing road instead of upon it. The result was that the trees and shrubs were destroyed to make room for driving, and the remaining foliage was covered with dust. The impact on the vegetation was heavy and destructive, even though the number of park visitors was not large.

Today, the situation is entirely different. In spite of an enormous increase in number of visitors, the improvement of roads has resulted in an improvement in vegetative conditions. Paved roads eliminate dust, and proper control through roadside barriers and gutters eliminates uncontrolled and indiscriminate driving through the forest.

Visitors today travel the road in comfort, the forest cover is undamaged outside the road itself, and the development has at once met a visitor need, and improved protection of the resources of forest, shrubs, and open meadows.

Trails in other national parks illustrate the same situation. In Mount Rainier National Park, trails in the Paradise area were heavily used, and dust was deep in summer, so that hikers walked beside the trails, thereby temporarily escaping dust but widening the trail greatly. In this situation, an actual light paving or other surface treatment of the trail to improve walking conditions serves to enhance visitor enjoyment, while improving park protection.

Boardwalks through the geyser basins in Yellowstone serve the same purpose. These simple walkways prevent indiscriminate wandering through dangerous thermal areas and lead visitors to desired scenic and safe viewpoints.

All of these examples illustrate the importance of controlled pattern developments, designed to best serve the visitor and protect park features. The principle is equally sound for roads, trails, campgrounds, or buildings. Rather than unnecessarily restricting public use of certain features, thoughtful development provides constructive opportunity for use while conserving the resource.

This illustration is indicative of another facet of United States park administration. Managers or park superintendents are ever conscious of the narrow line between overzealous preservations, which denies reasonable public enjoyment, and overdevelopment. Fortunately, the majority of park visitors are deeply conscious of the need for the conservative approach to park development. They react reasonably to our programs, as reflected in their willingness to support the National Park Service. Their efforts are often casual, but they indicate solid acceptance.

The importance and vitality of this philosophy in the national scene are well demonstrated in the development 6 years ago of the Mission 66 program for all national parks of the United States. Mission 66 derived from a postwar pattern of increasing public use at an unprecedented rate, with consequent damage to the parks because of inadequate facilities and personnel. Public outcry because of unsatisfactory park experience and park deterioration was loud and vigorous. Piecemeal public support and political concern were drawn together through a comprehensive 10-year program launched in 1956, to im-

prove this situation and to end in 1966. Coincidentally, 1966 marks the 50th or Golden Anniversary of the National Park Service.

Wide popular support developed for this effort to combine a program for better park protection with a better opportunity for park use. Congressional backing, with little regard to political parties, and administration support, through a major change in political leadership, demonstrated the broad range of interest in the parks and their preservation in the nation. Funds for parks have almost tripled since initiation of this Mission 66 program.

Master plan procedures were accelerated so that, although park use has increased as anticipated, the development to care for these visitors is catching up with the backlog of deferred work and is coming abreast of today's requirement.

In this discussion of planning practices, mention must be made of the importance of zoning. In the master plan, the best useful purpose for each portion of land is established. Some lands or waters are suitable and absolutely needed for intensive public use; others may accommodate only moderate use without damage and must be used cautiously, if at all. Another example from the management record of Yellowstone in recent years will illustrate the point. Yellowstone Lake is an area of 139 square miles of water, lying at an elevation of about 8,000 feet. In years past, use of boats was necessarily limited because of isolation; and the number of small boats produced and in use nationally was small. In a few postwar years, the pattern changed abruptly to about 5,000 boats a year on this lake, and a revision of management patterns was essential.

One urgent problem suddenly recognized was the accelerating thoughtless impairment of nesting grounds for rare species of water birds by some boaters. Terrestial wildlife also was disturbed; and the air was filled with the racket of motorboats invading professed wilderness areas. As the number of boats increased annually, it was evident the problem would increase.

Consequently, in the summer of 1959, lake zoning proposals were made public. These would eliminate motorboating from certain portions of the lake. Controversy developed immediately, leading to public hearings involving congressional and other political interests and to strong initial differences of opinion between dedicated conservationists and boaters. Public understanding and endorsement of the true nature of the proposal and the problem which led to the need

for restrictions came gradually; and in the summer of 1961, a modified form of lake zoning was included in Yellowstone National Park regulations for the first time.

The principle involved here of zoning for either acknowledged and proper public use, or restriction of use, is valid and a sound management tool. It will be used more extensively in the parks of the United States, as public use creates more problem situations. This procedure is reflected in the Outdoor Recreation Resources Review Committee report on *Outdoor Recreation for America* in proposing a zoning approach to types of recreational land management.

Several other facets of practical management experience occur, particularly in guiding planning procedures. One is recognition of the value of research as an effective tool. This research may be in history or natural history, and either of a theoretical nature, which seeks facts without attempting to relate them to daily problems, or it may be management-oriented to provide answers for such problems. In either event, it is a desirable, proper, and constructive use of the resources of a national park and of real value to management. It should be encouraged.

Typically, natural history research may be concerned with the problem of wildlife in the national parks of the United States. Belatedly, many park managers have recognized that early day practices of destruction of predators, coupled with civilization's encroachments across natural migration routes along park boundaries, have produced overpopulations of some grazing animals. These abundant populations, such as wapiti or deer, may be destructive of the most basic resource of all—the soil and its vegetative cover, as well as related species of animals, which must coexist with them on the same range. For too long, control procedures to combat such problems have been hesitant and fumbling because of lack of firm knowledge of the basic facts involved.

Information is required to answer such questions as this: What is the natural balance between beaver, bighorn, moose, wapiti, deer and pronghorn, when man has already altered the natural environment and wapiti (as the dominant animal) are eliminating other species through starvation? In the national parks, all wildlife species should exist in presumably natural balance. How can such a balance be established and maintained? What soil and range factors are involved? Is competition from insects or rodents a significant factor

in forage? These and many similar questions need answers from research to aid in proper management of wildlife.

Continuing with aspects of practical management, one that has been most helpful in the United States has been the early recognition of the importance of consistent law enforcement and park protection against unlawful acts of park visitors, coupled with helping these visitors understand natural interrelationships. A uniformed body of men was created 50 years ago to carry this out. The national park ranger and park naturalist force is a group of high-level men with intense pride in their uniform and their work, respect for the national parks and their custody, and a deserved reputation for loyalty, dedication, resourcefulness, and helpfulness to park visitors. Their reputation for integrity and competence is national in scope. Every land with a national park system needs a similar group of men, with whatever title may be appropriate in the particular situation.

Another group of professional park employees contributing substantially to successful park administration are the landscape architects, whose responsibility is to aid in planning and to guide development and maintenance. Sincere efforts are made to retain the true and characteristic flavor and qualities of a national park in the types of development that are made. Ideally, these men achieve these results by softening the strictly utilitarian designs of the engineer and blending the architectural motif of a building with the landscape in which it is framed.

Every national park system requires sound basic legislation, recognizing the national interests appropriate to each country concerned. From such legislation derives policy tailored to the needs of the nation and the people to be served. From these policies flow management procedures, guidelines, and plans. These are the practical basics an administrator must have to manage a national park.

Finally, the question remains of the true purpose of national parks. What are they for? How would a ranger or a park superintendent answer this question? How can the purpose be expressed through planning for park development and public accommodation?

There is no simple answer. A strong feeling guides most park leaders that parks are for people to use and enjoy. Yet enjoyment is too mild and limited a word. Parks are for the understanding of nature and ourselves; they are for the inspiration which comes from lonely commune with nature and the forces which shape our environ-

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ment; they are for solace for those troubled by the turbulence of modern civilization. In this Nation, and I am certain in all nations, the national parks also promote better citizenship, as they contribute to healthier and more stable people.

Our parks invoke patriotism and develop pride in our homeland and all that it has to offer. Parks bestow humility through confrontation with natural forces and instill strength through the understanding of them.

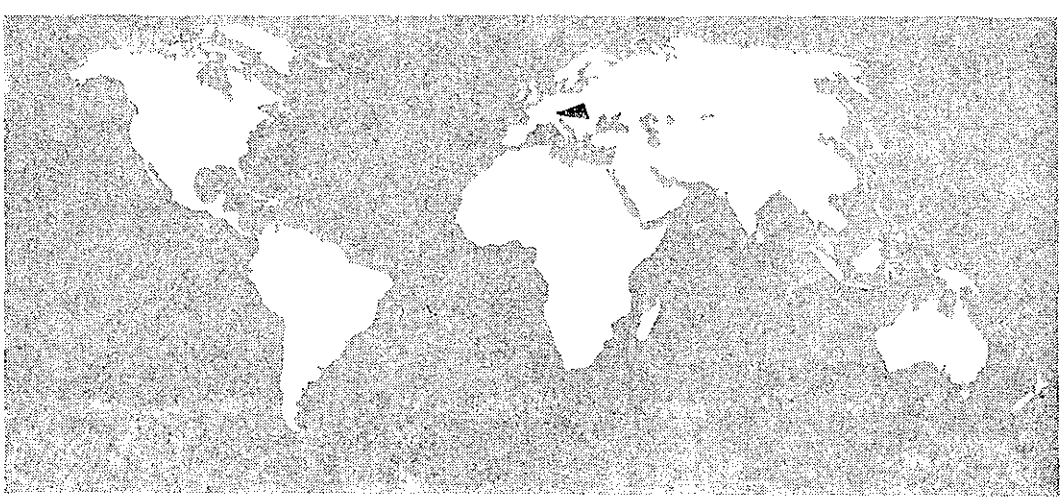
THE RESULTS OF EXPERIENCE

by

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Gert Kragh is by training a landscape architect. He earned his degree at the University of Berlin. From 1937 to 1954, he was Director of the Office of Conservation of Nature and Landscape Planning at Bonn, a position he held until 1962. At the present time, he is Director of the Office of Landscape Planning of the District Government at Cologne. At the Warsaw-Cracow meeting of the International Union for the Conservation of Nature, he was elected secretary of the committee on landscape planning.

He has written numerous essays and books. As secretary of the committee on landscape planning and nature conservation of the German Africa Society, he took part in the Arusha Conference held in 1961.



IT IS COMMON KNOWLEDGE that in the highly industrialized countries, the well-being of the population and environment depends on setting aside adequate areas for national parks and equivalent reserves. It is evident that protected areas of this kind have so far been set aside almost consistently on an inadequate scale, considering the surging growth in population and the extensive depletion of the environment for economic, technological and military ends, and for settlements (including weekend houses). Accordingly, attention must be paid to setting aside additional reserves at an increased rate wherever possible in keeping with tested and proved principles. Considering further the extensive pollution of water and air, the advanced chemical contamination of the environment (insecticides, etc.) and the constantly increasing hazards to soil and reserves of water, it is necessary to create an effective counterbalance from the realm of nature.

There are various possibilities in Europe for the protection of primeval landscapes or those which have remained close to the natural state. The basis is offered by special legal regulations (conservation law, as in Germany, Austria, Poland, Russia, and Sweden; or national park law, as in France) or by legislative acts covering individual cases (as in Italy and Switzerland). The protected areas are of the following types:

1. *National Parks*

   (*a*) Along American lines—no utilization for agriculture or forestry, ban on hunting and fishing, no mining, no settlement; accessibility to traffic and accommodations only in conjunction with tourism as permitted; in some cases no deviation from public roads.

   Examples.—Swiss National Park, Polish National Parks, Gran Paradiso in Italy, Mont Pelvoux (Savoy), and Abisco in Sweden.

   (*b*) Along the lines of large-scale landscape reserves with permission for agricultural and forestry utilization to the same extent as before and hunting and fishing activity to control stocks.

   Examples.—Most British national parks and Triglav (Yugoslavia).

2. *Nature Reserves*

Safeguarded under conservation law (e.g., in Germany, Austria,

Poland, and Russia) or property law (Belgium, Denmark, Germany, the Netherlands, and Switzerland), by the government or by competent associations. Strict protection, but in some cases limited utilization—for example, selective hunting, fishing, woodcutting, and grazing. General ban on building.

Examples.—Nature Reserves of Koenigsee and Karwendel in Bavaria, and Tauern' and Neusiedlersee in Austria; bird sanctuaries on the coast and in the interior (e.g., Mellum, Norderoog, Wollmatinger Ried, and Federsee in Germany, Camargue in France).

The objective is a selection, including specimens of all types of landscape that occur (in Germany, for example, sectors of high mountain, secondary mountains, and plain, with attention to marshes, heaths, bodies of water and forests, including their organic societies; geological formations; and landscape forms of historical interest—grazing-grounds, juniper-heaths, and the like). For example, about 800 nature reserves between 25 and 55,000 acres are maintained in Germany.

3. Landscape Reserves

For the preservation of ecologically important and esthetically attractive cultural landscapes and as buffer zones (glacis) of nature reserves. Utilization continues as before; any changes are subject to approval. Reserves of this type are set aside, for example, in Germany, Austria, Poland, Sweden, and Switzerland. In special cases, they may include the area of entire counties or districts and form a network within major industrial areas. For instance, there are about 4,000 landscape reserves in the Federal Republic of Germany.

4. Natural Parks

These are large-scale landscape reserves which, moreover, are particularly intended for recreation purposes. They are not to be confused with item 1, par. *b*. There are efforts to establish natural parks of this type, particularly in the vicinity of areas of concentrated population, for daily recreation and, at a distance from towns, for vacationing. The Federal Republic of Germany has 15 natural parks, and 20 more are planned. Furthermore, there are natural parks in Britain (which in that country are called national parks, in accordance with item 1, par. *b*) and in Sweden.

5. Natural Monuments

These are individual creations of nature, e.g., geological formations,

prominent trees, plant, or animal habitats of small size. In the Federal Republic of Germany, there are about 35,000 natural monuments.

It must be inquired whether these various types of protected areas fulfill the purposes and requirements connected with their establishment—to wit:

1. As habitats of plant and animal species that have become rare or as specimens of noteworthy landscape forms.
2. As sites of scientific research and training.
3. For the conservation of the scenery.
4. As recreation and observation areas for the population.
5. For the conservation of wild plants and wildlife as an aid to improving commercial plants and domestic animals.
6. As cells for regenerating the surrounding cultural environment.
7. As a basis for reconstructing the history of the landscape.
8. As a basis for comparison with cultivated areas otherwise of the same type.
9. As indicators of future evolution in environmental conditions.
10. For the conservation of exhaustible and renewable natural resources.

(*a*) The purposes and requirements are no doubt fulfilled in part by the present protected areas. At the same time, it can already be seen that—judged by the extent of the impairments, or even destruction now affecting the entire environment—the existing recreation areas are by far inadequate in number, size, and character to meet the needs of a rapidly increasing population that has become exceedingly mobile as a result of motorization.

(*b*) In most countries, the situation is also unsatisfactory with respect to the function of reserves as regenerating cells. Whether they are forests, scrub growth, hedges, marshes at various stages of development, lakes, river and brook landscapes or the like, their function can only have full effect if they are distributed over the entire utilized area in adequate numbers and suitable size. Setting aside a few large reserves is hence not sufficient to achieve this objective. Animal and plant species that have become rare and the multitude of organic societies cannot be conserved permanently on a serious scale unless the frequent practice of preserving only a few biotopes is avoided.

The incipient sellout of the coastal areas may be mentioned as an outstanding example of the manner in which very important areas, having the greatest bearing on recreation for the people and on fulfilling the functions listed above are being lost in large parts of Europe. Similar developments are, of course, to be observed on some other continents as well. This example is a parallel to the abundantly familiar sellout of shore areas on the Austrian, Swiss, and Bavarian lakes, especially in the Alpine region.

It has to some extent been possible, by means of landscape conservation regulations on a major scale, to stop this sellout, which benefited only a very limited group of wealthy persons. In Bavaria and Austria, virtually all lakes are subject to landscape conservation. Similarly, large-scale landscape reserves should, for example, be set aside on the shore of the Mediterranean (France, Greece, Italy, Yugoslavia, Spain, Turkey, etc.), as was mentioned by Professor Strygowski as early as 1959. The same applies to those coastal areas of the Atlantic and of the North and Baltic Seas which are most impressive from the landscape point of view. The American seashore program is a step in this direction. Reference should be made in this connection to the outstanding arrangement Sweden has laid down in her water law for reserving the seacoasts and the inland lake shores.

In order to fulfill the purposes specified in paragraph *b* above, a considerable number of conservation areas (nature reserves, landscape reserves, and certain types of natural monuments) were set aside in Bavaria, as in the rest of Germany, on the basis of the conservation laws of 1935 (e.g., in Bavaria about 150 nature reserves and 700 landscape reserves, with an area of 27,000 square miles). In this process, it was attempted to distribute these reserves throughout the utilized landscape. This effort still requires finalization and faces limitations, on the other hand, when the regions are entirely under cultivation or have already been cleared in large part. In regard to marshes, systematic planning has been implemented with the result that in Bavaria there are now about 80 marsh reserves with areas of up to 2,000 or even 3,500 acres. In similar manner, projects were carried out for riverain areas that had remained intact, for the lakes and for the forests, where 39 reserves of various types have been added just recently to the forest reserves already existing. Although for various reasons (for example, because of the problems arising when private property is affected) these efforts do not represent perfection, the aforesaid nonetheless shows an

approach to fulfilling the goals here mentioned. It is an example which should be adopted in all countries. It is true that these areas are limited in size, but they are distributed over the entire land. According to present findings, their sum is likely to make possible a greater ecological effect than can be expected from setting aside a small number of large reserves to serve huge areas. In this manner (and in combination with landscape reserves along the shores), it would at the same time be possible to relieve the national parks or equivalent reserves, some of which already are frequented too heavily.

In implementing a program of this kind, it is necessary to use both public land and areas under private ownership. Therefore, government funds must be allocated on a much greater scale than in the past for purchases by the government or competent organizations. We have heard that on the basis of a bill submitted by President Kennedy, enormous funds will be provided in the United States during the next 8 years for the establishment of new national parks, forest areas, and shore reserves. Among the purposes for which they are intended, recreation occupies a prominent place. Under this plan $1 billion are projected for the next 40 years. In Germany, 5 to 10 million marks are necessary annually for such programs—a small amount in comparison, for instance, with the funds provided for drainage and cultivation, which are a subsidy for the very destruction of ecological cells important to the overall landscape. In the Federal Republic of Germany, 300 million marks were spent in 1959 on engineering costs for drainage and cultivation projects. A considerable portion of such funds are subsidies.

In connection with this discourse, it must not go unmentioned that in some respects there are deficiencies in Germany which it would be wrong to ignore. For example, there is some lack of surveillance of the large number of reserves and some lack of thorough scientific investigation. Moreover, Germany and Austria, among others, do not yet have any national parks along American lines, because there is not sufficient support for completely prohibiting the operations now located in suitable large-scale nature reserves. An outstanding example is set in this regard by other European countries, such as Poland, and in regard to most of the deficiencies described, by Britain, the Netherlands, and Russia.

The program depicted above for the creation of reserves in Germany, with its advantages and drawbacks, presumes especially careful plan-

ning preceded by investigation. This suggests itself all the more since it has just recently been possible to make surprising new findings in the fields of conservation and landscape ecology. The continuing investigation of the underlying scientific principles throughout the world offers steadily increasing assistance. The following procedure has proved its worth as regards planning practice:

1. Inventory of existing protected areas, including determination of their geological structures, meteorological and hydrological conditions, plant cover, animal species, and historical and anthropological factors, along with the present forms of utilization.

2. *On the basis of a landscape diagnosis covering the entire territory* and taking into account the area's ecology, the recreation requirements, and the recognizable economic goals, administrative standards for safeguarding existing reserves and proposals for the establishment of new ones must be worked out. In doing so, it is necessary to consider the various area factors as a whole in their relationship to the economy. Special stress must be laid on the contribution rendered by areas of free nature to the general welfare and on the consequences of faulty developments resulting from inadequate planning in the past.

3. In supra-regional landscape plans for the entire territory, an outline must be drawn up in cartographic form covering the projected landscape development and based on the results of the inventory. These landscape plans include the existing and projected reserves of various classes and projects for the conservation and configuration of the overall landscape. The reserves are integral components of the effort to create economic and recreation areas in harmony with nature. For limited areas (such as individual reserves or landscape conservation projects in conjunction with settlement, reclamation, roads), regional landscape plans must be drawn up. The landscape plans may be in preparation of a coordinating system for the management of space or be a part of the same. They must therefore be drawn up in teamwork with all agencies and organizations interested in the landscape.

That would be the ideal state, and it ought to be attained. However, actual practice may lead to unforeseen difficulties arising from the dualism of economics and nature and from the habit of granting economic and technologic aspects priority over the seemingly idealistic goals of conservation. For example, a power project for which sufficient alternative locations were no doubt available was approved just recently for the Swiss National Park, one of the most scrupulously

managed reserves in the world. In the large-scale reserve of Koenigsee in Bavaria, permission has been granted for a high-capacity cable railway, whose consequences in terms of denudation and erosion are incalculable. In Gran Paradiso National Park in Italy, the mountain lakes are menaced by plans for power projects. In Poland, it is intended to use the Dunajecc for such projects in the Pienini National Park. In Abisco Park in Sweden, Torne Alv and Torne Traesk are in extreme danger of being diverted for hydroelectric power projects and losing their entire value. In the large-scale Austrian reserve of Hohe Tauern, the construction of a huge hydroelectric works has been approved.

These serious encroachments, which can never be repaired, are not confined to large-scale reserves in Europe, as the case of Kitimat National Park in British Columbia demonstrates. Grand Canyon National Park and Dinosaur and Rainbow Bridge National Monuments are threatened to the utmost by big dams. In Japan, Yoshino-Kumano National Park has been reduced in value by power projects, and Serengeti Park in Africa, by relinquishment of large sections for agricultural purposes.

These developments show that in addition to all planning, there must be effective protection of present accomplishments. In this respect, experience reveals that the individual countries are not always successful. In our view, this indicates the need for unanimous cooperation by all countries, joined in the IUCN and UNESCO, in order at any given time to assist that country where national parks and equivalent reserves are being threatened by technologic and economic planning.

Section Four—A

RAPPORTEUR

D. B. Turner

As this First World Conference on National Parks came towards the close of the sessions, the comprehensive sweep and survey of the subject of national parks shone out as perhaps the greatest highlight of the conference and a tribute to those who fashioned the scope of the conference. It appeared that all topics related to national parks were covered from the rostrum and from the floor—philosophy, principles, policies, and purposes. The scientific, economic, and cultural values of national parks were examined from worldwide viewpoints, and the optimum use of national parks and equivalent reserves was given full play.

In our panel the intent was to study the practical experience gained from standards, policies, and planning practices over the world as a whole. We were concerned then with the second mainstream of the conference, the practical values, operations, and lessons, as contrasted with the universal love of nature. We dealt with the translation of the ideas and visions we have about parks and reserves and crystallized our concepts. How are parks delineated and delimited, put into categories and classified, placed under administration and operated?

L. A. Garrison, our first panel speaker, in a thorough review of practical experience dealt with the creation, evolution, building and operation of the national park system in the United States. He provided a solid and appreciated core of instruction and assistance to the many delegates who yearned for advice and help in furthering park development in their respective countries. His paper, it is safe to say, will become a key reference in park offices throughout the world.

A. Eichler, presenting what might be called the Latin American viewpoint, made what must be judged a courageous speech. He accepted the proven worth of standards developed in North America, Natal, and other countries leading in national park administration. He then stated that we must fight for, as well as ask for, global and regional help for countries throughout the world which are less ex-

perienced in the problems of acquisition, development, and administration of national parks.

G. Kragh spoke about the categories of parks which are necessary and suitable as revealed by European experience. He described in some detail the development and use of parks according to category.

Notable in the discussion from the floor were the remarks of E. O. A. Asibey from Ghana. He stressed that thoughts about national parks and their place in satisfying the needs and desires of the people were coming to the new countries as novel and comparatively strange ideas. For that reason, those charged with working out the national park idea in new countries were hungry for park leadership from the countries in which park concepts and system operations had long been established. Particularly did they need the benefits of practical park experience.

To conclude the panel, the discussion leader, Col. Jack Vincent of South Africa, and the section chairman of the session, Newton B. Drury of the United States both caught the yearning of the majority of the delegates. Both recognized their desperate need for the concrete rather than the abstract and the pressing need for those who had long experience and schooling in park work to direct strong and immediate attention to helping the newcomers to the field of park administration. The factual and the realistic, rather than the theory, are the important points to stress on the highly important subject of national parks. As Colonel Vincent stated, the spotlight after this First World Conference on National Parks must swing to the practical part of national park work, if the new countries and those less advanced in national park development are to be assisted in "getting on with the job."

Section Four—B

The interpretive services offered by national parks and their contribution to public education was the subject of discussion in the second part of Section Four. One speaker from Southern Rhodesia described the role of interpretive programs in the newly developing countries. He said that the first stage requires emphasis on general understanding of conservation. Until this has been achieved, the remainder of the program will only be partially effective. In the United States, according to the speaker from that country, the situation is somewhat different. "It seems to me," he said, "that national park management has matured through the years, and that one very good index of this process has been the growth of our interpretive program." The third speaker discussed the difficulty in Japan of obtaining a sufficient number of rangers to work with the many millions of visitors who go to the Japanese national parks each year.

J. R. B. Coleman of Canada was the discussion leader. Bennett T. Gale of the United States was the rapporteur.

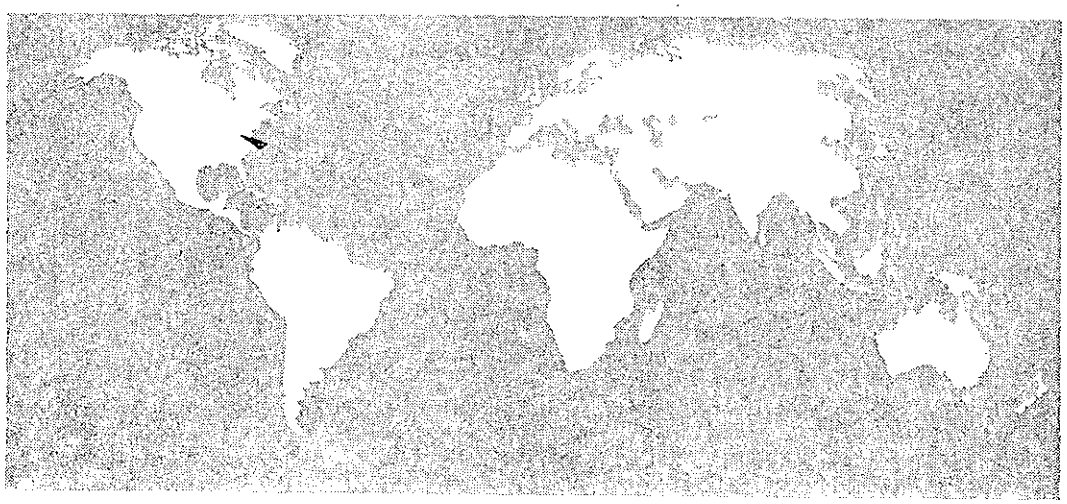
ENJOYMENT AND UNDERSTANDING

by

DANIEL B. BEARD
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Daniel B. Beard was born in 1906, the son of the Daniel Beard whose name is indelibly linked with the Boy Scouts of America. He earned his degree at Syracuse University and joined the National Park Service in 1933, serving as wildlife technician at the Trailside Museum, Bear Mountain, N.Y. In the fall of 1937, he was transferred to Florida to conduct the government's study of the proposed Everglades National Park. Later, as assistant chief of the Wildlife Division of the National Park Service, he helped to develop the book on endangered wildlife, *Fading Trails*.

Following 2 years in the Army during World War II, Mr. Beard returned to Florida. In 1947, when Everglades National Park was created, he became its first superintendent. He has also served as superintendent of Dinosaur National Monument in Utah and Colorado and of Olympic National Park in Washington. He has been chief of the division of interpretation of the National Park Service. In 1961, he was appointed assistant director, public affairs.



THE KEY WORD mentioned over and over again in national park legislation is "enjoyment"; national parks have been and will be created, so they may be enjoyed by people now and in the future. The National Park Service, an agency of the U.S. Government, was established in 1916 to see to it that the opportunity to enjoy national parks would be provided and continued in perpetuity.

This was and still is a very attractive idea. Some say it has been a miracle that the idea has lasted in the face of constant buffeting by those who believe that every acre of land should produce materials of some kind. Yet the idea has been so attractive and so well accepted by the people that portions of the United States containing outstanding scenery, archeological remains, historic sites, and related things were, and will be, set aside from other uses for enjoyment. It is just that simple. Of course, a great natural phenomenon must be protected and preserved if it is to continue to be appreciated and enjoyed. Enjoyment of parks stems from the thing to be enjoyed and not from any artificial development. And, furthermore, it must be recognized that a national park has many auxiliary benefits to the community and to a nation at large.

Two years ago, here in Seattle, Conrad L. Wirth, Director of the National Park Service, added this thought:

"Enjoyment without impairment is a fundamental requirement in the use and administration of the national parks. Preservation of the compositions of nature is a basic principle in the protection of the resources. Protection, while an absolute requirement, is not an end in itself, but a means to an end. . . . Enjoyment is an intangible thing, it is neither standardized nor homogeneous, it varies with each individual, and it spans a wide range of personal likes and emotions. . . ."

When the National Park Service sets out upon its mission of seeing that the opportunity to enjoy the parks is provided and preserved, it plunges into a whole realm of activities: planning, construction, fire protection, research, protection of people, maintenance, land acquisition, and so on. Yet these activities, necessary though they may be, are incidental because enjoyment is really an emotional experience. Detecting this fact just 50 years ago, a man named Laurence F. Schmeokebier published an article in *Popular Science Monthly* magazine. He wrote in part:

"During the year 1911 over 90,000 persons visited the national parks. . . . The majority of these tourists are intelligent and educated

people anxious to learn something about the causes underlying the wonders they are witnessing. Every one who has seen the beautiful and brilliant pools in Yellowstone Park is at least curious to know the cause of the harmonious and delicate coloring. The guides and stage drivers generally state that the colors are due to mineral matter, and as most people usually associate color with minerals the tourist goes home convinced, when as a matter of fact the color in the pools is due to algae. . . ."

He went on to suggest that simple, accurate, and interesting publications should be developed to assist the tourist in his understanding of Yellowstone. So strongly did he feel about it that he recommended that, if a bureau to administer national parks should ever be established, the preparation of publications would be its major duty.

Certainly, Schmeokebier was not the first to recognize that a national park can be enjoyed better and appreciated more fully, if one has an opportunity to learn more about its features. Nor was he the last. But, whose duty was it to impart this knowledge, and how was it to be done? Did the public coming to see the wonders of the parks want to be educated, and if so, by whom?

It all started simply enough in our national parks here. Men such as Dr. Harold C. Bryant [1] and Ansel Hall [2] took interested park visitors on nature walks. They pointed out trees, birds, flowers, and rocks formations. The opportunity was being provided in a modest way for those who cared to accept it. This was called "nature guiding," somewhat the type of thing C. M. Goethe [3] had studied in Europe in 1915 and brought back enthusiastically to his native California.

It quickly became apparent that nature guiding was a popular program, and the idea spread. It was frankly admitted from the beginning that this was an educational activity and should not be considered some sort of entertainment. So, by the time Dr. Carl P. Russell [4] took over leadership of the program almost 20 years later, it was a successful and well accepted activity in all national parks. Russell popularized the word "interpretation" and the name of the whole program was changed accordingly. It was finally defined in 1957 by Freeman Tilden [5] in his book *Interpreting Our Heritage* as: "An educational activity which aims to reveal meanings and relationships through the use of original objects, by first-hand experience, and by illustrative media, rather than simply to communicate factual information."

He explained that interpretation was the name of a function that

had now become associated with the work of national parks, state and municipal parks, museums, and other cultural institutions.

Tilden went on to lay down six principles for interpretation:

"1. Any interpretation that does not somehow relate what is being displayed or described to something within the personality or experience of the visitor will be sterile.

"2. Information, as such, is not interpretation. Interpretation is revelation based upon information. But they are entirely different things. However, all interpretation includes information.

"3. Interpretation is an art, which combines many arts, whether the materials presented are scientific, historical or architectural. Any art is in some degree teachable.

"4. The chief aim of interpretation is not instruction, but provocation.

"5. Interpretation should aim to present a whole rather than a part, and must address itself to the whole man rather than any phase.

"6. Interpretation addressed to children (say, up to the age of 12) should not be a dilution of the presentation to adults, but should follow a fundamentally different approach. To be at its best it will require a separate program."

Each of Tilden's principles is good and to the point, although I wish he had emphasized the fourth one a little more. For the good interpreter uses the tools and techniques of his profession up to a certain level of interest and curiosity, then steps aside.

Walt Whitman [6] must have had the same thought in mind when he wrote:

"You must not know too much or be too precise or scientific about birds and trees and flowers . . . a certain free margin, and even vagueness—perhaps ignorance, credulity—helps your enjoyment of these things."

To which someone else raised a cautious finger and said: "If you would know your ferns, forget your botany."

No man can leave the Grand Canyon, the rain forest of Olympic, or the silent ancient cities of Mesa Verde and be the same as before. Visitors who enter the awesome groves of giant sequoias are often so profoundly moved that they instinctively remove their hats.

But that is not enough for many. At Grand Canyon, if one can know and can get into conscious perspective the tremendous span of the earth's history that the grinding river has laid bare, the spectacle

takes on greater meaning; his enjoyment of the park and his whole life experience has been enriched. The function of the interpretive program is to give such an opportunity to those who want it. This objective has not changed since men now nearing their sixties went on naturalist-guided trips in national parks, while still in their teens. Only the ways to achieve it have changed, as new methods of communications have been developed.

It is not my intention to trace the history of interpretation in the United States, but to report to you briefly on how it developed, its place in helping people enjoy parks here, and add a few notes on techniques and methods we have found useful.

Each unit of the National Park System has a master plan to show not just what developments have been or will be taking place, but also where they will not occur. The master plan idea recognizes the necessity of clearly identifying the important and unique resources of a park, and their value to people in terms of recreation and education; to explicitly spell out, in drawings and text, what has to be done in the parks so that people can derive the fullest benefit without hurting the resources. The master plan is thus a packaged plan covering everything that is to be done in a park, including interpretation.

The master plan makes it necessary to think things through. For instance, most visitors do not stay very long in a park now—an hour or two in a small one and perhaps a day or so in the larger parks. Park interpretation must be planned to concern itself with the exceptional features even more than when John C. Merriam [7] expressed this idea in the early 1920's:

"At any place of great wonders it is easy to pick out a large number of things any or all of which may be interesting to the public. But the object of this particular work has been conceived as relating to the exceptional opportunities which the parks present. It is, therefore, important to give assurance that a brief period which may be at the visitor's disposal can be in part devoted to the greatest available features."

Several years ago, when Newton B. Drury was Director of the National Park Service, he ordered all park superintendents to prepare a concise statement of significance for each area in the National Park System. The questions the superintendents were asked were: (1) What is the national significance of the area I supervise? and (2) How can it be made to provide the greatest service to the nation? This

caused the superintendents to search and evaluate in order to say just what there was about the parks they administered which gave them importance to the nation.

Planning is, of course, a difficult and time-consuming activity. We feel that the results are worth it. A well-planned, well-thought-out and studied interpretive program for parks is one of the hallmarks of the national parks of this country.

Park interpretation is dependent upon a continued flow of knowledge that comes from research or investigation. The park itself must be studied by qualified specialists to provide the basic knowledge for interpretation and for intelligent management of the park resources. The park visitors—their use of and reaction to the interpretive programs—must be studied continually. Knowledge gained elsewhere may be used in an interpretive program. Let us say, for example, that a geologist in Europe or Asia finds that the climate during the Jurassic period was entirely different than previously supposed. This would, or should, have an immediate effect upon the interpretive program of Dinosaur National Monument in Utah which features the story of Jurassic dinosaurs.

The use of such applicable research gives vitality to an interpretive program, which can also make use of research while it is in progress in a park. At Independence National Historical Park in Philadelphia, visitors were delighted to find interpretation at the site of the Benjamin Franklin[8] home while excavation was going on there. It is clear that interpretation would lose its vitality and die unless continually nourished with knowledge derived from research.

The men and women of the National Park Service, who are the interpreters, have various professional backgrounds in biology, archeology, history, and geology. Often it is suggested that this is unnecessary because "anyone can learn to give a talk on any subject." That is true enough, but unless one knows his subject, has enthusiasm for it, and is enriched with a depth of knowledge, he is likely to be a poor interpreter. To this line of argument can come the rebuttal that a scientist is not necessarily a good interpreter, that the very fact he is a scientist, indicates he is not interested in people. That, too, can be and often is true. The aim, then, is to obtain professionally trained people, who have an aptitude for good human relations. They must be able to pitch interpretation to the frame of reference of the person to whom they are speaking. This cannot be done by

instinct alone. It is not enough that our interpreters have a thorough professional background, that they like people, and that they have a flair for teaching. They must be alert to changing conditions, and some of them must be able to appraise the changing needs of park visitors and to imaginatively plan and develop interpretation to fit modern needs.

One thing is certain, if park visitors are to get the most out of a brief visit: We must see to it that very early in their visit they have a chance to learn the important things to see and do—the exceptional things to experience in a particular park. We call this orientation.

Actually, orientation is everything that is done to assist the visitor in becoming aware of the park's resources, facilities, and services, so that he may benefit as fully as possible from his visit according to his time and interest. A good map is important, as are signs along the road, personal contact with rangers, audio visual programs, and exhibits in visitor centers.

This evening, in parks throughout the United States, people will emerge from campgrounds, hotels, and other places to attend outdoor campfire programs conducted by naturalists. Some of these programs are in amphitheaters that will attract hundreds of people and are equipped with stage, projection, and sound equipment. Others will be attended by no more than a dozen or so, seated on logs or on the grass.

At most of these gatherings there will be a campfire, reminiscent of man's more intimate dependence on and association with nature, to warm the hearts if not the bodies of an audience. While the audience gathers at the larger amphitheaters, familiar musical melodies may be played. The program may began with a uniformed man (or woman) leading the audience in singing well-known songs. The evening gathering of park visitors provides an opportunity to orient them further and to suggest what to see and do on their own and to invite them to attend interpretive activities. At the longer gatherings, these preliminaries will be handled by a master of ceremonies, who will introduce the speaker.

The talk is the most important part of the program. This is what the audience comes to hear. In education there is no adequate substitute for the teacher, and the same is true of the educational activity we call interpretation. A "live" interpreter is far better than a mechanical or inanimate one. It follows that the "live" interpreter must be

skillful at his trade, because a poor speaker is little more than nothing at all. This does not mean that the speaker must be an outstanding orator or an actor of some kind. The good interpreter is a teacher who presents facts in an interesting manner, so that his audience is stimulated to know more about the subject. His job is to interest and not to entertain. Above all, he must be accurate. The competent interpreter is always in short supply, so he must be used where he will be most effective. The campfire program is such a place. Given a versatile interpreter, the outdoor evening program is a highly successful medium of interpretation. It provides an opportunity to meet large audiences of park visitors under favorable circumstances for increasing interest, enjoyment, and appreciation of the national parks.

In caves and caverns, on forest trails, along ocean beaches, across mountain glaciers, in prehistoric Indian ruins, and in historic houses throughout the park system, naturalists, archeologists, and historians in the National Park Service uniform lead groups of visitors and interpret to them the features that are seen. Like the campfire program, the conducted trip also is a traditional method of interpretation in the parks. It is regarded as the most effective kind because the subject matter is close at hand and can be seen and touched while the interpreter is talking.

There is no other practical way for some of the park features to be seen and interpreted than by the conducted trip. The delicate formations of caves and caverns soon would be lost, if visitors were permitted to go by themselves; nor would it be safe. In Glacier National Park naturalists lead visitors across crevassed glaciers, where it would be dangerous for them to go alone. Certain archeological ruins and historic buildings need the live interpreter to give them meaning. In Carlsbad Caverns National Park groups on conducted tours sometimes exceed 750 people, although, in most situations, 25 to 30 people is considered the maximum number on a conducted trip. The size of the group must be limited to a comparatively small number in some historic houses, as well as some caves and archeological ruins. The point is that, while this kind of interpretation with a skillful leader is most effective, it has a more limited capacity than the campfire program.

Before World War II, naturalists in Yosemite conducted hikes in the High Sierras lasting a week. Last summer, after a lapse of 20 years, these 7-day hikes were resumed. The response from the participants was so enthusiastic that these trips will be continued this summer.

Visitors with time and interest to spend a week in a park are still with us, perhaps in greater numbers than before. But they are not conspicuous because of the overwhelming number of hurried visitors.

Another form of interpretation are the demonstrations. For example, one of the most delightful places along the Blue Ridge Parkway is Mabry Mill, which creaks and groans through the years as it turns out water-ground cornmeal. The rushing water turns the mill wheel, just as it did in great-grandfather's day. Inside this old mill, the smells and sounds are exactly the same, so that (as if by some legerdemain) the visitor is back in the days when pioneer settlers lived in the Blue Ridge Mountains.

Demonstration is a teaching method that is as old as man. In park work it is best used in historical interpretation: a horse-drawn barge on an old canal, Indian dancers, handicrafts, the firing of an old musket. No number of signs, diagrams, pictures, or books could tell how meal is ground as well as to see it actually done at Mabry Mill.

Soon after the National Park Service was established, the late Ansel F. Hall, a park ranger at the time, conceived the idea of converting an old artist's studio in Yosemite National Park, Calif., into a museum and a focal point for the naturalist program that was just beginning to be developed there. Milton P. Skinner at Yellowstone National Park started a museum there, and Jesse Nusbaum, who later was to become chief archeologist of the National Park Service, did the same at Mesa Verde National Park, Colo.

The American Association of Museums became interested, as park after park began developing some kind of exhibit. According to Dr. Carl Russell, former chief of interpretation, "It was Dr. [Herman C.] Bumpus [of the Association] who originated the 'focal point museum' idea so well represented by the several small institutions in Yellowstone, each one concerned with a special aspect of the park story, and so located as to tell its story while its visitors were surrounded by and deeply interested in the park features outdoors." Site museums is another name for them, although this is quite new. Ralph Lewis, chief, Branch of Museums of the National Park Service, explains it this way:

"A site museum is one that is closely associated with a place having scientific or historical significance. The museum is located at the site. Its scope is the story and meaning of the site. Its exhibits have the sole purpose of interpreting the site to visitors."

Most of the museums in the parks rightfully can be called site museums, although as Lewis explains, "The term most obviously applies to museums at historic and archeological sites." The trailside exhibits now used commonly in many national parks, and first tried at Obsidian Cliffs in Yellowstone, were an outgrowth of the focal point museum idea.

In my own remembrance, which goes back to park museums of the 1920's, exhibits and collections differed but slightly from those found in city museums. Park museums tended, however, to feature objects from the area itself rather than from all over the globe, and park museums were developed by ingenuity and little else. City museum exhibits were more elaborate because they were better financed. But the very simplicity and obvious "labor of love" gave park museums a tremendous appeal.

At Palisades Interstate Park, Bear Mountain, N.Y., a cooperative venture of the American Museum of Natural History and the park began to develop. William H. Carr became its director, as I recall, about 1930. The concept was a nature trail with little museums scattered along its length. One would walk the trail, step into a museum, and go on along the trail again. Although it did not work out exactly as planned, the Bear Mountain Trailside Museum, a somewhat new concept, became a prototype to be developed in other parks.

It is impossible to give the history of the museum program here. Suffice it to say that a park-type museum concept began to evolve and, somewhere along the line, its resemblance to the city-type museum became very tenuous. People did not come to national parks in order to visit museums full of stuffed bears, deer, and birds that could be seen in the wild nearby. In fact, even the name "museum" was beginning to be looked upon with disfavor. The museum was, after all, not the goal, but merely one of the tools, of interpretation.

When someone said, "The park is the museum," then the naturalists, historians, exhibit planners, and others began to develop a different perspective of the function of the park museum as an integrate part of the interpretive program. The park as a whole may be regarded as an exhibit and the museum as an explanatory label. This concept underlies all park museum work.

Park museums are not independent or self-sufficient, but are units in a larger interpretive system. Their exhibits are primarily concerned with park features and with natural and human history of the

area; they deal with natural phenomena or historical events outside the park, only if needed for perspective or reasonable completeness in telling the park story. They illustrate those ideas, significantly connected with the park, which cannot be understood easily without them. The aim of museum exhibits is to encourage visitors to go outside and discover things for themselves. Although the break had been made with the traditional museums, the progress of techniques, methods, and exhibit concepts in the country and abroad affected park museums. For instance, the display of objects began to give way to exhibits featuring "ideas." Museum exhibits took on a great deal of color, with artistic design or composition to strengthen the appeal.

When the 10-year program of improvement called Mission 66 began to make its presence known in the form of new park facilities, the museums often became part of the "visitor center," a structure designed to provide park visitor, with information, orientation, and interpretation. It came upon the scene as a method, if you will, of meeting the impact of a great many more park visitors than ever before. Personal contact and friendly little museums could no longer meet the public needs. Park entrance stations, clogged with traffic, were no longer able to serve as information booths.

The typical park visitor center is far more attention-getting than the traditional structure. It asks to be seen and beckons one to enter. It fails in its purpose, if it hides. I mentioned visitor centers earlier in connection with visitor orientation; these facilities carry a major part of this function. An early stop at a visitor center enables the visitor to get the information necessary to make the best use of his time in the park according to his interest. Inside the buildings, the same welcome is incorporated into the lobby, where a uniformed naturalist or receptionist is normally available at an information desk.

In a relaxed atmosphere, carefully and purposely developed, the visitor can see exhibits on the park, which stimulate his interest while increasing his knowledge. He may talk to the uniformed representatives, ask questions and receive accurate answers. Most visitors will want to attend the audiovisual "show" in a little theater-like room in the visitor center. As a general rule, it will be an automatic program with color slides and professionally taped narration. Quite often, a "picture window" in the visitor center lobby opens on a prime park view that the exhibit may interpret.

The visitor center, if it does its job, is a pause in the park visit. It

sends the visitor into the park in a mood to enjoy it more. He knows he is welcome, he knows where he is going. And, most important of all, he has made the transition from the world outside to the park. He can see, enjoy, understand, and appreciate.

A well designed visitor center must reflect the purposeful blending of many professional talents: architecture, landscape architecture, museum preparation, research, engineering, and practical park administration. None can dominate. All must work toward the same objectives. Behind the scenes, a visitor center may house offices, library, and study collections.

Visitor centers are not inexpensive. Space, exhibits, audiovisual equipment and facilities, and good architecture cost money. So far, 63 visitor centers have been completed by the National Park Service, 16 are under construction, and 66 more are programed between now and 1966.

Many of the museum and visitor center concepts developed in the national parks are being used elsewhere. Although not the first, a nature center for children in Rock Creek Park, Washington, D.C., has stimulated interest in that program. Nature centers as junior museums and nature workshops are beginning to become integral parts of the educational system of communities.

They are generally located on the edge of a city in a sylvan setting. The National Audubon Society recently set up a separate division to encourage the establishment of new nature centers and to aid them. Private capital as well as public funds are being used, as nature centers for children are planned, constructed and put into operation.

This year, areas administered by the National Park Service will receive about 80 million visits. To meet this influx, interpretive services will have about 844 historians, archeologists, guides, information specialists, and so on, over half of whom are seasonal employees. As can be readily understood, all interpretation cannot be handled by personal contact alone. Considerable reliance must be placed upon various devices and techniques which are not manned, such as self-guiding trails and tours.

Self-guiding facilities along park roads and trails are on 24-hour duty 7 days a week. No other interpretive medium can reach so many people and provide interpretation at the most favorable places—the sites of features or events. It would not be desirable, even if it were possible, to have a live interpreter at every important park feature.

Self-guiding interpretation along roads and trails is more important

today than it was years ago, because visitors do not stay as long. It suits the convenience of visitors who are in a hurry. At Mesa Verde, for instance, the average length of stay 30 years ago was 2 to 3 days. Now it is three-fourths of a day.

We might say that ever since the Grand Loop road was constructed for stagecoaches in Yellowstone, national park roads have been designed for interpretive purposes, although early park planners may never have heard the word as we use it today. Thus, we can characterize a park road as a "vehicle" for interpretation, and a very useful one, too. When new roads are built or old roads are realined, the interpretative opportunities must be considered. The proposed road location or realinement must be studied on the ground to make sure that important features along the route can be presented and interpreted, and not destroyed or damaged as a result of the construction. Space for interpretive signs, markers, exhibits, turnouts, and parking areas must be provided so that visitors can stop safely.

Signs and wayside exhibits have been used for many years to interpret features seen in proximity to park roads. Until quite recently, these were often "targets of opportunity" rather than a carefully planned, interrelated, and integrated program. Although not universally applicable, many park roads are so situated that a self-guiding tour is an excellent interpretive method.

Interpretation has been provided for some park roads by means of a descriptive booklet keyed to numbered markers on the roadside. It is a less expensive method than signs and exhibits, with the turnouts that must be provided to use them, but not as effective, except perhaps on one-way roads where stopping is not so hazardous.

Self-guiding roadside interpretation is more important in some types of areas. Blue Ridge Parkway is a 500-mile recreational road. Its visitors are on the move most of the time, stopping from time to time, where there are turnouts and parking areas, to enjoy scenic views and to read the interpretive signs. At Natchez Trace Parkway, 98 percent of interpretive contacts are through roadside self-service facilities. Battlefield parks make use of signs, markers, and exhibits along their roads to explain battle action and troop movements. But it is important in all parks that have roads.

One of the best complete roadside interpretive developments in our National Park System is at Badlands National Monument in South Dakota. One thing that makes it effective is a distinctive and har-

monious design and color scheme for the signs, which is maintained throughout, beginning with the entrance sign. Continuity of design and color in the signs throughout the park have the important effect of adding to the cohesion of the park story.

Interpretive signs are difficult to develop. There can be nothing casual or haphazard about them if they are to do their job. Facts must be accurate and the text pertinent. Freeman Tilden gives us an example of a good one. He saw it in New Hampshire, and this is the thought it conveyed:

The Basin

> Over a period of centuries a pothole was formed by the action of a large stone turning and spinning under the pressure of rushing whirling water, in a depression of the granite stream bed.

How much better that is than saying: "This is a pothole in granite."

Nature trails are well accepted and widely used in this country. They follow two set patterns without much overlap. The earliest nature trails employed little signs that described features encountered in a particular place. Most popular now are the trails with booklets keyed to numbered stakes or stations. The latter system is beginning to be questioned as to its actual value, however, because in numerous instances investigators have found that people soon tire of reading a descriptive pamphlet at each numbered station. It seems possible that a combination of the two systems is indicated, or perhaps someone will think up an entirely new approach. One of the greatest sins in park interpretation is to say too much—to say more than the visitor will read. Perhaps this is the difficulty with some of our self-guiding trail booklets. Obviously they are not effective, if they are not used.

The aim of interpretation is not to educate in the sense that education is usually regarded. It may result in an education—motivated by interest created through a national park interpretative program. However, we can and do carry interpretation beyond the level of motivation.

Visitor centers and other public buildings in the parks throughout America display publications on both general and specific subject matter. Most of these publications relate to individual parks; some pertain to groups of related parks, and some are concerned with subject matter that is common to more than one park.

Most of the publications treat park subjects in a popular way, and are

intended for visitors who have somewhat more than a casual interest in the park story.

The National Park System of the United States, when completed, will contain the outstanding examples of our landscape relatively intact, with plants and animals in normal relationships. All our great historic sites will be in the system. So, taking it as one thing—one system—we can see that it is an educational resource that has scarcely been tapped. It has the capacity to do much more than it has in the past to enrich the lives of our people and those who come to visit us from other countries.

There was a period in our history when the National Park System had to absorb a great deal of the national need for outdoor recreation. This stage is passing now, as national forests, state parks, and areas under other managements are "tooling up" rapidly to meet the demands. While park enjoyment is a form of outdoor recreation, there are other types that the national parks cannot supply.

So it seems to me that national park management has matured through the years, and that one very good index of this process has been the growth of our interpretative program.

Techniques of interpretation will change as new means of communications develop. I predict that in 25 years the interpretative programs will constitute the major activity of the National Park Service.

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(1) Former Chief, Branch of Research Information, National Park Service, U.S. Department of the Interior.
(2) Early park naturalist and later concessioner at Mesa Verde National Park, Colo., U.S.A.
(3) Contemporary American conservationist and philanthropist.
(4) Former Chief of Interpretation, National Park Service, U.S. Department of the Interior.
(5) Contemporary American author of books about national parks of the United States.
(6) American poet (1819–92).
(7) Former president, Carnegie Institute of Washington, D.C., U.S.A.
(8) American statesman (1706–90).

INTERPRETATION AND UNDERSTANDING

by

JOHN A. PILE
Public Relations Officer, Natural Resources Board of Southern Rhodesia
SALISBURY, SOUTHERN RHODESIA

John A. Pile grew up in the farming areas of Essex, England. After service as a pilot in the Royal Air Force during World War II, he resumed his agricultural studies at Writtle Agricultural College, where he received his diploma. He then joined the Colonial Service. As an agricultural officer, he was assigned to the Gold Coast, West Africa. There he was engaged in extension services, taught improved methods of farming and lectured at the Agricultural Training School at Bunsu. In 1955, he moved to Rhodesia to become public relations officer to the Natural Resources Board. One of the important functions of the board is to stimulate interest in the conservation and proper utilization of the country's natural resources. Under the terms of the Natural Resources Act, these include: soil, water, minerals, birds, animals, fish, vleis, sponges, reedbeds, vegetable products, and national parks.

Under Mr. Pile's direction, a comprehensive educational program has been developed. Among his many duties, he supervises the production of farming bulletins, instructional posters, booklets, films, and weekly radio programs on natural resources.



THE FEDERATION of Rhodesia and Nyasaland comprises three territories—Southern and Northern Rhodesia and Nyasaland. The Federation is bounded on the north by the Congo Republic and Tanganyika, on the west by Angola, on the east by Mozambique and on the south by the Republic of South Africa and Bechuanaland.

This paper, for reasons which will become self-explanatory, deals primarily with Southern Rhodesia, a territory 150,000 square miles in extent with a population of some 2,800,000, of which 225,000 are European.

Although in Southern Rhodesia, the first game reserve was created in 1927, national parks were not proclaimed by law until the end of 1949. However, a subcommittee of the Natural Resources Board was formed in 1947 to explore the need for national parks and to make recommendations regarding areas to be so declared.

In 1949 the National Park Act was promulgated, and the Governor was given authority to constitute any area of Crown Land, or any land bequeathed or donated to him, a national park. The act also established the National Parks Advisory Board and laid down its functions. The areas immediately designated were the Wankie Game Reserve, Robins Game Sanctuary, the Kazuma Pan Game Reserve and an area in the Chimanimani Mountains. In all, these covered an area of over 3 million acres. Later in the same year portions of the Rhodes Inyanga Estate were also designated.

With the advent of federation in 1953, national parks were made a federal subject, although the consent of the governor of the territory in which a park was situated was necessary before administration of any park could be transferred to the federal government. Southern Rhodesia immediately agreed that all national parks in that territory should be transferred to the federal government. Northern Rhodesia and Nyasaland did not agree to their parks being transferred and therefore they are still under territorial control.

While the federal government assumed financial control of national parks in Southern Rhodesia, it was not until April 1958, that the Federal National Parks Board was established and the federal government assumed full control of the 14 parks in Southern Rhodesia, covering an area of about 4 million acres.

The Federal National Parks Board consists of a chairman, nominated by the Minister of Home Affairs, and eight other members.

The boards's terms of reference are—

(*a*) To exercise general supervision over the national parks.

(*b*) To stimulate by publicity and other means public interest in the parks.

(*c*) To recommend to the Minister of Home Affairs the measures deemed necessary by the board for the proper control and management of the parks, and

(*d*) Generally to advise the Minister on the exercise of the functions conferred upon him by the National Parks (designated areas) Act, 1955.

In order to assist the board in the exercise of its functions, a local committee for each national park has been appointed. Funds for the upkeep and development of the parks are provided by the federal government, who have to date spent nearly 1 million pounds on the national parks of Southern Rhodesia.

Following the arrival of the European, the Royal Charter of 1889, granted to the British South Africa Company, made provision for the safeguarding of the Bantu's land rights; and in 1898 an Order in Council placed upon the company the obligations of setting aside sufficient land for occupation by the Bantu and made provision that "a Bantu may acquire, hold, encumber and dispose of land on the same conditions as a person who is not indigenous to the country." Under these more settled conditions and with the introduction of medical science, there was a rapid increase in the indigenous population; and the primitive methods of agriculture soon gave way to the plough. Between 1902 and 1939, the Bantu population had trebled. At the same time, general development commenced with the opening up of the mining industry, communications by road and rail, the building of towns, the large scale cultivation of land for agricultural purposes, and the establishment of export markets.

By 1938 it became apparent that Southern Rhodesia's natural resources were rapidly being dissipated or destroyed and that far-sighted measures would have to be taken, if the resources were to be saved and the future of the country assured. The outcome was the setting up, in 1941, of the Natural Resources Board constituted by an Act of Parliament, which in essence recognized the board as the public trustee for the natural resources of the colony. The board is a nonpolitical, independent body comprised of members appointed by the governor and chosen with regard to their knowledge and experience of the

country's natural resources. Neither the chairman nor the members of the board are civil servants, although the staff of the board are drawn from the ranks of the Civil Service.

The board has three main functions as defined in the Natural Resources Act:

(*a*) To exercise general supervision over the country's natural resources.

(*b*) To stimulate by propaganda and such other means as it may deem expedient a public interest in the conservation and improvement of natural resources.

(*c*) To recommend to government the nature of the legislation and measures deemed necessary for the proper conservation, use and improvement of natural resources.

The natural resources as defined in the act are—

(*a*) The soil, water, and minerals.

(*b*) The animal, bird, and fish life.

(*c*) The trees, grasses, and other vegetation.

(*d*) The springs, vleis, sponges, reed beds, marshes, swamps, and public streams.

(*e*) Such other things as the Governor may, by proclamation, declare to be natural resources, including landscapes and scenery which in his opinion should be preserved on account of their aesthetic appeal or scenic value.

The board has extremely wide powers in that it can give orders to the owners, occupiers or users of any land to adopt such measures as it may deem necessary for the conservation and protection of the resources. While an appeal to the court against such orders is provided for, the board relies upon persuasion rather than compulsion and depends upon the goodwill and commonsense of the people to ensure a future both for themselves and for those who are to follow. What in fact the board endeavors to instill into the minds of the people is that while we, during our short lifetime, have every right to make reasonable use of the country's resources, we must also regard ourselves as trustees, entitled neither to mistreat, squandor, nor destroy.

In regard to national parks, the board, shortly after its establishment, made representations to the government that a National Parks Trust should be set up by statute. A bill was drafted in 1946, but owing to delay in the passage of this bill, the board set up a National Parks Committee in 1947, which continued to function until the National Parks

Act was promulgated in 1949. Although national parks in Southern Rhodesia became a federal responsibility, the closest possible liaison has been maintained between the bodies—the chairman of the Natural Resources Board being a full member of the National Parks Board.

In Southern Rhodesia the museum service was established in 1901. Their terms of reference cover research, exhibition, and education. In 1936 the passing of the Museums Act established the National Museums of Southern Rhodesia under a statutory board. The organization comprises an administrative unit in Salisbury, the National Museum, Bulawayo, the Queen Victoria Museum, Salisbury, and the Umtali Museum. The staff of the organization is comprised of 10 scientific officers, and 4 honorary scientific officers supported by technical and clerical staff.

The fields of work covered by the museums are as follows:

(*a*) Antiquities—archeology, ethnography, and national history.
(*b*) Vertebrate zoology—mammalogy, ornithology, herpetology.
(*c*) Invertebrate zoology—entomology.
(*d*) Botany.
(*e*) Biology.
(*f*) Paleontology.

In line with modern museum development, research work has graduated from the study of pure taxonomy into the ecological field; and the museums keep their staff in the field as far as is practical and, in addition, undertake expeditions to interesting parts of Africa. Although a Southern Rhodesia territorial service, their work is by no means circumscribed by territorial boundaries; and parties from the museums have worked as far afield as Nigeria and Tanganyika.

In certain fields, there is no question that the museums possess the finest collections in zoology and other branches of science, covering the Central African region, and are rapidly building on these. All three museums are at present in the process of being rebuilt at the cost of some £450,000.

But in Africa, the problem of educating the public to appreciate the need to conserve resources—in other words, to develop a conservation consciousness, and at the same time appreciate the value of services offered by national parks and museums—is indeed complex because of the different races, their customs, and varying degrees of education.

In Southern Rhodesia, as has already been indicated, the indigenous population outnumbers European and other races by over 2 million

and, while the education facilities and standard of education of these peoples is today advancing rapidly, the majority of the population are educationally below the standard expected by more advanced countries throughout the world. Nevertheless, it must not be supposed that the indigenous population of the country are not aware of the basic necessity of conserving the country's flora and fauna, or that they have no appreciation of the part these play in the well-being of their people. One has only to study their tribal customs, their superstitions, and their agricultural practices in the past to realize that they are naturalists by tradition. In many tribes, the very names given to the children reflect strong appreciation and awareness of the importance of nature.

As a very simple example, in Barotseland the Mahobohobo has been declared a food tree and is therefore strictly protected by tribal law. One of the prices a country has to pay for conservation and development is a breakaway from traditional habits and practices, forced upon it by population expansions, land pressures, and industrialization.

In the old days the land round a village was cleared to produce the food requirements of that village. This did not entail the complete removal of all vegetation. Trees were cut off some 18 inches to 2 feet from the ground, the timber being used for cooking, warmth, and building, only the shrubbery and grass being removed altogether. The land was then cultivated for as long as it would produce sufficiently for the needs of the village. Once it failed to do this, the village moved to another area, leaving the abandoned land for nature to rehabilitate.

These days have long since passed. Today the people are static. Wildlife, a natural source of meat protein in the past, has moved away to more remote areas; and the same lands have to be cultivated year after year on a rotational basis. Many of the people have, of course, been swallowed up by industry and commerce, and all are now torn between their old instincts and tribal customs and the exacting mechanism of the modern world.

It has already been shown how land was set aside in the very early days for national parks and how museums have been established for the enjoyment and education of all people.

The immediate problem which confronted the country was, therefore, threefold:

(*a*) The education of the more advanced section of the community to the need for, and methods of, conservation and wise use of resources.

(*b*) The education of the more backward sections of the population in adapting themselves to the new way of life thrust upon them, and to give them an appreciation of the importance of basic natural resources and how to conserve them for their own betterment and that of their children in the light of their new environment.

(*c*) As progress is achieved with (*a*) and (*b*), the stimulation of interest in national parks and museums, and the creation of an awareness of the important part they have played in research, education, and recreation.

It would have been pointless to have started instructing the people about national parks and museums and the benefit they could derive from them, until they had been taught to appreciate and develop a conservation consciousness toward natural resources generally. It is in this field that the Natural Resources Board, working as an independent body, has played a vital part in these formative years, building up a steady and comprehensive conservation education program. By the 1930's much of Rhodesia's topsoil had already been washed into the rivers and streams and was fast on its way to the sea to be lost forever. This had to be stopped at all costs, and to do this a comprehensive farmer-education program was launched.

Working with the Research, Conservation and Extension Services and area conservation committees formed throughout the country, the board made immediate use of radio, the national press, magazines, films, filmstrips and slides, together with the production of booklets and bulletins, to stress the improvements to be gained by contour ridging, grass strips, and waterways in arable lands; the use of organic and inorganic fertilizers, crop rotations, and correct stocking rates; the advantages of fire as a servant against bush encroachment and the danger of fire that becomes the master; the hazards of streambank cultivation, and the importance of vlei and sponge protection.

This campaign has continued and been intensified over the years and has paid handsome dividends, so that today it is true to say that in terms of practical conservation measures in all areas, from peasant to advanced farm practices, Southern Rhodesia is among the leading countries of the world.

Much of the success that has been achieved, particularly in the tribal areas, is due to the fact that the campaign in all its aspects, particularly the cooperation given to government agencies, has ema-

nated from the board, which is an independent, nongovernment body; but much more has been achieved by this campaign than mere conservation of the soil and water. It has resulted in higher standards of farming, which in turn have meant better standards of living.

That then was the immediate problem. The long term approach was the conservation education of the country's youth. Here again the problems that had to be surmounted were tremendous. Schools have been built as rapidly as the country's economic development will allow, but it is quite obvious that the program could in no way keep up with the population, which trebled in 30 years in the early 1900's and is today reputed to be doubling every 25 years. In addition to this, urban populations working in industry and commerce also had to be awakened to the importance of the country's natural resources and the need to conserve them.

It was realized, therefore, that a progressive conservation education campaign must be undertaken, particularly in the schools. In the early years, money, the shortage of staff, and the urgency of the soil and water conservation campaign in the farming areas limited the amount that could be undertaken. However, a Conservation Day was organized during the year, when members of the board's staff and the Departments of Conservation and Education and of Agriculture visited schools throughout the country and talked to them about conservation, encouraging them to plant trees in the school grounds for which special ceremonies were arranged. This was not altogether satisfactory, as it does, of course, take a trained and experienced person to put any subject over to a classroom of children.

The next step was, therefore, to encourage education authorities to introduce conservation education into the school curriculum. The education authorities, themselves short of teachers, had to contend with overloaded classes; and, in addition, many of the teachers had come from overseas, were not conversant with the problems of the country, and were largely unsympathetic towards the importance of conservation education.

The Natural Resources Board therefore started conservation education courses for teachers in the school vacations. These were held at some holiday resort and thus gave the teachers a free holiday, during which talks and outings were organized to give them an appreciation of the country's conservation problems and the services, such as national parks and museums, that were available to them. Two or three such

courses were held each year, which, at the most, catered to some 150 teachers. This nucleus started to create an interest in conservation education in the schools, which enabled the Board, in conjunction with the Conservation and Education and the Agriculture Departments, to speed up the number of teachers who could be catered for by organizing day or morning outings on weekends in large and small communities throughout the country.

At the same time, the Conservation Day was extended to a Conservation Week and, by approaching the ecclesiastical bodies, Sunday of Conservation Week was observed as Conservation Sunday. A definite theme was taken for Conservation Week, starting with the importance of soil. Cyclostyled sheets were prepared, showing how the theme could be introduced to children; and, in the preparation of these sheets, a careful study was made of material produced in Europe and the United States. It was necessary to start right at the beginning and, taking any object in the classroom, trace it back to its origin—the soil. This approach was so successful that each natural resource is now taken as a theme for a whole year, with Conservation Week forming the highlight of the year's activities, not only in the schools, but for the whole population.

As the theme for 1961 was Wild Life Conservation, it would seem appropriate, in view of the close link between this resource and our national parks and museums, to take this particular year's activities as an example.

At the beginning of the year, a national poster and slogan competition was organized, the winning entry forming the basis of the National Campaign Poster and embodying the slogan "Conserve Wild Life—Don't Destroy—Let's Enjoy." Tens of thousands of these posters were distributed throughout the country in shops, garages, halls, offices, schools, and clubs. As a result of international publicity, copies of these posters were to sent to organizations in the United States, Great Britain, Brazil, Australia, New Zealand, the Republic of South Africa, West Germany, Kenya, and Tanganyika, and, of course, were widely distributed in Northern Rhodesia and Nyasaland.

In order to gain wide support for the campaign and to insure overall distribution of material, all chambers of commerce, publicity associations, town management boards, wildlife and hunters associations, and travel agents were kept fully advised of details of the campaign and its progress, and all gave the board their full support. The cooperation

of these bodies does much to insure the success of any campaign, and commerce and industry in particular can play a major part in adding their financial backing for the production of material, particularly in these times of financial strain.

For instance, a leading oil company sponsored the production by the Natural Resources Board of over 40,000 wildlife coloring books, which contained 24 outline illustrations of different wild animals, with a short simple writeup on each. The cost of this production was over £1,200, and the books were distributed to primary schools throughout the country. In addition, a large tea concern ran its sales campaign on a wildlife theme and, through the board, distributed colored wall charts illustrating 50 different animals. Picture cards of these animals were not only given away with packets of tea bought in shops, but large quantities were also made available, together with special albums, for free distribution to schools. The same company offered a special prize in a National Wild Life Photographic Competition, which enabled a number of senior school children of all races to spend 1 week in a national park.

Another instance is a leading soft drinks company, who used the National Campaign Poster, plus the slogan, in all their advertising and gave away miniature models of wildlife for a specified number of their products' bottle tops. By working in conjunction with this company, not only did the wildlife campaign generally receive far more publicity than could otherwise have been achieved on the board's limited financial resources, but the company donated over £400 towards wildlife conservation. This money went towards a national appeal for funds to reintroduce white rhinoceros into two national parks, and to restock national parks throughout the country with certain species of wildlife rescued from the rising waters of Lake Kariba and other areas, where wildlife is in danger of extinction.

Following the general pattern of conservation education, special courses were held for teachers; and in districts adjacent to national parks and museums, visits and outings were arranged for them.

A special advertising program was implemented, which not only drew attention to the campaign and canvassed for support, but also highlighted pernicious practices such as snaring. This program was supported by special articles in the press and magazines, which not only emanated from the board but also from conservationists, both in the government and otherwise.

Advertising was also used for special competitions for children, for which attractive prizes were given. Particularly successful was a coloring competition, in which applicants were sent a scenic picture incorporating some ten different species of animals. Entrants to the competition also had to name the animals. Many thousands of children of all races entered for this competition.

A most popular and successful approach was the production of tens of thousands of the game "Snakes and Ladders," which was adapted to the wildlife theme. At the bottom of each ladder, a good wildlife conservation practice was illustrated, which allowed the player to move his counter up the ladder. At the head of each snake, a bad wildlife conservation practice was illustrated; the player landing on this square had to move his counter down the snake. By this means, children had instilled in their minds a number of good and bad wildlife conservation practices without any direct instruction being given to them. As in the case of the campaign poster, this approach attracted the imagination of many countries. Requests have been received for permission to adapt this approach to local conditions.

Apart from material actually produced by the board, reprints of selected articles such as *Huxley in Africa; The International Importance of African Wildlife* by Fulbright Scholar Thane Riney, and *Wildlife and Human Values in Southern Rhodesia* by T. Riney and R. H. N. Smithers, were purchased and distributed throughout the country.

Two colored posters under the titles *Game Animals of Rhodesia—Antelopes* and *Some Rhodesian Birds of Prey* were produced in cooperation with other government departments.

Wide use was also made of the radio, particularly on a program called "Our Natural Resources," which is produced by the Natural Resources Board each week. Throughout the year, the campaign theme was highlighted on this program, and special scripts were written for translation and broadcast in the vernacular. During Conservation Week, special radio programs were introduced, such as a talk for "Rural Correspondence Schools," a quiz on the "Young Rhodesia" program, which has become a popular feature attracting many thousands of entries. Every morning of the week, a competition entitled "What Animal Is It?" attracted tremendous support. Each day the first three correct entries opened received attractive prizes donated by commercial firms.

As already explained, Conservation Week forms the focal point of

the year's activities. Schools throughout the country arranged their own school exhibitions. The best work from each school in each region was then exhibited in the main regional centers. Then the best work at each regional exhibit was put into a national exhibition, where national parks, museums and the University College of Rhodesia and Nyasaland put on special displays and demonstrations. The board awards certificates of merit for outstanding work done by class groups and individuals, which attract keen competition between schools for their award.

This campaign had a tremendous impact on the country. It has been a major step towards creating an appreciation of our wildlife resources, their conservation and wise utilization and the importance of national parks and museums in the overall pattern.

The theme for this year's campaign is "Trees and Shrubs." It is being conducted on similar lines to those described and, although the theme may not be expected to capture the imagination to the extent of wildlife, indications are that it will in fact be just as successful.

It has been shown how in Southern Rhodesia an intensive conservation education program has been built up to create a conservation consciousness in the minds of everyone. Today, as is already the case in practical conservation, the country is rapidly taking its place alongside other leading countries in the conservation-mindedness of its people.

The stage is now set for the people of the country to appreciate and take advantage of the far-sightedness of governments of the country's early history, who made provision for national parks and museums. There are, however, many problems, not the least of which is transportation and the accessibility of national parks and museums to a population widely dispersed over an area of 150,000 square miles.

Nevertheless, a start has been made. Air travel is available to the major parks, and in all cases, of course, the parks are accessible by road. Most parks are well equipped with good, reasonably priced accommodations; and each year some 415,000 visit our national parks, with visitor days totaling some 670,000. But more important than this, the Natural Resources Board and National Parks Board are active, as a first stage, in arranging primarily for school children of all races who live within reasonable distance of national parks, to be taken to them. The parks principally involved are MacIlwaine, Victoria Falls, and Wankie.

Probably the most important factor is that an awareness and appreciation of our national parks has been created, not just for their educa-

tional and aesthetic value, but also for their recreational potential. The stage has therefore been reached, when it has become economically practicable to increase park facilities and to organize cheap day or weekly excursions to the parks. With the better standard of living brought about by the improved conservation farming practices of the rural dwellers, a greater cross section of the community are, and will be, able to avail themselves of the amenities and enjoyment of the national parks.

In regard to museums, the position is somewhat different. As a result of research, they have been able to produce many publications of both scientific and general value, which receive a wide distribution both within and outside the country. The results of research and published in the serial publications of scientific societies and in the *Occasional Papers of the National Museums of Southern Rhodesia,* of which some two or three parts have been produced annually since 1936. In the field of popular publications, the museums have produced booklets of subjects such as *Rhodesian Wild Flowers, The Hawkmoths of Central and Southern Africa*, and checklists of birds and animals covering Southern Rhodesia and surrounding territories, based on material collected by museums themselves.

By providing facilities for research workers, other museums and organizations in Africa and overseas, and by cooperating in research projects with overseas museums, universities and, of course, within recent years with our own University College, they have played no small part in distributing knowledge and creating educational facilities, not only in Rhodesia, but throughout the African continent and the world at large. Within the territory, close cooperation is maintained with departments and commissions operating in fields of common interests as, for example, the Natural Resources Board, the National Parks Board, the National Historical Monuments Commission, the Forestry Commission, the National Archives, and the Department of Wild Life Conservation. They have carried out surveys in national parks and in other specific areas, which come under the control of these bodies. Because of their interest in zoology, geology, etc., they are particularly concerned in the development of the interpretive side of national parks and have plans for the establishment of small regional museums within these areas as a means of interpreting these parks to the public. This development has started with the provision of small exhibits at the Victoria Falls and Rhodes Inyanga National

Parks. In recent years, however, this activity has been slowed down because of the rebuilding program and the pressure on technical departments of the museums, which normally undertake this work. Nevertheless, this work will go ahead and will be of considerable value now that we have, as already explained, created an appreciation and interest in our national parks and museums.

The museums have also played a part in the conservation education campaign. Members of their staffs have at all times been available to lecture to teachers at the conservation courses, and the opportunity has not been lost to hold many of the courses and outings at the museums. In addition, there is an organized program every other Saturday morning throughout the year at which junior members of the Friends of the Museum Society are given film shows, talks, and demonstrations on all aspects of natural history, including the art of taxidermy.

THE EDUCATIONAL CONTRIBUTIONS OF NATIONAL PARKS IN JAPAN

by

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As a young man, Tetsumaro Senge was a skilled mountaineer and skiier and developed a deep interest in nature and the out of doors. His enthusiasm for the national parks of Japan was stimulated by Tsuyoshi Tamura, who is known as the "father of the parks" because of his important role in the development of the Japanese park system. Mr. Senge graduated from the forestry department of the University of Tokyo and in 1931 joined the National Parks Division of the Ministry of Welfare. He served with this division until 1959.

In addition to his present duties as executive director of the National Parks Association of Japan, he is also director of the Japanese National Tourist Association and a member of the National Parks Council of the Ministry of Welfare.



A LONG CHAIN of islands stretching from south to north, Japan has a fairly complicated topography with a more than 3,000-meter high mountain range crawling at the center of the main island. There exist many active volcanoes and hot springs. Surrounded by cold and warm currents, and with high humidity and copious rainfall, the country, belonging to the subtropical zone rather than to the subfrigid zone, abounds with a rich variety of plants. Although there are few large mammals, many rare insects and birds are found.

Being historically very old and comprising a huge population, Japan has utilized much of its narrow land for various types of industries, such as agriculture, forestry, cattle breeding, and power generation; and, in fact, little remains in its natural state. Since national parks and quasi-national parks are the most outstanding of those places which have managed to retain much of nature, they are indispensably important spots to study geographical features, geology, ecology of animals and plants, etc. The preservation of nature is strongly called for by the academic world also.

In Japan, there are many historic relics, vestiges of ancient civilization, hoary structures, ancient tombs, and so on, which bespeak the country's oldness. At some parks, their cultural properties are as highly evaluated as their natural beauties. Akan and Shikotsu-Toya National Parks, the Ainu villages in their vicinity, the Toshogu Shrine, the Rinnoji Temple and the Futa-arasan Shrine at Nikko National Park, the Ise Shrine at Ise-Shima National Park, the Kumano-Sanzan Shrine and the Nachi Kannon (the goddess of mercy) at Yoshino-Kumano National Park, the Itsukushima, Ohyamazumi and Kotohira shrines at Seto Naikai National Park—all these possess great religious, historic, and architectural value, many of which are designated by the Cultural Properties Protection Law.

Dewa Sanzan Mountains at Bandai-Asahi National Park, Mt. Nantai at Nikko National Park, Mt. Tateyama at Chubu Sangaku National Park, Mt. Fuji at Fuji-Hakone-Izu National Park, Mt. Ohmine-san at Yoshino-Kumano National Park, Mt. Hakusan at Hakusan Quasi-National Park—these mountains were holy grounds of the ancient religion of the mountains, and even today many believers in white robes are seen climbing these mountains.

There are also relics of early Christian culture in Japan at national parks in the Kyushu Island, and ancient tombs and shell-heaps at parks

in the Tohoku district. Many of the shrines, treasuring antique documents, furnishings, festival equipment, paintings and writings, swords and the like are designated by law as cultural properties. Most of the national parks in Japan are indispensible and important places for the study of human and cultural science, such as history, architecture, and arts and crafts.

Among the educational facilities for national parks, museums play an important part, but at present there are none established directly by the state. State-subsidized general museums exist only in Nikko and Fuji-Hakone-Izu National Parks. Simple exhibition facilities are set up at the administration offices or reception rooms of respective national parks.

Unique ones include an exhibition featuring mainly shells at Yoshino-Kumano National Park, the municipality-run mountain museum in Chubu Sangaku National Park, the Moyoro Museum in Abashiri Quasi-National Park, and the aquarium in seashore parks. Privately owned are the volcanic museum in Aso Park, and so on.

Besides these, government offices and universities possess volcanic research institutes, botanical gardens, and fisheries experiment stations, and these bodies are playing the same role as museums.

As mentioned above, many time-honored shrines and temples exist in national parks, having treasure houses where ancient documents, paintings, writings, swords, and furnishings of high cultural value and permanent interest are on display. These treasure houses offer suitable places for the study of history, religion, arts, and crafts, and are used as widely as the museums.

For the 19 national parks throughout the country, the state-appointed park rangers numbered only 52 in 1961. The average number of rangers for each park, therefore, was less than three; and even at Nikko and Fuji-Hakone-Izu National Parks, which are the most representative of the Japanese national parks, there are barely about five each. To increase the number of park rangers is an urgent necessity.

The duties of the park ranger are general park administration and guidance of visitors to parks, but there are no park rangers specializing in either of these. In Japan, there are no ranger-naturalists and ranger-historians. Since the zoning system has to be adopted for national parks, it follows that, if any of the parks intends to do something, it is required to obtain the sanction or approval of the Welfare Minister. In submitting a project plan to the Welfare Minister, the park ranger

is responsible for preparing a survey report to accompany the plan. This is peculiar to Japan and is very time-consuming. As a matter of fact, many park rangers are too busily occupied with this work to attend to interpretation for, and guidance of, visitors.

In an effort to correct this situation, local public bodies in those areas where national parks exist employ their own park rangers to do more work primarily assigned to rangers. In the case of Nikko National Park, Tochigi Prefecture took the initiative in placing park rangers and letting them conduct interpretation work for the benefit of visitors.

The central government, for its part, is making efforts to augment the number of park rangers but, as a temporary measure, adopts the honorary ranger system under which well-rounded persons of leadership and a deep affection for nature, past 30 years of age, are appointed as honorary park rangers on the recommendation of local public bodies. Their tenure is for 1 year, and at present about 300 to 400 honorary rangers are working without recompense throughout the country.

They belong, in most cases, to the National Parks Association, Nature Conservation Society, cultural properties protection bodies, local public bodies, schools, alpine organizations, ski associations, Boy Scouts, or the Travel Association. They are working very hard in the spare hours they have at their disposal, regarding the work as honorable. In the future, it is hoped, this system will be normalized in such a way as to pay reasonable salaries and travel allowances.

According to a public poll conducted by the Cabinet in 1960, those who like to travel accounted for 63 percent of the total coverage, those having no particular liking, or disliking, for travel, 25 percent, and those disliking travel, 12 percent. The survey revealed that those of higher schooling and living standards, those in their twenties, and city dwellers have a stronger desire for traveling. The number of travelers is estimated at 500 million man-tours a year. This means arithmetically that each Japanese makes five trips a year on the average.

In recent years, increased income, more leisure hours, and improved transport facilities are stimulating travel. In 1960, visitors to national parks totaled 90 million and to quasi-national parks, 51 million. These figures eloquently bespeak what significance these parks assume in the national life. The total, 141 million, compares with 87 million in 1957, representing an increase of 62 percent or 54 million.

Nikko National Park is one of the most representative parks in Japan that many Japanese are eager to visit once in their lives. Vis-

itors to this park totaled 7,290,671 in 1960, or a surprising 202.9 percent over the number of visitors in 1951. In other words, the number doubled in 8 years. Not only that, 1960 saw a rise of 13 percent over the preceding year, and the number is expected to rise hereafter.

Under such circumstances, the park is indisputably as crowded with visitors and traffic as are busy quarters in cities. This phenomenon is not exclusive to Nikko, and perhaps Hakone is worse.

The overuse of the parks is by no means welcome. The natural environment of parks will not only be spoiled and the parks littered, but this situation also will make visitors to national parks end in mere sightseeing or pleasure-seeking. Under these conditions, it is quite impossible for visitors to become acquainted with nature, or for park rangers to give lectures to them.

It is interesting to note that travel in Japan is characterized by heavy party tours, not family or individual ones. The foregoing survey showed that those who traveled in a party accounted for 66 percent. The turnstile at Nikko National Park reported that 50 percent of those who passed the gate were transported by chartered buses for excursion parties. When smaller groups, who rode sightseeing buses and regular buses, were added to them, the percentage rose above 60 percent. This tendency is seen at other national parks, though a few parks—primarily for mountaineers—are understandably exceptional.

Most of these group tours are organized by travel agents, transportation companies, government offices, companies, labor unions, various organizations, and schools.

Family travel is on the increase, but it is not so heavy yet. This may be attributable partly to financial factors and partly to the structure of Japanese houses, which are vulnerable to burglary. Many people, therefore, prefer party travel that is more economical and better arranged.

Party tours, organized by companies, government offices, and the like, are in most cases designed to give comfort to employees and at the same time to enhance their mutual friendship. Sometimes a party comprises hundreds of people, and buses are a common means of transportation. On a journey, the bus girl explains various places and things of interest along the route or even introduces relevant folk songs. Such being the case, travelers have little chance to listen to park rangers' explanations.

Explanations by bus girls are usually full of flowery words but are

superficial. It is necessary to make them scientific and accurate with the cooperation of sightseeing bus companies.

School excursions are regarded as part of the regular curriculum, and students in upper-classes in elementary schools, junior high schools and senior high schools make less-than-a-week tours. A 1959 Education Ministry survey found that 45,000 schools had such excursions, and over 5 million students participated. The survey's findings were:

		Percentage of questionnaires collected
Elementary.....	2, 389, 167	76. 9
Junior high.....	1, 606, 387	87. 7
Senior high.....	734, 003	89. 3
Total.....	4, 729, 557	

Major destinations are national parks and quasi-national parks, and Nikko, Fuji-Hakone-Izu, Ise-Shima, Seto Naikai, and Aso National Parks, as well as the Biwako Lake, a quasi-national park, rank among the "Best Ten" along with big or historic cities such as Tokyo, Osaka, Kyoto, and Nara.

As a school excursion is part of the regular curriculum, it is arranged carefully. An explanation of the places to be visited and the objects seen is prepared in advance, so that the students can set out with background knowledge of them. After arriving at these parks, teachers give lectures to the students, and park rangers actively join them to offer explanations together. If need be, slides are shown at the hotels where the students are staying. Some schools incorporate explanations by park rangers in their excursion programs from the beginnings.

Rangers' interpretations seem most effective at campgrounds. Campers usually stay longer than ordinary travelers, and in the daytime many of them set out to climb mountains or take a hike. Park rangers go along with these campers and give outdoor lectures. Their lectures on plants seem most interesting to them. At night, they circle a campfire and enjoy the rangers' educational explanations by the use of movies, slides, etc. At some parks, specialists in the fields of geographical features, geology, animals, and plants are invited to give specialized guidance and interpretation.

Generally, however, trips are brief; most of them are for 2 or 3 days. The cabinet's survey showed that the overnight trip accounted for 46 percent and 3-day tours, 27 percent.

Excepting students, few can take a week's vacation even in the summer in Japan. This is also the case with government offices and big companies which allow their employees a total of 20 paid holidays a year. Consequently, few people stay long at the same spot or enjoy recreation leisurely. Instead, they move from place to place in a short period of time—a travel pattern which characterizes sightseeing trips. Being hurried, they often miss a chance to listen to the park rangers' explanations attentively.

Japanese have a habit of not showing earnest interest in lecture meetings or academic presentations. In fact, motion pictures and other attractions are presented to attract audiences to lecture meetings. Explanations by park rangers bear a similarity to such lecture meetings.

The history of their country being old, the people show deep interest in history, mythological stories, and legends from their childhood, but many of them do not take as deep an interest in natural science. It may be said, after all, that their love for nature is an appreciative one, failing to develop into scientific interest. This tendency is particularly noticeable among those who are middle-aged or older. Youngsters tend to take keener interest in natural science as school education advances, but their interest is not necessarily sufficient.

Park rangers' explanations are well received when they come to human and cultural affairs, but visitors' response to those of natural science are not encouraging. Here lies the difficulty of interpretation.

As described thus far, national parks and quasi-national parks have much educational value, preserving things in their natural state. However, the lack of museums and similar educational facilities and the acute shortage of park rangers in charge of rendering guidance to visitors are regrettable facts. Moreover, the attitudes of travelers are not always wholesome from the standpoint of national parks. In these circumstances, national parks are not producing the desired educational fruit.

To enable national parks and quasi-national parks to make more educational contributions, the following measures need to be taken hereafter:

1. To propagate the ideal of national parks and quasi-national parks.
2. To establish educational facilities, including general museums, roadside exihibition facilities, and explanatory boards.
3. To increase the number of park rangers, ranger-naturalists and ranger-historians, and institutionalize honorary rangers.

4. To make pictures, movies, slides, etc., for rangers' use.

5. To conduct research on aspects of culture and natural science in national parks.

6. To enlist the cooperation of the government offices, organizations, and academic societies concerned.

7. To render guidance in the proper use of national and quasi-national parks, provide low-priced accommodations, create People's Holiday Villages, and lead visitors from mere sightseeing to a study of nature by enabling them to stay longer.

8. To examine the system of national parks to prevent damage to the parks caused by overuse.

Section Four—B

RAPPORTEUR

Bennett T. Gale

Section Chairman Drury suggested a change in the panel title, namely, "National Parks as Furthered Through Public Education and Interpretive Services."

Like some of my predecessors, I find it difficult to summarize the many points and facets of the papers and discussions from the floor, particularly those concerning interpretive facilities and techniques. In this connection, however, I commend to you the invitation of our discussion leader, J. R. B. Coleman, for you to consult, if you wish, with those Canadian and United States conferees who have had experience in the field of park interpretation. I am also quite sure that Roger Tory Peterson and Herbert Zim would be glad to join in this effort and to render any possible assistance to you in your presentation problems.

Daniel Beard's paper outlined the history of the interpretive movement in the United States parks and enumerated and evaluated some of the techniques in use. It is important, I think, to repeat one of his final statements, that an enthusiastic interpreter is the key to effective park interpretation.

J. A. Pile in his paper pointed out the very real problem of establishing a national park education program in a young, developing country and suggested that an awareness of the need to conserve a nation's natural resources must come first. He discussed in some detail ways and means of creating an all-out conservation education program leading gradually to park interpretation.

The present park situation in Japan was discussed by T. Senge, who feels that the educational work as now conducted there is woefully inadequate. However, the vast number of school children served by this program makes it appear that T. Senge is much too modest. Specifics for the ideal staffing and facilities in Japan were also considered in the paper.

Comment from the floor was concerned primarily with techniques

of a public education program. In addition, the training of interpreters (including possible traveling scholarships for mutual exchange of personnel); the necessity to involve the youth of the country in the education effort; and the differing problems of interpretation of historic sites where cultural, rather than natural, values predominate, were topics brought to attention.

Two major points were stressed in these discussions; the first concerns the subject title as it appears in the program, "Public Education as Furthered by National Parks Through Interpretive Services."

The parks themselves present unparalleled opportunity for the education of their visitors. In the great scenic parks, we have examples of earth forces, processes, and concepts, all spectacularly displayed. These are natural exhibits of international significance.

I would like to add the practical comment that my colleagues in the geological profession fully realize this fine opportunity and want to take advantage of it to help popularize geological science. They are working very closely with our own National Park Service and, I know, will welcome the chance to work with any or all of you in interpreting the features of specific parks. Look them up. Where better to tell the stories of volcanism, of glaciation, of mountain making, of ground water solution, and similar earth sciences than in the places where these landscapes are so well shown? Where better to consider concepts of geological time of Jurassic environments or the like than at sites with the evidence all around?

The same opportunities are available in other fields and are equally well displayed in the parks. Interpretations of wildlife, of undisturbed but varying environments, of area or regional ecology, of the story of early man and his struggle to gain his place in the world, and of the stirring events that make up each nation's historical heritage can be best accomplished where these features or sites are preserved and protected.

The second point is more attuned to N. B. Drury's modification of our subject title, "National Parks as Furthered Through Public Education and Interpretive Services."

It is through public education that we gain encouragement in park programs. Interpretation of a park story brings with it greater appreciation of the significance of the area. People are more willing to see that proper support is provided the park, when they better understand the reason for its creation. Protection of area values is also

aided through increased appreciation of the worth of the park features. As the panelists have pointed out, it is through park interpretation that full understanding and full enjoyment of a park experience is achieved.

Finally, it is certainly the consensus that national park interpretation must be conducted both within the park and as an extension service.

Section Four—C

The third group in Section Four discussed the preservation of wilderness and habitat types in national parks and equivalent reserves. The three speakers, who came from Tanganyika, Senegal, and the United States, talked about many aspects of the wilderness. One described its importance to civilization. "Unspoiled wilderness," he said, "is a part of our cultural heritage . . . Living wilderness combines the authority of the very old with the freshness of the very new." Another told of the practical problems of establishing and maintaining unspoiled areas and dealt with such questions as the extent to which land management should be employed. The third speaker discussed the types and sizes of natural areas that are needed and, in discussing their establishment in various countries, ended with this challenge: ". . . might not this be a form of peaceful international competition?"

The discussion leader was Howard Zahniser; the rapporteur, Walter S. Boardman. Both are from the United States.

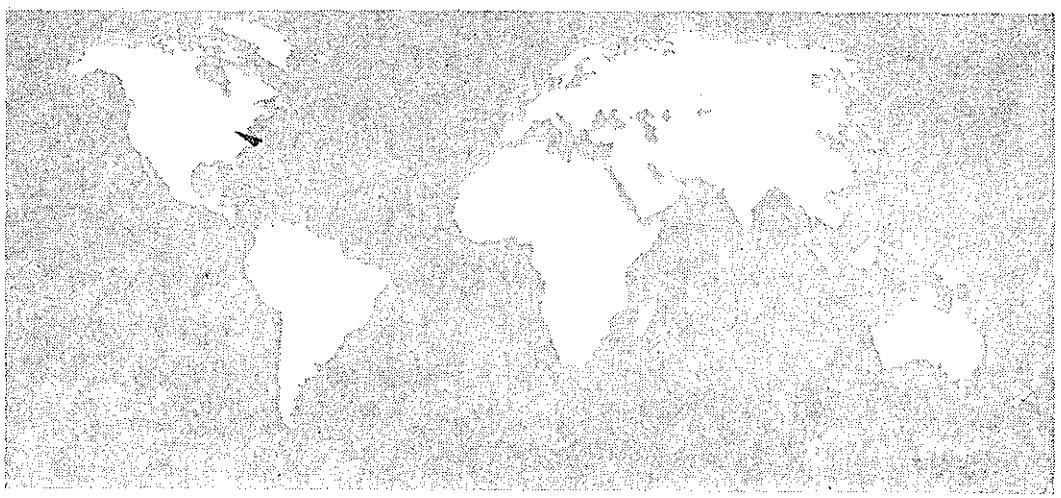
THE ENJOYMENT OF WILDERNESS

by

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Paul Brooks is editor-in-chief of the Houghton Mifflin Publishing Company, a firm whose list includes many books that are outstanding in the field of natural history. Among these are the *Peterson Field Guide Series.*

Mr. Brooks and his wife spend their holidays camping in the national parks and in the wilderness areas of the United States. An ardent conservationist, he has written a number of articles for national magazines, principally the *Atlantic Monthly* and *Harper's.* These articles reflect his joy in the wilderness and also his great concern that it be preserved.



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A CLUB IN New York to which I belong has a time-honored category of membership described as "amateurs of letters and the fine arts." If I can make any contribution to the present discussion, it will be as an amateur of wilderness—strictly unprofessional, unofficial, and relying on love of the subject to compensate for lack of professional training. May I then begin with the personal reaction to our country of an old friend from England who is far more knowledgable than I, but who has just seen the wild places of America for the first time? His comments run counter to the tradition of English visitors; they are, if anything, overgenerous.

"Americans," writes James Fisher in *Wild America,* "show us too little of their earthly paradise, and publicize too little their determination to share it with wild nature. Perhaps they have forgotten that they had dedicated national parks before we in England had even one little, local, private nature-protection society. . . . Never have I seen such wonders or met landlords so worthy of their land."

A graceful compliment; I wish that we could accept it at its face value. Unfortunately, we cannot. We have, during three centuries, ravaged a shockingly large proportion of our land; Fisher, guided by his fellow ornithologist Roger Tory Peterson, saw the best of what is left. Only a tiny fraction of the United States remains virgin wilderness. But the appreciation of this priceless remnant by such visitors from overseas is intensely stimulating. It is a positive voice among the cries of havoc: a salute to what we still have, rather than a beating of the breast for what we have lost.

Any lover of the wilderness who has walked or climbed or paddled a canoe through a wilderness area can dispense with philosophical explanations of its importance. The impact of a primeval wilderness like the Olympic rain forest is immediate and overwhelming; once you have explored it, lived with it, begun a little to understand it, you are willing to raise heaven and earth to save it from destruction.

Yet the question remains: How widely is this attitude shared and understood? It is easy to preach to the converted, but does the public at large know what we are talking about? The question has very real bearing on the creation and administration of wilderness areas in our national parks and forests. After all, this appreciation of wilderness for its own sake is a very recent element in Western culture. During most of our history, wild country, as opposed to ordered landscape, has been feared and abhorred. The park, the formal garden, the rural re-

treat: these were a part of civilized living; wilderness, however, was wasteland, and rather terrifying wasteland at that.

The cult for domesticating nature reached its height in England during the early 18th century, as one can see in the writings of men like Dryden and Pope.[1] Only here and there was a voice raised in dissent. To take a single example: that philosophical nobleman, the Earl of Shaftesbury,[2] confessed without apology to a passion for primitive landscape "with all the horrid graces of the wilderness itself," as opposed to "the formal mockery of princely gardens." Far be it from him, he said, to condemn a joy that is from nature.

Apparently his books were widely read in America; two centuries ahead of his time, he was a remote spiritual ancestor of the founders of our national parks and wilderness areas. Later on, Jean Jacques Rousseau[3] preached the gospel of wild nature. But not until the time of the romantic movement did European writers begin to praise the wilderness as such.

"Nature-poetry of the romantic revival," writes the late Alfred North Whitehead,[4] "was a protest on behalf of the organic view of nature . . . a protest on behalf of value." This "organic view" and the values it represents lie at the root of the present discussion.

To the early settlers in America the virgin forest was, quite naturally, a "howling wilderness," an enemy to be conquered. By 1756 John Adams[5] was writing complacently in his diary about the wonderful way in which we had subdued the land to our will: "Then the whole continent was one continued dismal wilderness, the haunt of wolves and bears and more savage men. Now the forests are removed, the land covered with fields of corn, orchards bending with fruit, and the magnificent habitations of rational and civilized people."

Not till our fear of wilderness (and most of the wilderness itself) had vanished did we begin to appreciate what we had lost. Even today, two centuries after John Adams wrote, we are still dominated by the Old Testament philosophy that (as John Muir[6] put it) the world was made especially for man: the stars to light our dark ways, hemp to wrap packages and hang the wicked, sheep to provide clothing "on perceiving the demand for wool that would be occasioned by the eating of the apple in the Garden of Eden." This is the identical attitude of those who consider virgin forest as just so much wasted lumber. It is the attitude of the professor of forestry who remarked: "Well, now, you know, nature hardly ever does anything just right."

The whole idea of national parks is less than a century old. President Lincoln signed an act of Congress to save our redwoods in 1864, during the height of the Civil War; our first national park, Yellowstone, was founded shortly thereafter. Nor is it surprising that this now worldwide movement should have originated in America. Here man's destruction of his environment has been most rapid, most efficient. Here, until fairly recently, we had room enough to lay waste, to consume, and to move on. The founding of the park system coincided with the demise of the frontier, with the realization that we could no longer simply live off the country, but from now on we must live with it.

Europeans knew this centuries before America was discovered. They have cherished their land, nurtured their forests; they have turned a smiling face—rather than turned their backs, as so often in America—upon their rivers. The town in the Cotswolds or in the Black Forest is a part rather than an interruption of the landscape. But, perhaps inevitably, something irreplaceable has slipped away; something that in America, and in Africa, we still have time to save. This is what we are considering here: primeval wilderness, not as man made it, but as it has been evolving since long before man was on the earth.

Our system of national parks, and specifically of wilderness areas within the parks and forest reserves, is based on the principle that wilderness is of value for its own sake—scientifically, culturally, spiritually. Principles, however, don't get you very far until they are implemented by practical politics.

The idea of preserving wilderness in the national forests by official decree had its formal beginnings in the 1920's, under the leadership of pioneer conservationists and original thinkers such as Aldo Leopold.[7] It received an improved status in 1939 when, after years of effort by Robert Marshall[8] and others, the Chief of the Forest Service was authorized to set aside national forest lands in two categories: "wilderness areas" in single tracts of not less than 100,000 acres; and "wild areas," of less than 100,000 but more than 5,000 acres. The use and administration of each was to be the same. There were to be "no roads or other provision for motorized transportation, no commercial timber cutting . . ."; no hotels, stores, resorts; no landing of airplanes or use of motorboats except for administrative needs or emergencies. These remain today the minimum safeguards for maintaining the integrity of such tracts of land and water within both the

national parks and national forests. Now at last we trust that the Wilderness Act—the fruit of incredibly patient and devoted effort by many of the men who are attending this conference—by federal statute will protect officially designated "wilderness areas" from exploitation.

Untamed wilderness is, I believe, an essential element of our culture. This statement may be a semantic paradox, since the very word "culture" denotes *something nurtured* by man. Yet in its broader connotations I believe that it is true. Appreciation of wild nature can be a creative act, like appreciation of a work of art or literature or music. The quiet contemplation of a grove of redwoods dating back to the birth of Christ; a day's hike, binoculars in hand and pack on back, along a rough trail through the remaining hardwood stands of the southern Appalachian Mountains; the breathtaking sight of flight after flight of white ibises coming in at sunset to roost among the Florida mangroves, or a flock of wild white rams on a snow-specked ridge in Alaska; the first look into the depths of the Grand Canyon or across the limitless distances of the rolling Arctic tundra—these are aesthetic experiences, they are a part of our way of life.

As in the case of great works of art, such scenes, such experiences, have an impact on many levels. The impact deepens with closer acquaintanceship, for familiarity with wilderness breeds not contempt but humility. The infinitely complex, delicately balanced relationships in a natural community are a source of increasing wonder to anyone who studies them. And while the amateur of wilderness cannot hope to understand such a community so thoroughly, let us say, as a trained biologist, he can appreciate the values that it represents. In the language of the scholar's world, wilderness areas are source documents; they are the original points of reference. As the oneness of all life is recognized not just as a metaphysical concept but as a scientific fact, the old adage, "know theyself," must be expanded to include "know nature"—not only under controlled conditions, but as it functions untouched by man. Every new discovery, whether within the atom or in outer space, takes us further from the concept that man is the measure of all things.

Our craving for wilderness increases, I think, in direct proportion to growing urbanization. The more city pavements, the more suburban sidewalks, the more precious become the surviving forest trails. The so-called "urban sprawl" is a disease of technical civilization, which has reached epidemic proportions in the United States. We have seen

the countryside near our towns and cities slowly dying of creeping conformity. Our national symbol, the bulldozer, flattens the hills, fills the ponds and smooths our path to manmade monotony. As Phyllis McGinley [9] says in her poem *In Praise of Diversity*, we are "altering to a common way/The planet's holy heterodoxy."

Even beyond the cities, beyond the identical "main streets" of our towns, identical ribbons of concrete threaten the remotest wild areas with the twin blights of sameness and tameness. Wilderness on the other hand represents the very essence of diversity, both within the living community itself, and as between one type of environment and another: between the hammocks of the Everglades and the tundra of Mount McKinley National Park; between the southwest desert and the northwest rain forest; between the dunes of Cape Cod and the alpine meadows of the High Sierra. "Praise Allah," says the Eastern proverb, "for the infinite diversity of his handiwork." Yet year by year we whittle away this priceless heritage, forgetting that it is possible for an environment, as for a species of animal, to become extinct. This slow process of attrition is difficult to dramatize and to publicize. A man will drain a swamp who would not go gunning for the last ivory-billed woodpecker; he will allow the grasslands to vanish bit by bit though he would not shoot a whooping crane.

These considerations have, I think, immediate bearing on the administration of our wilderness areas. Roads, lumbering, mining, dams and drainage ditches, motorboats, and airplanes—they are all agents of attrition. How they operate is generally obvious, but not always. Let me take an example close at hand. If, before I had ever visited Olympic National Park, someone had told me that "selective cutting" should be allowed, that "salvage" of overage trees would actually improve the forest, I might have found the argument convincing. I did not know that the seedlings in this rain forest get their start in decaying wood and therefore depend on our leaving the forest floor undisturbed; I had not seen scores of tiny hemlocks or Sitka spruce growing out of one fallen trunk nor beheld the great buttresses of ancient trees that had started life high off the ground in the crack of a rotting stump. I had not realized at first hand what havoc the removal of one of these giant trees would cause in the close-knit texture of the surrounding forest.

As with lumbering, so with roads. A wilderness area is by definition a roadless area. But if it is to serve any recreational purpose, you have to get to it, and in some terrain this poses problems and justifies

compromise. Judging from my single visit to the Everglades, for example, I doubt whether one would get very far on foot; here the problem has been solved by putting through one road with short spurs to ingenious and highly educational nature trails around certain hammocks, leaving the rest wilderness. On the other hand, to construct a road of any sort along, let us say, the ridge of Isle Royale—which is easily walkable from end to end by trail—would be a sin. Or take Mount McKinley National Park, which has few trails but does have one beautiful gravel road from which the visitor can see wildlife close at hand, and whence the more energetic can walk up the streambeds or across the tundra. When my wife and I were there last summer, this road was being widened and modernized; and with every foot of speedway something was being lost. Beware the roadbuilder; give him an inch of gravel and he will take an ell of macadam.

Next to lumbering and roadbuilding, the most obvious threat to our wilderness is probably the internal combustion engine: on the water, in the air—and recently on the forest trails themselves in the form of the insidious machine called a trail scooter or a "tote-gote," which can go wherever a mule can. Outboard motors are now made light enough to be carried across canoe portages; thank God, they eventually run out of gas. For pontoon planes, every lake is a landing field; they would have ruined the great Quetico-Superior canoe country if the conservationists, in a historic assertion of wilderness integrity, had not had them stopped by Presidential proclamation.

And, of course, the greatest dangers to wilderness come under the head of progress: dams for waterpower and irrigation, drainage of marshes that reduce the ducks we want and increase the surplus crops we do not. Some people feel that, if you insist on preserving certain chosen areas from such destruction, you are a reactionary, sentimental "nature-lover," who fails to understand that natural resources are to be "used" and that the place for green is on the back of a dollar bill. Other opponents of wilderness preservation claim, by some obscure chain of reasoning, that such a policy involves "special privilege." This view is tenable only if one rejects the basic premise that virgin wilderness has an intrinsic value. The man whose favorite recreation is driving a car or a powerboat would be indignant, if the trees along the roadside were cut down and the lakes clogged with saw-logs. He would say rightly that there is a place for everything, and that some of our country should be saved for scenic driving and motorboating.

By the same token, at least a small portion of our land should be set aside and administered for those willing to make the effort to enjoy it on foot or by canoe. It is not a matter of privilege, but of land use.

In this connection, I think it is now generally agreed that the enormous pressure on our parks, in an era of exploding population, can be relieved only by the creation of a national system of recreation areas in places of scenic beauty outside the parks themselves, with adequate campgrounds and other facilities for the increasing number of American families who like to spend their holidays out-of-doors.

All this involves technical and administrative problems beyond the scope of an amateur of wilderness. One point, however, seems clear: In a highly commercialized technical society, wilderness can be kept alive only by a combination of education and law. Our subjugation of the natural world around us has reached a point of absolute power: a point where the measure of our maturity is our self-restraint, our willingness not to control every inch of our environment. Unspoiled wilderness is a part of our cultural heritage. And as all of us at this conference know—as anyone knows who has ever set foot in a virgin forest—it is a dynamic, not a static, thing. Living wilderness combines the authority of the very old with the freshness of the very new. As Thoreau [10] wrote, "All nature is a new impression every instant." Perhaps that is why it will always strike a responsive chord in man.

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(1) John Dryden, English poet (1631–1700). Alexander Pope, English poet (1688–1744).
(2) British statesman (1621–83).
(3) French writer and philosopher (1712–78).
(4) Contemporary British mathematician and philosopher.
(5) American statesman and second President of the United States (1735–1826).
(6) American writer and pioneer in conservation (1838–1914).
(7) American conservationist and writer. Worked for the U.S. Forest Service and later taught at the University of Wisconsin, Madison, Wis.
(8) American conservationist and author. Worked for the U.S. Forest Service. Founded the Wilderness Society.
(9) Contemporary American poet.
(10) Henry David Thoreau, American writer and philosopher (1817–63).

THE STRICT NATURE RESERVE AND ITS ROLE

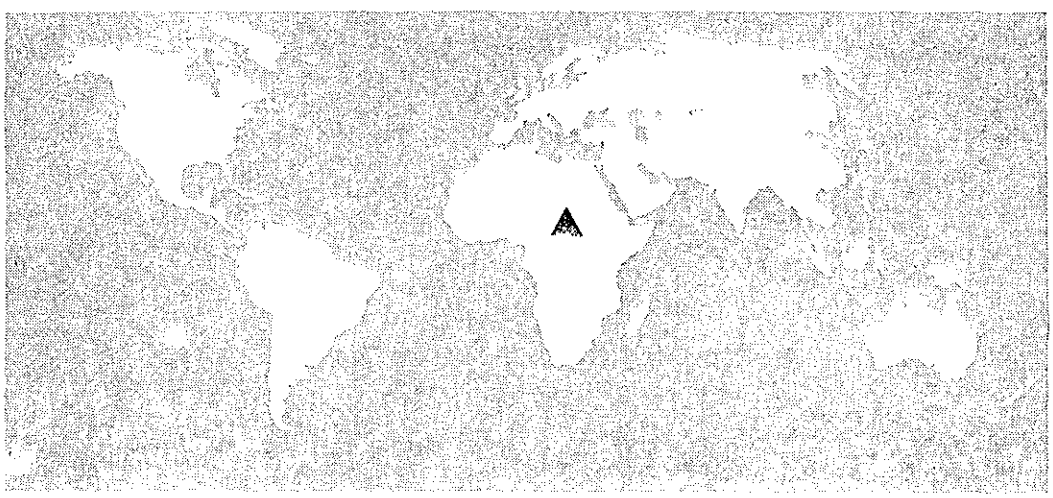
by

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As a scientist, Théodore Monod is primarily concerned with oceanography, but his interests are not confined to that field. He has published papers on subjects ranging from geology to botany and zoology. His travels have taken him to many distant places, but he is especially familiar with Africa and the Sahara.

He is professor at the Museum of Natural History in Paris, director, as well as founder, of L'Institut Français d'Afrique Noire in Dakar, and president of the African Scientific Council.

He has been deeply concerned with conservation for many years and has played an important role in the creation of national parks and reserves in French-speaking Africa, particularly the Niokolo-Koba Park in Senegal.



688-804—64——18

WHILE THE IDEA of a national park is well known, although the term is far from always being employed in the same sense, that of the "strict nature reserve" (in the terminology of the 1933 London Convention) could not, for obvious reasons, arouse a similar degree of interest. In the usual sense of the term—and consequently in the form in which the United States popularized it far in advance of other countries—a national park is an area protected for its own sake and administered for the enjoyment and instruction of the public. By contrast, the purpose of the "strict nature reserve" (hereinafter referred to as SNR) is the absolute protection and preservation of an area, from which shall be excluded all human activity whatsoever, with the sole exception of scientific research.

The official definition of the SNR, which it is necessary to know, is given in article 2, paragraph 2, of the 1933 London Convention:

"The term 'strict natural reserve' shall denote an area placed under public control, throughout which any form of hunting or fishing, any undertakings connected with forestry, agriculture, or mining, any excavations or prospecting, drilling, levelling of the ground, or construction, any work involving the alteration of the configuration of the soil or the character of the vegetation, any act likely to harm or disturb the fauna and flora, and the introduction of any species of fauna and flora, whether indigenous or imported, wild or domesticated, shall be strictly forbidden; which it shall be forbidden to enter, traverse, or camp in without a special written permit from the competent authorities; and in which scientific investigations may only be undertaken by permission of those authorities."

Prof. E. Bourdelle, in his useful *Attempt to Unify the Nomenclature in the Field of the Protection of Nature*,[1] makes the SNR one of three types of "general nature reserves," the other two being "managed nature reserves" and "national parks": "Strict nature reserves are general nature reserves set up for the purpose of absolute protection and of scientific research, to which access, forbidden in principle, is reserved exclusively for certain scientists or for government officials."

C. Diver, J. Ramsbottom, and G. F. Herbert Smith, in discussing *Nomenclature for Nature Protection*,[2] equate the "strict nature reserve," as defined in the London Convention, with a "strict wilderness area",[3] between which the authors see "no essential distinction" even though the first is an SNR and the second an area from which human

activity is barred only in its more commercial aspects (motorized transportation, trading, etc.).

The SNR is, in fact, a unique idea, born both in the Belgian Congo (despite the term "national park" still used for it) and in Madagascar; unfortunately, since then it has largely failed to set a precedent.

As one proponent of the concept of the SNR, Professor Georges Petit, has justly observed:

"The scenic point of view, which is an inherent part of the concept of the national park, is here superseded by the solely biological point of view: in a strict reserve, nature is left to itself. Under no circumstances will the ranger be tempted to indulge in reforestation, even by means of species borrowed from the reserve itself; under no circumstances will he attempt faunal restocking, even with individuals of indigenous species. Understood in this way, the nature reserve is an ideal center for biological observations".[4]

Moreover, the fact must be emphasized that these observations, far from being merely passive and concerned solely with the gathering of data, involve chiefly a dynamic aspect; in fact, they constitute a genuine experiment, inasmuch as the spontaneous evolution of a scrap of nature sheltered from human activity can be observed from the beginning. For this reason, as Professor V. Van Straelen (one of the most earnest champions of the idea of the SNR) has justly observed, "the observation of a strict nature reserve will resemble an extensive undertaking of experimental ecology".[5]

But for this "natural" experiment, on the scale of a fragment of the cosmos, to attain full significance and be thoroughly effective, it is further necessary that the undertaking be assured of continuity.

Now we are well aware of the constant struggle against many opposing forces, involved in the defense of a protected area, even of a national park. Similarly, it is not surprising if the less popular SNR, lacking the support of public opinion, is still more gravely threatened—even when, as is often the case, it has been legally made an "inviolable national property"—since even the most exact terms of a legal document will not stand the attacks of interests and appetites. The sad story of the SNR of the Monts Nimba in West Africa is proof enough since, despite its enormous biological interest, it is in a fair way to succumbing to the attacks of an international coalition of financial and mining interests. The misdeeds and on occasion the crimes committed because of the "holy hunger for gold" (*auri sacra fames*) are

well known; the "hunger for iron" (*ferri fames*) has here revealed itself as at least equally malignant.

This deplorable example scarcely induces optimism. Nevertheless, we must not be discouraged; moreover, even if, as one sometimes fears, the protection of nature were entirely a rearguard action, the battle—hopeless though it might be—must be fought to the end *pour l'honneur*.

Let us then act as though the term were valid and man were prepared to understand both the utility and the beauty of the SNR formula and, consequently, the need to increase the number of such reserves throughout the world.

Such a solution will immediately raise a number of technical problems, two of the most important of which will undoubtedly be the dimensions to be accorded the SNR and the methods of protection.

Needless to say, no set of rules can usefully cover the infinite variety of situations which may arise in matters of experimental biology or of applied natural history. It is clear, for instance, that a question of degree is posed by the function of the intrinsic character of the habitat that is to be assured of absolute protection. A small lake could perfectly well constitute an acceptable SNR for its aquatic inhabitants, provided, of course, that the protection covers a sufficient portion of the watershed and the body of water is not enclosed in cultivated—or, worse, urbanized—surroundings.

I well realize that in theory the segregation of an area ostensibly shielded from all human activity is utopian, since the very composition of the terrestrial atmosphere, with its various components (CO_2, etc.) and its dust remains subject to the influences of mankind. In practice, nevertheless, the elimination of almost all such activity remains possible, especially in nonindustrialized areas.

Naturally, one will always attempt to protect an environment or series of adjacent environments in which the total biomass has been preserved and which consequently presents a biological series tending most often toward the macrophanerophyte—or, more simply, toward the tree for flora and toward the larger mammals (carnivores, ungulates, etc.) for fauna.

But let only one species of large size be introduced, and one must immediately face the necessity of an area sufficient for the normal development of the biological and sometimes migratory activities of this species.

Nor do the proponents of large areas lack for arguments. As V. Van Straelen writes (*loc. cit.*, p. 84):

"In a given country it is preferable to assemble into a small number of parks [6] the superficies which it is both desirable and possible to make into absolute reserves, thus providing areas large enough to contain complete biotic units. The danger of the springing up of abnormalities due to biological isolation is reduced to a minimum; and the migrations, seasonal or other, of certain animals (notably mammals) are not hindered."

This is obvious, and one would not dream of confining elephants, giraffes, zebras, and gnus to areas too small for them, even though such areas might be perfectly acceptable as other biocoenoses.

Furthermore, the size of the larger species of fauna, to whose activities the area of the SNR must conform, is not the only factor in the case, since the possibilities of protection enter into it equally. The greater the extent of the SNR, the greater will be the difficulties of supervision. Would it be better to have an SNR of adequate size for its larger fauna but too big to be effectively defended, or a satisfactorily guarded SNR—even in the extreme, enclosed—too small for the normal activities of certain species?

In some cases "joint" sites will help resolve the problem—for example, when an SNR is itself situated within a national park or other kind of reserve (forest, for instance). But it is beyond question that the ideal will always be: adequate size and adequate supervision. This is the most desirable, in default of which the feasible must always approach it as nearly as possible.

It is useless to disguise the fact that the costs will grow along with the area and that if a policy of systematic sampling of environments, in the form of a collection of type-habitats, should be developed, the urgency of the measures to be taken will without doubt lead to the multiplication of SNR's, even of average or reduced size, in order to save a maximal number of characteristic environments.

In fact, one must ask whether the time has not come to undertake the establishment, on a worldwide scale, of a collection of well chosen type-environments, whose preservation would be the object of as consecrated a care as is given in museums to the prototypes on which rests the description of animal or plant species.

This idea, proposed for discussion at the conference on the *Conservation of Nature and Its Resources in Modern African States*

(Arusha, Tanganyika, 5–12 Sept. 1961), was the subject of Recommendation No. 6 by this conference:

"The preservation of type-habitats in Africa is understood as follows:

"The conference, RECOGNIZING the necessity of creating throughout the whole of Africa a collection of types of natural habitats assured of absolute protection and constituting a sampling of environments as representative and as varied as possible;

"CONVINCED that this type of protected area bears, in addition to its obvious scientific interest, a practical importance so much the greater in that it alone is able to present, among areas subject to human interference, invaluable evidences of spontaneous evolution;

"EXPRESSES the wish that in every country the idea of the "Strict Nature Reserve" as officially defined by the London Convention (1933) be applied as often as possible, provided that the creation and management of such reserves be invested with all appropriate precautions, and in particular that a qualified scientific body be called upon both for selection of the areas to be protected in this manner and for the direction of studies to be carried out within these Reserves."

The idea of a collection of type-habitats has, thus, been sketched for Africa. It would be highly desirable to see it taken up on a still wider scale, in such a way as gradually to extend the envisioned collection of type-environments over the whole face of the globe.

Even if on-the-spot responsibility (management and supervision at the minimum) must be that of each state, it would be necessary, in my opinion, for a qualified international organization—the International Union for Conservation of Nature and Natural Resources, for example—to be charged with—

(1) Adjudicating proposals according to an overall plan of ecological division of the globe.
(2) Registering the SNR's at a central clearinghouse.
(3) Procedure (to be precise, giving selected areas the status of "type-environment," together with the legal effects entailed by this elevation to the rank of an internationally guaranteed natural property).
(4) Keeping up-to-date scientific records of the type-environments.
(5) Publishing an annual list of these together with a summary of the results of studies undertaken (including bibliographical and other pertinent references).
(6) Negotiating with the states on all matters pertaining to the

undertaking (selection of areas, technical or scientific problems, etc.) and giving them, on their request, due assistance.

It goes without saying that the central scientific authority would be able to delegate suitable parts of the program to bodies covering, as the case might be, a continent (e.g., Africa), a region (e.g., Central Africa), a regional bioclimatic type (e.g., the saharo-sindian deserts in Africa), or even, if expediency demanded it, a state, in spite of the fact that every effort should be made to transcend purely political frontiers.

As for the distribution of type-areas over the surface of the globe, it would undoubtedly be necessary to abandon any known bioclimatic or ecological division and to proceed by wisely established stages in such a way that, at the end of a certain number of years, the various divisions would all be represented.

Suppose, for example, one took as average divisions the 10 world-wide "formation-types" recognized by Dansereau:[7] forest, park, savanna, jungle, prairie, grassland, steppe, desert, tundra, sere—or the 15 "classes of formations" of Schimper and Von Faber (1935) accepted by Dansereau:[8] tropical rain forest, subtropical rain forest, monsoon forest, temperate rain forest, summergreen deciduous forest, needle-leaf forest, evergreen hardwood forest, savanna woodland, thorn forest and scrub, savanna, steppe and half-desert, heath, dry desert, tundra and cold woodland, cold desert. It is on the basis of a preliminary classification on this order, with its successive subdivisions, that the program to be undertaken would be set up.

How far is it desirable for this carving up to go? Unquestionably, it would be useless to try to decide this dogmatically in advance, since a host of contingencies must necessarily be taken into account. But one must not conceal the great complexity of the problem as well as the necessity of avoiding a twofold danger: oversimplification on the one hand, overcomplication on the other hand.[9]

Take, for example, the western Sahara. For this region, I believe, I have been able to distinguish, reckoning from a fivefold division based on the nature of the substratum, 33 biotopes: 8 for a rocky substratum, 9 for compacted, 8 for friable, 6 for saturated or liquid,[10] and 2 for organic.

Here one might hesitate between two methods: One consists of attempting to increase the number of protected areas even if each one has to be of reduced size; the other is the selection of areas sufficiently multiform to include a series of different habitats.

In desert or subdesert regions—Sahara and Shel, for example—the extent of the bioclimatic sameness is such that, after all, a relatively restricted number of protected areas will certainly be sufficient to constitute a representative sampling. This might lead one to believe that, if one is to be satisfied with a small number of SNR's as a center, it would be desirable for each to be of considerable size; and since it would be a matter of arid zones very thinly populated, supervision would not be very difficult. Now, nothing could be farther from the truth, for in a nomadic country, people (and consequently domestic animals) are constantly on the move, and there is little land that escapes them. It is true that at the center of an "empty quarter" such as Mãjabat-al-Koubrã in the western Sahara, completely without waterholes for 250,000 square kilometers, an SNR of 1 million hectares (2,500,000 acres) would be almost as safe as the same area at the heart of the Antarctic; but in a case like this access would be equally difficult for scientists, and the SNR would remain quite theoretical.

In every way, the problems of supervision of the SNR's to be designated as the collection of type-environments remain difficult to solve. Certain types of habitat lend themselves more easily to protection than others—for example, an isolated mountain, an island, or a crater lake.

In many cases recourse to an enclosure has proved to be absolutely necessary, and experience has shown (I am thinking of the protected portions of Atar in Mauritania) that even fenced-in enclosures in a desert zone are not always sufficient protection against small livestock like goats.

If the difficulties of the task must be fully recognized, and if it presents a truly gigantic undertaking—just the thing to discourage by its very vastness all except a dreamer or a visonary—could it not rather constitute for man an objective worthy of his dignity as a thinking being and number among the responsibilities which he now assumes for the physical future of the planet? Furthermore, might this not be a form of peaceful international competition, just as capable as many other kinds of challenges, of eliciting the devotion, the labor, and the enthusiasm of a man who persists in considering himself *sapiens?*

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(1) *Pro Natura,* I, 1, August 1948, pp. 33–36; résumé in Derniers refuges, 1956, pp. 62–63.

(2) *Ibid.,* I, 2, October 1948, pp. 57–60.

(3) According to the Pan American Convention, this would be a "region under public control characterized by primitive conditions of flora, fauna, trans-

portation and habitation, wherein there is no provision for the passage of motorized transportation and all commercial developments are excluded. Such a reserve shall be maintained inviolate, as far as practicable, except for duly authorized scientific investigations or government inspection or such uses as are consistent with the purposes for which the reserve was established."

(4) Protection of Nature and questions of "definition" in: Contribution à l'étude des Réserves Naturelles et des Parcs Nationaux, *Mém. Soc. Biogéogr.*, V, 1937, pp. 5–14.

(5) Les Parcs Nationaux et la protection de la Nature, 1937, p. 82.

(6) In the Congolese sense of the term.

(7) A universal system for recording vegetation, *Contrib. Inst. Bot. Univ. Montréal,* 72, 1958, pp. 1–58, 21 figs. (cf. figs. 18–19); cf. P. Dansereau and J. Arros, Essais d'application de la dimension structurale en phytosociologie. I. Quelques exemples européens, *Vegetatio,* 9 (1–2), 1959, pp. 48–99, figs. 1–83, pls. A–F, tables I–IV (repre. *Bull. Serv. Biogéogr. Univ. Montréal,* No. 22, Dec. 1959) (cf. pl. D).

(8) Cf. P. Dansereau, *Rev. Canad. Biol.,* 11 (4), 1952, figs. 4 and 6, and 1958, pp. 21–27.

(9) I wish to be clearly understood: there is no "over"-complication in nature; and the ideal solution, of course, would be successfully tracing from reality our efforts toward the protection of habitats. But, again, it is highly necessary, for reasons of simple practicability, to make do with the *possible* for want of the *desirable.* A makeshift, certainly; but all the same, *little* is worth more than *nothing!*

(10) Aquatic habitats must not be overlooked; a general program on a world-wide scale must include various types of marine environments—littoral, coral reefs, mangroves, etc., at a minimum.

SCIENCE AND NATURE RESERVES

by

JACQUES VERSCHUREN

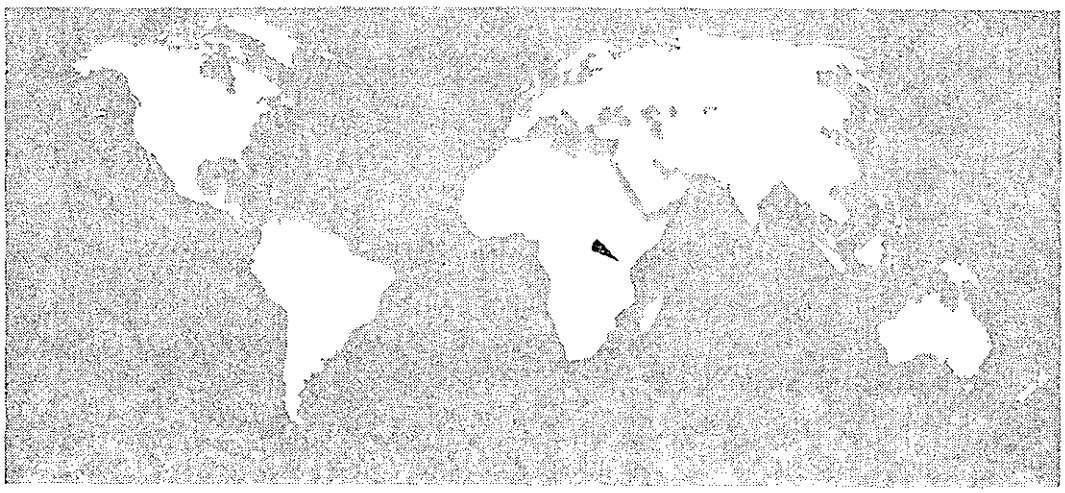
Biologist, Food and Agriculture Organization, United Nations

ARUSHA, TANGANYIKA

After obtaining his doctorate from the University of Louvain in Belgium, Jacques Verschuren went to the Congo, where he had previously conducted a scientific survey. For 10 years, he was a biologist and ecologist for the national parks of the Congo and Rwanda, working principally for Albert National Park. He was one of the last persons to live like an early explorer in central Africa, making his safaris on foot and sleeping under a tent in the jungle for some 2,000 nights.

Before the Congo became independent, he had explained to the local African authorities the need for protecting nature. He remained in Albert National Park at the time of the Congo's independence and, thanks to the cooperation of the Congolese authorities and the courage of the guards, he kept the park intact under unusual and difficult circumstances. He has remained on excellent terms with the authorities of the Congo and praises their attitude toward the preservation of nature. He believes they have played an outstanding and determining role in the preservation of the parks of the Congo.

In 1962, he was appointed biologist for FAO of the United Nations in Tankanyika and has been leader of the Serengeti Research Project, directing the scientific survey of one of the most important fauna reserves in the world that contains more than 1,000,000 ungulates.



WHILE IT IS true that cultural, economic, and touristic values are important factors in justifying the establishment or the maintenance of national parks, it is no less clear that one of the principal arguments in their favor is their scientific value. During recent years epecially, there has been a slight tendency to overlook this point of view. In the face of the rapid development in many countries and the effort to survive, the immediate advantages of nature reserves—i.e., their direct economic yield alone—have been put forward. Their scientific values, being less directly appreciable by the general public, have been somewhat ignored.

In every science, it is necessary to appeal to criteria, to control samples. The basis of all scientific research is the ability to refer to a given unit of measure. The taxonomist, whether botanist or zoologist, considers it essential to be able to draw on carefully preserved "types" which can in no way be altered by man. In ecology, it is fully as vital to be able to refer to clearly fixed type-environments or standard biotopes.

It has been extremely difficult to discover any more unchanged environments. Only the national parks are in a position to provide the biologist with control-specimens of nature. Just as the taxonomist has his type specimens, the ecologist needs to draw on biotope-types—i.e., strict nature reserves.

It has been maintained that to "leave nature to itself" is a piece of foolishness, that nature is in perpetual evolution, and that to keep segments statically "stable" is nonsense. The proponents of strict nature reserves have been charged with "stick-in-the-mud-ism." This matter should be properly understood. It is in no way a question of "outnaturing nature," but a desire to eliminate one essentially variable factor—the human element. It is readily acknowledged that these biotope-types are constantly evolving, and it is this dynamism that gives them all their value as well as spontaneity.

It might be objected that man makes up a part of nature and that the mere action of suppressing his activity in a national park is in itself, paradoxically, a human intervention. Unfortunately, it is impossible to determine how far man intervenes naturally, how far he can still be looked upon as making up part of the natural biotic totality. Every attempt in the national parks to maintain so-called primitive societies in proper balance with the environment has proved itself a failure,

whether it was with certain pastoral peoples in East Africa or with the pygmies of the great equatorial forest.

Total and complete elimination of the human factor from a strict reserve is not an end in itself, we readily grant. But at least the error is completely measurable and invariable. A national park where attempts are made to modify nature would no longer constitute such a fixed basis for reference.

Far be it from us to state that management is not justified. On the contrary, it often enters in to the point of being indispensable. But in a strict nature reserve it is to be excluded. In administering a national park, it is expedient to establish clearly the objective sought.

There is scarcely any doubt that the survival of certain animal species is connected indirectly, or even directly, with human intervention. The whole problem of brush fires is an example here. Biologists are not wanting who believe that certain open botanical formations in Africa, as well as in other continents, were established by and, chiefly, owe their continuance to their being regularly overrun by agricultural fires. Quite often it is especially difficult to discover whether a fire has been set by man or whether it started spontaneosly. In a strict nature reserve, the problem of fires is without doubt the most troublesome to deal with. The fact remains that these "open" areas, which are due partly to fires, correspond to a "T" with the areas inhabited by the larger ungulates in Africa. This does not exclude the possibility that the absence of any intervention might not lead to some of the larger mammals becoming scarce, if not disappearing.

When it is decided to undertake management in a national park, it is well to establish management on a solid scientific basis. It should not be an end in itself, but a means. It is highly desirable to be able to observe in parallel the evolution of strict nature reserves and of wisely managed areas.

The methods used should be a function of the goal to be reached. In the Serengeti National Park in Tanganyika, for example, it is obvious that the major objective is the continuance of the migrations of hundreds of thousands of the larger ungulates, followed by their predators—migrations which in themselves constitute a scientific phenomenon of unparalleled value. It would be senseless to refuse *a priori* to intervene, in the name of complete protection, and to look upon the reduction, if not the disappearance, of the herds, caused by the eventual self-destruction of the habitat, as a deeply interesting biological experi-

ment! In the case of the Serengeti National Park the goals are quite clear, and no method of management to attain them should be considered repugnant.

It must be recognized, furthermore, that nature, left to itself, often puts up a very good defense. In the absence of human intervention, a remarkable balance is usually established rapidly. The most striking example is without doubt that of the Albert National Park in the Republic of Congo, where, despite every pessimistic prediction and contrary to what casual observers thought, there has been no evidence of the slightest self-destruction of the habitat after more than 30 years of strict and complete protection.

One argument often brought forward in Africa against strict preservation in the national parks is that of destruction of the environment and, in particular, the evident reduction of the forest cover by elephants. It would be useless to deny the influence and the effects of these herds in reserves such as the Murchison National Park in Uganda, the Tsavo National Park in Kenya, and the Albert National Park in the Congo. But this is really a matter of an unsound argument. The abundance of elephants in these parks is entirely abnormal and is caused by the immigration of animals from surrounding areas, where they enjoy no protection; it is thus a result of an artificial factor. The increase of the herds and their effects on the vegetation are due to the lack of a proper standard of complete protection; strict preservation of these reserves would require their enclosure, not to prevent the animals from getting out, but really to make it impossible for them to get in.

In many cases the slaughter of excess animals merely comes to the same thing as restoring the equilibrium unbalanced by human activity. It is, then, a matter of compensatory management.

It is clear that all biocoenoses should be rigorously protected in a strict nature reserve. In national parks (using the term in a broad sense) the stress is generally laid on the larger mammals and on birds, but these make up only one specifically limited aspect of the biologic totality, even if the most spectacular. To establish a strict nature reserve amounts to protecting the soil, the subsoil, the flora, and the fauna. It is equally essential to see to the prevention of aquatic environments; unfortunately, we have arrived almost nowhere in this respect; and even in the most highly protected parks, fishing is often authorized. No adequate study has been made of the relationships

between the vegetable and animal plankton, molluscs, fish and larger aquatic mammals of central Africa.

Recent studies have shown that it is advisable to preserve carefully the micro-organisms of the soil with their complex interactions. Certain very special biotopes, which up to now have been completely preserved from human intervention, may perhaps be the hiding places of molds which can turn out to be of capital importance in problems of human therapeutics.

Finally, it should be added that it is only in the strict reserves that the specialist in animal psychology can study the unadulterated behavior of the higher vertebrates.

In the temperate regions where, only too often, the biotic totality no longer includes the larger mammals, relatively restricted areas can be adequate. But as soon as the higher vertebrates enter the picture, and even more when it is a question of more or less migratory species, the area envisaged must be on a totally different scale.

In any case, the fact must not be lost sight of that there is a critical minimum area. Some aspects require sufficient space to be able to reveal themselves; "edge-effects" are very marked in the outskirts of reserves; numerous disturbing influences appear on the borders (streams, high watersheds, seeds, etc.), and only the center of the reserve is safe from these.

As far as possible, strict reserves should be located at the heart of the national parks, where the protection is less rigorous but where the park acts to a certain extent as a buffer.

The relationship between national parks and strict reserves should be clearly established. It would, of course, be ideal for every national park to be in its entirety a strict reserve; but we must be realistic and recognize the economic and touristic claims of the areas preserved.

Every national park should include inviolable "sacred zones," to which the average tourist has no access, with priority given in every way to scientific considerations. As far as possible, these areas, dedicated to scientific research, should be difficult to enter. It is clear that, so long as it does not go beyond certain limits, tourism is in no way disadvantageous to most of the higher vertebrates, which quickly become accustomed to man; they even become too well accustomed, and their behavior loses its natural character. The use of vehicles for moving about the national parks, with the aversion of the "civilized" to going on foot, is a blessing for the true naturalist. The most inter-

esting zones are thus very inconvenient of access and therefore are better defended than by the sternest repressive measures.

Access to strict reserves should be permitted to naturalists to enable them to carry out definite research programs. It is nevertheless essential that such regulation is not so Draconian as to make the measures for preservation annoying. From a psychological point of view it will sometimes be desirable to authorize certain important visitors, even though nonscientists, to enter these sanctuaries.

Although the maintenance of nature reserves as control-samples is important in itself, it is also essential that these preserved areas be the object of sustained scientific studies. We might observe in this connection that there are too many naturalists who, under the pretext of indispensable biological studies, do not hesitate to carry out real massacres. Here, we believe, one can never be strict enough. A biologist privileged to work in a nature laboratory must at all costs give the preservation of the reserve absolute priority over his own labors. Such a scientist should prove that he is a convert to the protection of nature.

It is highly desirable for a national park to include a series of quadrates, whose evolution is regularly studied, as is the case in Albert National Park. In Serengeti National Park, within the framework of an extensive research plan, we have established a series of quadrates in various biotopes, subject to different conditions of grazing, burning, etc. Finally, it should be added that the strict reserves used as controls, as well as environments which are subject to management, should be studied by means of both aerial and ground photographs of chosen sites, taken periodically and preferably near or in the quadrates.

An example of each of the most typical natural associations of a fixed biogeographic zone should be established as a strict nature reserve. It would be ideal for it to include the greatest possible number of different biotopes. As new national parks are established, care should be taken to place under protection not only the most scenic landscapes or the areas with the most game, but also a wide variety of biotopes. The less homogeneous a park, the more interesting it is for the naturalist.

In the temperate zones, most of the primitive biocoenoses have been destroyed, but there are still plenty of untouched environments in the tropical and equatorial zones. It is desirable that a list of the principal biocoenoses be drawn up by ecologists (both zoologists and botanists). This list of biological types under protection should be kept up to

date. This conference could express the desire that a committee on strict reserves and biological-type environments be established.

Confining ourselves to Africa, we contend that it is almost exclusively the savannas or steppes, often entirely secondary growth, which are the objects of protection, as a result of the preservation given to large game. With only a few exceptions (Monts Nimba in Guinea and the northern part of Albert National Park in the Congo), no rain forest of any great extent has been made part of a national park. Nevertheless, the protection of forest samples is an urgent matter; one has only to look at a map of the vegetation of Africa to become aware that this "continent of forests" is almost 90 percent denuded! Plans have been drawn up for the establishment of a vast and remarkable forest reserve, the National Park of the Salonga, in the Province de l'Equateur in the Congo. It is fervently to be hoped that the authorities of the Republic of Congo, who have shown an exceptional interest in the protection of nature, will soon effectuate this project.

Among the forests should be specifically mentioned the mangroves of the seacoasts. But the situation as far as the mountain forests are concerned is particularly alarming. Almost everywhere in Africa—and, we believe, in South America as well—the forests of the middle elevations have been destroyed by man. The vegetative zone between 1,300 and 1,800 meters is almost everywhere secondary growth. It is only along a narrow strip on the western flanks of the Ruwenzori that the uninterrupted transition of zones of vegetation from the rain forest to the alpine environment can be followed. The bamboo forests are especially threatened.

The higher zones (alpine and subalpine flora) are better defended and in several mountain massifs enjoy a protection which is, however, far from being complete in most cases (Mount Kenya, Mount Kilimanjaro, and the Aberdare, Ruwenzori, and Virunga ranges).

The savanna or steppe of East Africa is beyond doubt the most protected environment, but, if the truth be told, entirely indirectly. It is exceedingly difficult to determine which are the really primitive associations, with fires complicating the problem gratuitously. Nevertheless, there is no lack of the open spaces that are wanting in the strict nature reserves of Africa. Some desert or near-desert areas are also very highly deserving of protection, quite as much as various swampy tracts whose future is uncertain.

More localized biotopes should also be included in strict nature reserves (lake shores, gallery forests, active volcanic areas, thermal springs, grottoes, and caverns).

Some natural associations warrant effective preservation, not as representative samples of a typical environment, but as unique examples of it. It is obvious that the crater of Ngorongoro in Tanganyika is of a distinctive character. The extinct volcanoes associated with it and the extraordinary throngs of the larger ungulates of the Serengeti unquestionably constitute for the biologist one the most valuable natural associations on this planet. Let us fervently hope that, in the rivalry between common cattle of scarcely any economic value and a fauna unique in the world, genuine cultural, scientific—and even economic—interests will unhesitatingly prevail.

The preservation of samples of primitive nature is not merely a dream of naturalists, who are wedded to the past. It is, quite on the contrary, a working basis for the biologist, who wishes to go full steam ahead in studying the dynamics of a constantly evolving nature.

The problem is of special importance in tropical and equatorial zones. Some of the new countries of Africa are privileged to possess such untouched environments in their territory. Experience in the Congo, as in Tanganyika and other new republics, has shown that the leaders in these countries have given particular attention to the preservation of their national parks. They are aware that their prestige is at stake.

Together with their cultural, economic and touristic values, the scientific interest of nature reserves is an added reason to guarantee definitive protection for national parks forever.

Section Four—C

RAPPORTEUR

Walter S. Boardman

The discussion leader, Howard Zahniser devoted a few minutes as the members assembled to telling of the Wilderness Bill in the United States Congress and of the delay in getting action. This difficulty in placing long term values above immediate profit by industry in a country of economic and other advantages shows the relative difficulty that people in new or poor countries experience in setting aside national reserves or parks.

Paul Brooks traced the shift from John Adams (1756), who thought of wilderness as an enemy to be destroyed, to the present recognition that some wilderness must be retained for man's sanity.

Faced by the increasing pressure for mass recreation and its effect upon existing parks, he presented the thesis that "the enormous pressure on our parks, in an era of exploding population, can be relieved only by the creation of a national system of recreation areas in places of scenic beauty outside the parks themselves, with adequate campgrounds and other facilities for the increasing number of American families who like to spend their holidays out-of-doors."

Théodore Monod spoke for the kind of reserve which excludes all human interference whatsoever. "One cannot pick a flower without troubling a star" was a poetic expression of one making a strong appeal for a resolution calling for strict nature reserves. In view of the more and more efficient and widespread inroads being everywhere made on natural habitats, it would appear desirable to undertake, on a world-wide scale, the establishment of a list of type environments that would benefit from a status similar to that of the type-specimens preserved in museums. This would be the basis of a series of strict nature reserves.

Jacques Verschuren, in off-record remarks, commented that 8 days ago, he was camping amid 900,000 large plains vertebrates, who were in migration in Tanganyika. The scientific value of national parks, he said, is at least equal to their cultural or touristic values and should in no case be lost sight of, even though less directly appreciated by

the general public. Management is justified in national parks but not in strict nature reserves.

He also joined with Monod in a strong recommendation that samples of the principal biocoenoses should be set aside as strict nature reserves. A list should be kept up to date by a special committee.

The economic value, as well as the scientific value, of such preserves was touched upon by Jacques Verschuren.

The question period was opened by Mr. Brooks asking how Africans and Europeans look at the strict nature reserve. Dr. Verschuren responded that while there are great differences of viewpoint, the public is sensitive to the high values.

Marcel Bahizi stated, "The strict nature preserve is important to us." Scientists on study find no changes in conditions. Poachers come largely from other countries. Last year a preserve warden was killed by them while in line of duty. He asked and received a moment of silence for this man who gave his life for his park in Africa. The conference was moved by the sincerity and intensity of Mr. Bahizi's feelings. Raymond W. Cleland from New Zealand stated that there are no buildings on preserves except those for control of introduced animals.

Edward Cliff, Chief, U.S. Forest Service, stated that his office believes in multiple use of lands. One of these uses is wilderness. The first such area was established in the 1930's, and now there are 83 without roads, hotels, or other conveniences. Hunting, fishing, controlled grazing, and even fire fighting and insect epidemic control are practical. Management for limited human use will still go on even if the Wilderness Bill is passed.

Other members of the audience said national parks must work out a compromise—congestion must be avoided. The number of visitors must be restricted, if damage appears to be done. There are two kinds of visitors—the lovers of nature, who cause no problems, and the recreationists. When recreationists learn to understand the parks, they become lovers of nature.

The problem of the possible loss of the rhinoceros in Cambodia, because its habitat has been converted to ricefields, was presented. Should a new place be made for these animals even if another habitat is altered? The answer was "yes."

There is no hunting, fishing, or destruction of life allowed in the national parks of Thailand. It is a very young country in its parks

program. How can the United States National Park Service help Thailand?

Jack Vincent of South Africa pointed out that they have gained popular support for "wilderness type" areas. Many walk 30 miles to visit them.

Anthony W. Smith asked how large a rain forest must be to become effective as a nature reserve.

Near the close of the discussion period, Jibrin Jia of Nigeria called for definitions. He asked that the following terms be clearly defined before the close of the conference: 1. national park; 2. strict nature reserve; 3. game preserve; 4. sanctuary; 5. buffer zone.

There were no good answers, and the question highlighted the need for more precise and uniformly used terminology.

GENERAL SESSIONS

Section Five

International Coordination of National Park and Reserve Programs

Under the chairmanship of Ian McT. Cowan of Canada, the discussions were carried on by two groups.

Section Five—A

The first of these, with panelists from Australia, Poland, and the United States of America, dealt with the international role of parks in preserving endangered species and type-habitats and showed how boundary parks can be maintained between nations. One speaker pointed out that the distribution of species has no relationship to present political boundaries; another dealt with the problems of international cooperation in the Antarctic; the third told about a highly successful park located on the boundary of Poland and Czechoslovakia and administered by both countries.

The discussion was led by Edward H. Graham of the United States of America, and the rapporteur was Jean Dorst of France.

CONSERVATION IN THE ANTARCTIC

by

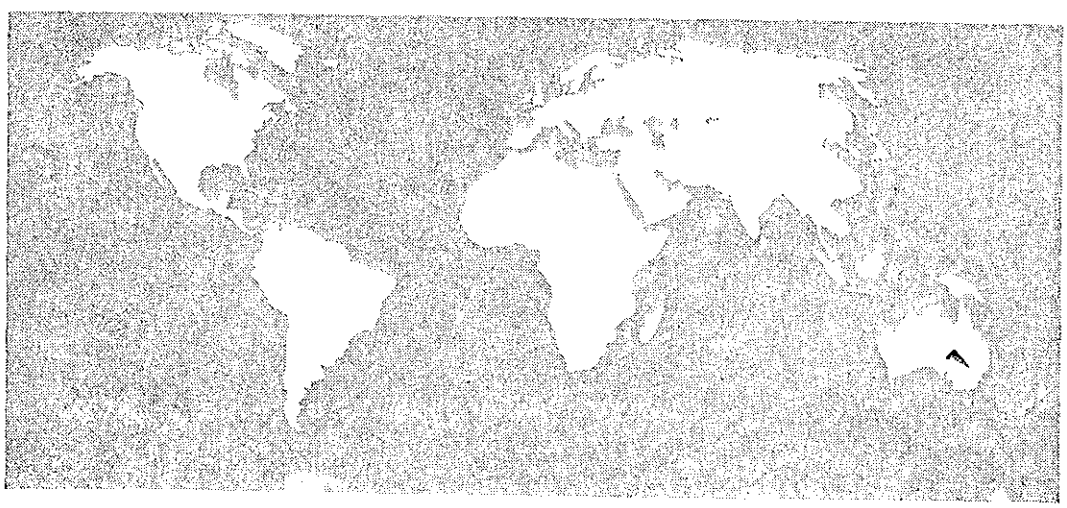
ROBERT CARRICK

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Born in Scotland, Robert Carrick earned his bachelor of science degree at Glasgow and his doctorate in zoology at Edinburgh. After teaching zoology in the Universities of Leeds and Aberdeen, he became in 1952 a resident of Australia. There he has been especially interested in the ecology of birds and mammals, studying both Australian and Antarctic species. In 1953, he originated the Australian national bird-banding plan. He has served as secretary of the International Permanent Working Group in Biology of the I.C.S.U. Scientific Committee for Antarctic Research. This group has drafted recommendations to the Antarctic Treaty Powers on how to conserve living resources.

He is the author of many publications and was organizer and editor of the First Symposium on Antarctic Biology, which was held at Paris in 1962. He is presently Senior Principal Research Officer with the Division of Wildlife Research, Commonwealth of Australia Scientific and Industrial Research Organization.



ANTARCTICA DIFFERS from the rest of the world in several respects that materially affect any measures that might be taken to conserve its scenic and living resources.

Firstly, there is no indigenous human population. This is the last great region of the world to be invaded by man, and a century of pioneer exploration of the most arduous kind is now being followed by the establishment of permanent human communities, whose activities make an inevitable impact on the Antarctic environment. This is still small-scale by any other standard, but improvements in clothing, accommodation and transport have made the Antarctic habitable to normally active people of any age or sex, and impairment of natural values in any region can be effectively achieved by a few uninformed or uninterested people with the means at their disposal. Also, some Antarctic wildlife is particularly vulnerable through its inability and lack of opportunity to adjust to human interference.

Secondly, national sovereignty is not recognized in Antarctica, as it is (usually) elsewhere in the world. The territorial claims of seven nations to sectors of the Antarctic continent are not recognized by nonclaimant nations. There is, however, a unique example of international agreement contained in the Antarctic Treaty, signed in 1959 by representatives of 12 interested nations. This treaty decrees that Antarctica shall be used for peaceful purposes only, that scientific investigation and free exchange of information will continue there, and that present claims to sovereignty are neither prejudiced nor recognized while the treaty is in force. It made provision for consultation between the contracting parties on six subjects, which include facilitation of scientific research, exercise of jurisdiction, and preservation and conservation of living sources in Antarctica. Geographically, the treaty applies to the area south of 60° south latitude, except the high seas.

Thirdly, the extreme climate has produced a region of unusual scenic grandeur, but the virtual absence of terrestrial vegetation means that the sea is the pasture on which almost all Antarctic animal life depends. It has also produced a flora and fauna of great scientific interest because of their unique adaptations to extreme cold, and of great aesthetic attraction because of the tameness of much of the fauna.

National parks in the accepted sense would appear to be impracticable in this region. Yet a case might be made for so declaring some of the representative and more impressive examples, such as snow and

mountain scenery, on the principle of not underrating man's eventual ability to modify even this environment. There is still time to get in first. The scale and simplicity of the Antarctic scene impart a peace of mind and sense of human perspective that more sophisticated surroundings seldom give; and the mountain ranges of Victoria Land, for example, compare with any similar scenery. However, even with improving air transport, including the possibility of staging-points on world air routes becoming located in Antarctica, only a very small minority of people are likely to visit there in the foreseeable future.

The scientific importance of Antarctic life fully justifies measures to conserve these forms and to study their needs. The breeding-places on land of most of the large fauna, such as seals, penguins, and albatrosses, are often the scene of large colonies that are constant from year to year. This simplifies their protection through the declaration of reserved areas.

The aspect of Antarctic conservation that could have far-reaching importance is the demonstration that it is possible for nations to cooperate fully and openly toward making one part of the world a place where development for human use will take account from the outset of the conservation of living resources and the preservation of the natural environment. If governments in other regions should accept the principle that preservation of natural values can satisfactorily be achieved only through international cooperation and early planning, the contribution of the Antarctic to progress on this front will far exceed any local achievements.

Some of the problems of Antarctic conservation have been discussed by Carrick (1960) and Murphy, and in the SCAR (Scientific Committee for Antarctic Research) report (1961) on suggested measures. Recommendations on a variety of human activities that cause direct disturbance or mortality to Antarctic wildlife have been made; and although the same problems arise here as elsewhere, they are sometimes seen in a rather more acute form. For example, birds or seals that are highly adapted for aquatic life are at a serious disadvantage on land; and when new threats materialize, such as dogs, men, vehicles, and low-flying helicopters, they fall easy victims or panic in a manner that causes heavy nest losses.

However, these are minor matters compared with the fundamental dependence of Antarctic life on the productivity of the seas, which are specifically excluded from the Antarctic Treaty. There is no inter-

national agreement on conservation of the living resources of the sea; indeed, wide differences of opinion have led to over-exploitation, e.g., of whales, and if the earlier plankton items of the food chain in the Southern Ocean (one of the richest in the world) are similarly depleted, the effect on higher forms of life will be devastating.

An encouraging feature, in addition to the international agreement that exists between governments on Antarctic affairs, is that the scientific advice of biologists is being sought and brought to bear on conservation measures. The Scientific Committee on Antarctic Research (SCAR) of the International Council of Scientific Unions (ICSU) is the advisory body whose views on all scientific and technical matters in the Antarctic are considered and, in the main, accepted by the treaty powers. The successive steps that have been taken toward achieving conservation of living resources in Antarctica are:

1. *March 1959: Third Meeting of SCAR, Canberra, Australia*

The need for conservation of Antarctic flora and fauna was noted, and the study of means of protection recommended.

2. *November 1959: Antarctic Symposium, Buenos Aires, Argentina*

Scientists of all disciplines passed a resolution that the nations supporting Antarctic stations should take joint steps to ensure the preservation of the Antarctic flora and fauna and its protection from needless persecution and destruction.

3. *December 1959: Conference on Antarctic Treaty Powers, Washington, U.S.A.*

The Antarctic Treaty was signed and included the decision to discuss preservation and conservation of living resources in Antarctica at future meetings.

4. *June 1960: International Council for Bird Preservation, Tokyo, Japan; and Seventh General Assembly of the International Union for the Conservation of Nature and Natural Resources, Warsaw, Poland*

These assemblies proposed that the Antarctic International Treaty should include appropriate measures designed to maintain the fauna, and urged the setting aside of inviolate areas for the conservation of this unique polar fauna and its natural environment.

5. September 1960: Fourth Meeting of SCAR, Cambridge, England

A suggested form of measures to promote conservation of nature in the Antarctic was prepared. This is a comprehensive statement on scientific, economic, and legislative aspects. The existing measures adopted by the 12 treaty powers are listed. It is urged that the key importance of plankton be recognized by all nations, and that activities that might impair it, such as harvesting or the introduction of alien species, should be scientifically assessed before being put into practice. The hope is expressed that nations exercising sovereignty over subantarctic islands will introduce comparable measures to the regulations they draft for Antarctica.

It is recommended that all areas of land and fresh water, including fast ice and ice shelves, and all coastal waters south of latitude 60° south should be recognized internationally as a nature reserve. Provision is made for scientific and other necessary collecting. Species or habitats which are especially important or vulnerable should be further protected by the designation of selected areas as sanctuaries.

6. July 1961: First Consultative Meeting of Antarctic Treaty Powers, Canberra, Australia

Representatives of the treaty powers agreed to recommend to their governments that they recognise the urgent need for, and consult on, international agreement for measures to conserve the living resources of the treaty area, taking into account the SCAR proposals. General rules of conduct for individuals in Antarctica were stated.

7. October 1961: Fifth Meeting of SCAR, Wellington, New Zealand

It was decided to prepare lists of sanctuaries and of species of particular scientific interest. It was considered that the Ross Seal (*Ommatophoca rossi*) and Fur Seal (*Arctocephalus* spp.) should receive complete protection throughout their Antarctic range.

In terms of international problems, conservation of living resources in Antarctica represents a comparatively simple case. But it remains to be seen when the internationally agreed measures mentioned by the First Consultative Meeting will be promulgated, and how effective they will be. Difficulties not peculiar to the Antarctic are evident.

Among the Antarctic biologists, there is some range of interest and acceptance of the importance of conservation, and a few have received definitive education in the subject. The principles of biological con-

servation are not included in many science courses. This applies much more to government administrators and legislators, who often find themselves on strange ground in biological matters and are naturally cautious. Also, agreement on peaceful purposes only, and on international cooperation in scientific research in Antarctica, are more easily achieved than agreements that impinge upon a nation's territorial claims, including coastal waters or economic activities. Every biologist knows that preservation of the habitat, which normally means assurance of food supply and shelter, is the first essential for conservation of any species, but the high seas south of 60° south are excluded from the Antarctic Treaty area. This stems no doubt from legislative difficulties and economic interests, but that does not alter the inescapable fact that the fate of the plankton is the fate of the Antarctic fauna.

The progress made between the First (Canberra, 1961) and Second (Buenos Aires, 1962) Consultative Meetings of the Antarctic Treaty Powers in consulting upon measures, as the recommendations made at the second meeting, will indicate how successful this venture in international cooperation in conservation of living resources is likely to be. The real test of the capacity of governments to accept and agree upon the more fundamental matter of conservation of the products of the sea, with harvesting of any species kept to the level of the annual surplus, lies in the future.

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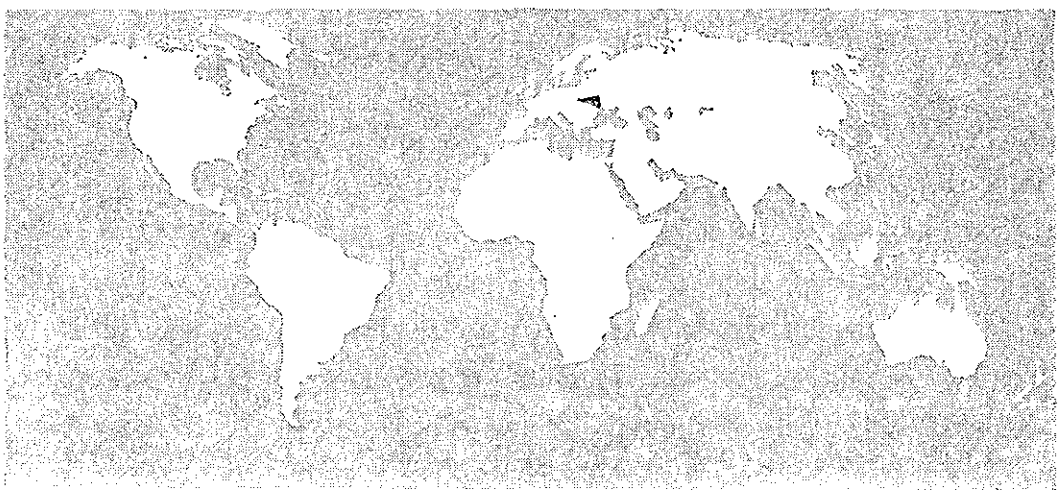
PARKS BETWEEN COUNTRIES

by

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More than 50 years ago, while he was studying the geology of the mountains between Poland and Czechoslovakia, Walery Goetel became interested in the problem of conservation. Since then, although he has continued his work as a professional geologist, he has devoted much of his time to conservation. In 1947, he participated in the conference held at Brunnen, Switzerland, to discuss the establishment of an international organization for the protection of nature; and he was present at the founding of the International Union for the Protection of Nature at Fontainbleau, France, in 1948 (now the International Union for the Conservation of Nature and Natural Resources). He has served as a member of the Union's executive board, and helped to organize the Union's General Assembly in Warsaw, Poland, in 1960.

He is professor of geology at the Mining and Metallurgy Institute at Cracow, Poland, and a member of the Polish Academy of Sciences. He is also a member of the Polish Board for the Conservation of Nature and Vice President of the Committee for the Conservation of Nature and Natural Resources at the Polish Academy of Sciences. As a conservationist, he has specialized in international boundary parks, and the parks at Tatra, Pieniny and Babia Gora—on the border between Poland and Czechoslovakia—are chiefly the result of his work.



THE ORIGINAL features of nature in various countries, especially in their mountain regions, are generally well preserved in the boundary areas. The political frontiers of countries often run across mountain chains and massifs, drawn in an entirely artificial way either along the mountainous ridges, down the slopes or along the valleys. On either side of the demarcation lines lie stretches of mountain scenery of similar features, will preserved owing to the difficult accessibility of the mountainous terrain.

In those cases where one country, lying along such a line, intends to establish in its own area a national park because of the high scientific and touristic significance of the border area, there arises a natural inclination to extend the activity of nature protection also to the area lying in the territory of the adjacent country.

In this way the Waterton-Glacier International Peace Park, connecting the splendid mountainous region across the boundary of the United States and Canada, was established in 1932.

The President of the United States sent the following message to the dedication ceremony in June 1932:

"The dedication of the Waterton-Glacier International Peace Park is a further gesture of good will that has so long blessed our relations with our Canadian neighbors, and I am fortified by the hope and faith that it will forever be an appropriate symbol of permanent peace and friendship."

These significant words properly appraise the international importance of the boundary parks. This appraisal may serve as a device for any similar initiative contemplated to be carried out in the world.

Work in Europe to establish the boundary national parks, especially those in mountainous regions cut by political frontiers, has been underway for many decades. At a number of international conferences—especially those held by alpinistic organizations in which I participated—lively discussions on the problems of creating similar parks have been undertaken; and in some cases the relevant projects are far advanced. Among such activities, those that evoke great interest include the projects for creating the boundary parks in the Alps of the Karwendel Group between Austria and Germany, in the boundary region of Grand Paradise between France and Italy, and in the Pyrenees region, adjacent to Val Ordeza, between France and Spain.

From the standpoint of international cooperation, the most interesting project for establishing a boundary park is the Eifel and Ardens

mountain region, bordering France, Belgium, Germany, and Luxembourg; but in addition to the number of countries cooperating in the protection of nature on their boundary areas, this project is further complicated by the extensive urbanization and industrialization of the region.

Outside Europe, I had encountered that problem in Central Africa at a conference held in the locality of Kigoma on Tanganyika Lake in 1929. Nature conservationists from Congo and Uganda discussed with Prof. B. Willis, of the University of California at Berkeley, the establishing of a natural boundary park in the volcanic region between Congo and Uganda; the project was developed successfully later on.

However, all the above mentioned projects (with the exception of Glacier Park) have not yet been definitely completed insofar as their legal status and other specific details are concerned, and I deem it advisable to present here in brief the case of two European boundary parks, which have been established on the Polish-Czechoslovak frontier, as the legal and objective status of these parks have been definitely completed and their international significance is clearly evident.

The act of creation of these parks—so far as their legal state is concerned—is based on the so-called Krakow Protocol, agreed upon between the plenipotentiaries of the Polish and Czechoslovak Governments in Krakow in 1924 (Ing. W. R. Roubik and Prof. W. Goetel). That was a peaceful ending to a lengthy Polish-Czechoslovak litigation over the boundary line in the mountain massif of Tatras. The international act provided for "reservation of regions for culture, wildlife, plant and local scenery protection." This was equivalent to an international boundary park and was negotiated in order to smooth out definitely the relations in the boundary areas.

We had kept our American friends informed about the preparations pertinent to the establishment of these parks in which the scientific workers and the tourists of both negotiating parties were actively participating. The eminent champion of conservation in the United States, W. T. Hornaday, in 1925 published in the *New York Zoological Society Bulletin* a letter I had written describing our work; he wrote in the introductory note the following words:

"Out of the welter of post-war chaos and economic stress in Europe, the world will read and consider with profound satisfaction the news of the creation of these important national parks on the international boundary between Poland and Czechoslovakia for the protection of the

natural beauties of those two nations. The movement reveals a degree of spiritual recovery, poise and vigorous enterprise that is worthy of the utmost admiration."

These impressive words have illustrated properly the importance of the international work contributing to the establishment of the international boundary parks.

In the same year in which Waterton-Glacier Park was formally created (1932), the first international boundary park in Europe was established in a rather small, but particularly beautiful, mountain massif of Pieniny on the border river of Dunajec. It was formally announced during a meeting honoring Polish and Czechoslovak citizens active in nature protection.

We were greatly gratified when the participants of the 1960 IUCN Congress, held in Poland, expressed their admiration for the National Pieniny Boundary Park after the boat trip down Dunajec River. A special resolution was passed by the IUCN Congress on this occasion.

The preparatory work for the creation of the second boundary national park in the Tatra Mountains also started in 1932, but it had to be postponed because of World War II. In the period of 1948–54 that park was finally established on its present legal and formal basis, having been called into existence earlier, *de facto*.

The Polish-Czechoslovak cooperation in the field of the two boundary national parks, which has lasted now for several decades, provides notable experience as to the positive international role of national parks of this kind.

The significance of scientific work carried out in the territories of these parks comes to the foreground. Both the Pieniny and the Tatra Mountain parks abound in unusual phenomena of animate and inanimate nature, which are of special interest to geologists, geographers, botanists, foresters, and zoologists. The scientific work carried out by the Polish and Czechoslovak scientists in these parks has been considerably advanced, owing to mutual understanding and reciprocal assistance in its performance. Thus the quality and quantity of this work is improved; mutual consultations and conferences are a remarkable incentive for advancement of the work.

Tourism is the second important item of our cooperation. Both of the boundary national parks are areas of heavy use by tourists whose numbers in the Tatras on either side of the frontier amount to over 2 million and, in Pieniny to over 1 million annually. Special inter-

national agreements—the so-called tourist conventions—have been concluded, with provisions for tourists of both countries to cross the frontier and visit both parks interchangeably.

Both parties are in close consultation in matters of selecting the method of building and laying out tourist paths, shelter houses, roads, and other improvements in order to prevent the destruction of nature by the intensity of mass tourist traffic on both sides of the boundary parks. Detailed planning of facilities is done for both parks by eminent specialists of the two countries. The plans are discussed in detail and agreed upon at bilateral conferences.

The forest management and wildlife protection in both parks is agreed upon in all details. Protective regulations in this domain are the result of reciprocal consultation and are uniform. The bodies of Polish-Czechoslovak cooperation are the Council of the Tatra National Park and that of the Pieniny National Park; they consist of prominent scientific workers and other experts. The staffs of the national park management of both sides cooperate with each other. The employees of the park managements, the frontier guards, the guides, the lifesavers, and the tourists from both sides are in charge of protecting and regulating tourist traffic.

The services for nature protection of both sides also act in close cooperation.

The general scope of cooperation is regulated at frequent conferences and sessions by both parties.

The participants of the IUCN Congress had the opportunity to see the friendly terms on which the cooperation is being carried out between both parties at the meeting of the Polish and Czechoslovak workers of the Pieniny National Park held at Cerveny Klaster on the Czechoslovakian side of Dunajec River.

Thus the creation of boundary parks at the Polish-Czechoslovak frontier involves the strengthening of peaceful, scientific, cultural, and economic cooperation between the two countries concerned.

It is planned to establish similar parks in two more regions of the mountainous boundary area between Poland and Czechoslovakia, in the Babia Gora group, which is typical of the forested region of the Karpaty Mountains, and in the group of Sudety Mountains in the western part of Poland.

There is also cooperation between scientific workers and those of the nature protection services in the eastern part of this country in

the Bialowieza National Park, where the *Bison europeus* is protected. The workers of the national parks on each side of the Polish-Soviet frontier in this part of the country exercise their protection practices over the bison and elk (*Alces alces*) in ever-closer cooperation.

On the basis of experience gained in the frontier national parks of Poland and Czechoslovakia, it is suggested that the following principles be observed when contemplating the creation of national parks along the boundaries of two neighboring countries, and also when such parks have already been established:

1. To organize in each country a team of scientists, nature lovers, and tourists for the purpose of initiating close cooperation between the two teams for establishing the given frontier national park. The members of such a team ought to be selected from among the members of various institutions and scientific, cultural, and tourist societies that are interested in the project.

2. On the basis of suitable scientific studies, there should be prepared a specific territorial and organizational projection of the park. During the first stage of implementation, such a projection should not set the ends definitely; rather it ought to provide for the possibility of territorial extension and organizational growth.

3. In frontier national parks, due respect must be paid on both sides of the boundary to problems of national sovereignty and existing legislation. It is not advisable to aim at any form of joint dominion.

4. It is necessary to safeguard the legal basis for the existence of a frontier national park by means of laws or decrees of the countries to which belong the territory of each part of the park. Such legislation in both countries ought to be prepared with the cooperation of experts in a manner that will safeguard the conservation of nature on both sides of the boundary in areas that will form an entirety from the point of view of natural science.

5. Each part of a frontier national park ought to have a park council composed of the most prominent scientists, experts in regional affairs, representatives of the regional authorities and institutions, and of social and tourist organizations in the given districts. The park councils should be advisory bodies, the opinions of which are binding on the park managements. The two councils of a frontier national park ought to hold joint meetings at least twice a year, alternating at the headquarters of the two park managements.

The managements of the two parts of a frontier national park ought

to be composed of the best possible experts, and they should have personnel that is adequate in number and well trained. The management of the two parts of such a park ought to be in direct and constant contact, and they should cooperate in all park problems.

6. In either part of such a national park, there should be organized a group of nature conservation guards, composed of specially trained park employees, frontier guards, and volunteers from among tourists and nature lovers. Such guards ought to operate according to rules that should be identical, as far as possible, on both sides of the boundary. Each group of guards should be supervised by a member of the park management.

7. Scientific research in national parks ought to be carried out by scientific institutions which prepare plans for research in agreement with the park council. Permission for carrying out research work should be given by the park management. Authorized research workers are entitled to far-reaching assistance from the park council and the park management.

8. In both parts of a frontier national park, scientific stations ought to be established and provided with the necessary scientific equipment and literature. Scientists working at such stations, as well as other scientists carrying out research in frontier national parks, should receive all possible assistance in the parks on both sides of the boundary, using as a basis a plan of scientific research, prepared in joint agreement.

9. Regulation of tourist traffic in national parks ought to be based on the following principles:

(*a*) Special facilities should be introduced for scientists and tourists wishing to cross the boundary within the park.

(*b*) Tourist footpaths in parks ought to be of two kinds: for mass tourist traffic and for more expert foot tourists.

(*c*) Tourist huts within the parks ought to be built in strict accordance with the requirements of nature conservation. The construction of such huts, their location, and character should be agreed upon, if possible, during joint sessions of the two park councils and park managements.

(*d*) Vehicular roads ought to be constructed on the outskirts of the park; if they do enter the park itself, the traffic should be suitably regulated and adjusted to the requirements of nature conservation.

(*e*) Campsites and parking places ought to be established in both

parts of such parks in such manner that their location and construction do not conflict with the principles of nature conservation.

(*f*) The execution of tourist traffic regulations and the control of nature conservation observance among tourists should be supervised by nature conservation guards, acting according to identical rules in both parts of such parks.

(*g*) In order to insure the realization of the program discussed above, it is necessary to promote in a suitable manner among the populations of both countries the high aims of the frontier national park as a work of international culture.

I believe that wherever unusual features of nature appear and need to be preserved, the creation of a boundary park may prove an essential factor in cementing international cooperation and maintaining peace. That is why this problem requires specially careful consideration from the IUCN and other organizations and institutions dedicated to nature conservation.

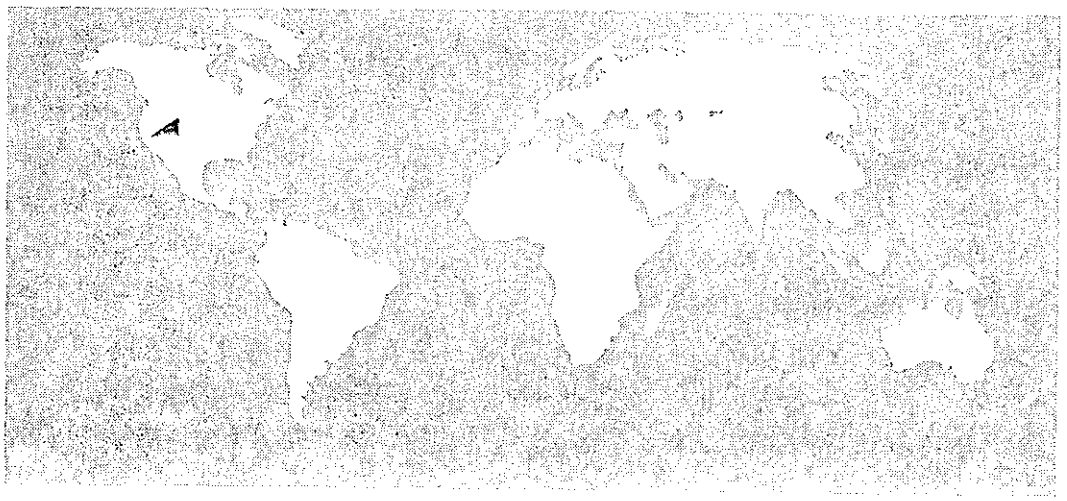
THE INTERNATIONAL ROLE OF PARKS IN PRESERVING ENDANGERED SPECIES

by

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Lee M. Talbot was born in New Bedford, Mass., U.S.A., and took his degree at the University of California, Berkeley, Calif. Except for military service in 1953 and 1954, he has been engaged in field studies in Alaska, Africa, South Asia, and the Middle East in addition to doing graduate work in geography. His work has been sponsored by a number of organizations, including the National Academy of Sciences—National Research Council, the New York Zoological Society, the Government of Kenya, the American Committee for International Wildlife Protection, and the Wildlife Management Institute.

In 1959, he went to the Serengeti-Mara Plains of East Africa with his wife, Martha Hayne Talbot. For almost 2 years, they studied the influence of primitive and modern land use on big game, concentrating particularly on the wildebeest. Using a modified Land Rover, a roving laboratory, and a safari tent, they were able to study the big game of the area during two migrations.



THE WORLD HAS lost an estimated 107 kinds of mammals since the time of Christ; and most, if not all, of these departed species and subspecies owe their extinction to man's activities. These same activities today have brought at least another 600 forms to the point where they may be considered threatened with a similar fate (Harper; Allen). Without national parks or equivalent protected areas the losses would be much greater.

About 100 extinctions spread over 2,000 years does not at first appear to be a particularly urgent matter. The urgency becomes clear, however, when one realizes that the rate of extermination—like the rate of the world's human population growth with which it is closely associated—has sharply accelerated in recent years. Nearly 70 percent of the losses have occurred in the last century, and almost 40 percent within the past 50 years. Stated another way, from the time of Christ up to A.D. 1800, one mammal was exterminated each 55 years; during the next century, the rate increased to one each year and a half; since 1900 man has exterminated roughly one form each year!

And this number refers only to mammals. No one has made a similar tally of reptiles, amphibians, fishes, or insects; but we do know that since 1689, when the last dodo is thought to have died, 87 other bird forms have been exterminated, and probably 19 others (Greenway, pp. 7 and 8).

Although it is more difficult to document plant losses, it is probable that the list of plant species exterminated, or virtually so, in historic times would greatly exceed that of animals and birds. Because of the vulnerability of many plants, the number of endangered species of plants is great (Coolidge; Däniker; Deuse; Fosberg; Ramsbottom; Vrydagh).

Species of flora and fauna are exterminated by man in two ways: directly through killing, and indirectly through changing the species' habitats. The obvious way to destroy an animal or plant is to kill it. Less obvious than direct killing, but often far more threatening to the species' survival, is habitat modification. A plant or animal does not exist by itself, isolated and independent. Rather it might be considered as the center of a complex ecological web, whose radiating strands are the organism's relations with, and requirements for, a variety of factors, including water, soil, other plants and animals, climate, disease, and parasites. These strands, in turn, are themselves interconnected and

make up, in sum, the organism's whole habitat. Survival of the plant or animal usually depends on the habitat web remaining intact.

Some human activities—such as cultivation, flooding, and construction of cities—virtually annihilate entire habitat webs, and the results are rapid and easy to see. Less easily recognized are the longer term effects of those human activities that alter only a part of existing habitats. Grazing of domestic livestock may alter the vegetation, create competition with wild animals for water and food, bring about surface desiccation and erosion from overgrazing, and introduce parasites and diseases. Man's manipulation of fire can be a particularly potent habitat factor. Uncontrolled fire may alter or destroy vegetation, soil, and watershed; but a given pattern of fire may also be a part of a habitat web, maintaining a given habitat until its regime is altered. Complete protection of an area from fire may have as disastrous an effect on the existing habitat as overburning it.

Diversion of surface water, or alteration of the subsurface water table through wells, etc., may strongly affect the flora and fauna of an area. Accidentally or intentionally introduced exotic species of both plants and animals can have disastrous effects on the indigenous species and their essential habitat webs.

These are only a few examples, but regardless of the form that such habitat modification may take, they are an almost inevitable concomitant of human activities, so much so that it is difficult to find any significant area of the earth's surface that has not been altered in some fashion by man (Thomas). The extent and degree of this change are usually in direct proportion to the numbers of humans involved. Consequently, as the world's human population rapidly expands, an ever-increasing number of wild animals and plants with extensive or inflexible habitat needs are being literally squeezed out.

Man set the stage for the extermination of plant and animal species, when he became able to modify his own environment—when he became an ecological dominant. This point in man's development was reached far back in prehistoric times. The prehistoric men who were hunters and who used fire extensively doubtless exerted considerable influence on plant and animal populations of their times, but as yet there is insufficient evidence to document their effects. Within historic times, however, there is considerable documentation, especially with regard to certain mammals and their habitats.

The implications of man's impact on his own environment were

realized early in history. For example, in the fourth century B.C., Plato spoke eloquently of the then-recently denuded hills of Attica, and of what is meant in terms of the land, of soils, water, timber, and crops (Plato, translation). An appreciation of man's impact on wild animals and plants came early also, at least in India. As early as the third century B.C. the need for complete protection of certain areas and animals was realized. In addition to declaring certain species of birds and other animals totally protected (Asoka, c. 250 B.C.), areas called "Abbayaranya" were established "where beasts could roam about without any fear of man" (Artha Shastra, c. 300 B.C.). It was noteworthy that at least until the 1950's, India alone of the worlds' major land areas, had not exterminated a single mammal.

As the human population increased and more of the earth's surface was actually occupied or modified by man, increasing numbers of mammals were threatened. The first species to go were those which competed with or threatened man and his activities. The earliest documented extermination is that of the European lion in A.D. 80–100 (Harper), and more than half (54 percent) of the species exterminated in Africa, Asia, Europe, the Antarctic, and North America have been larger predators (*Ursidae, Canidae,* and *Felidae*). These animals competed directly with man for food in the form of wild and domestic ungulates, and the larger forms were also a threat to man himself. Such animals can only survive in a protected area, where their activities do not conflict with those of man. A good example is the Asiatic, or Indian, lion (*Panthera leo-persica*) (Talbot, 1960).

At the time of Christ, lions were sufficiently common to be mentioned some 130 times in the Scriptures. They were apparently found throughout the Arabian peninsula, Syria, Palestine, Iraq, Pakistan, and much of India. During the Crusades, lions were virtually exterminated in Palestine; however, until the 1800's they were still found throughout most of the remainder of their former range. With the coming of modern weapons, however, lions rapidly disappeared from most of this area, and most significant reductions occurred when well armed military personnel occupied part of the lions' range. Although a few individual lions may have survived in other remote areas in the 1920's or 1930's, since 1884 the last real population of Indian lions has been limited to the Gir Forest, in northwest India.

Lions survived in the Gir due to several factors, among them a strong religious opposition to killing animals in the area and the

isolation of the forest. By the early 1900's, however, the isolation had been overcome and visiting hunters had so decimated the population (variously estimated at between 12 and 100 individuals) that the lion was declared protected in the forest, and it has remained so to the present (Talbot, 1960, pp. 6–83). Thus, due to the effective and far-sighted action of the Indian authorities in setting aside the Gir Forest as a preserved area, the Indian lion has so far escaped extinction.

The other principal group of continental mammals to be exterminated were the large ungulates which required extensive feeding grounds, thereby competing with man and his domestic livestock, and which were hunted by man for food and other products. About 40 percent of the species exterminated in Asia, Europe, Africa, and North America were from this group. It is possible to maintain populations of many wild ungulates outside of parks (Bourliére) and under some conditions such populations may provide a significant resource for animal products (Talbot, Ledger, and Payne). Where such species have become dangerously threatened with extinction their survival has been assured only through parks or similar reserved areas.

In America, for example, between 1850 and 1890, the bison (*Bison bison*) was reduced from a population estimated in the millions to just over 1,000 animals (Allen). Several refuges and parks were then established for the protection of the remaining bison, and by 1933 the total population had risen to about 21,000 animals (*op. cit.*). In 1960 there were about 20,000 wild bison in herds under Federal control in two national parks in Canada and two wildlife refuges in the United States (Fuller).

South Africa affords another example. Here the once-rich ungulate fauna was rapidly decimated by hide and meat hunters and by farmers clearing their lands. Four species were exterminated and many others seriously threatened before effective action was taken by some individuals and later by the Government, in establishing parks or equivalent reserves for the most threatened species. The bontebok (*Damiliscus dorcas*), blesbok (*Damiliscus phillipsi*), white-tailed gnu (*Connochaetes gnou*), and mountain zebra (*Equus zebra zebra*) are examples of threatened ungulate species saved here in enclosed reserves or parks.

Island fauna comprise the third major group of mammals of significance on the extinct and vanishing lists. About 30 percent of the total

known mammalian extinctions are island forms. These mammals seem particularly vulnerable. Their island ranges are often extremely limited, and on the many island habitats, where no important natural predators existed, the fauna has proven easy prey to introduced predators and competitors. In Australia, for example, the introduced fox and cat are credited with the extermination or serious diminution of many of the smaller native marsupials; the introduced rabbit, rats, and mice have been equally destructive by taking over or altering the habitat for the native fauna (Harper). The introduced house rats and domestic cats have exterminated three mammalian species on tiny Christmas Island off Java (*op. cit.*). Goats, introduced on islands virtually throughout the world, have greatly altered the vegetation and present a continuing threat to the native insular fauna and flora.

The problem of preservation of many of these insular forms is in some ways more difficult than with the continental ones, largely due to the role played by introduced predators and pests. Park or reserve areas have to be managed, at least to the extent of removing the exotic species and protecting the areas from exotics' reoccupation. This is most difficult where the exotics include rats and mice. However, in many cases parks or equivalent reserve areas offer the only hope for the preservation of endangered insular forms (Calaby and Ratcliffe).

A mammal is rarely brought to the verge of extinction by a single factor, such as hunting. Commonly, the habitat of a species is so modified or reduced through human activities that the animal's numbers are brought down to the point where hunting can become a critical factor. The great Indian rhinoceros (*Rhinoceros unicornis*) is a good example (Talbot, 1960, pp. 31–47). There are five forms of rhinoceros extant: the black and the white rhino of Africa, and the Javan, Sumatran, and great Indian rhinoceros of southern Asia. In recent centuries all these forms were considered relatively common. Today they are all considered to be threatened species.

In the 1400's the Indian rhinoceros were found throughout a large part of the northern Indian subcontinent. Their range extended from the foothills of the Hindu Kush in the west, into Burma and possibly to the China Sea in the east, and from the frontier of Kashmir and the foothills of the Himalayas in the north, to the Bay of Bengal in the south. As the human population of India increased, so did the amount of land occupied by villages and used for cultivation and grazing. Since the 1400's much of the northwestern part of the rhinos' range

in India has become increasingly arid and untenable as rhinoceros habitat, largely because of human population pressure and land abuse. As the lowlands were taken over for agriculture, the rhinos retreated to the sparsely inhabited hills. Here they were followed by different varieties of agriculture (largely rice and tea), by grazing livestock, more intensive land use, and more people.

Because of the medicinal and magical properties credited to all parts of a rhinoceros by many peoples of Asia, very high prices have been paid for various rhino products, especially the horn. Consequently rhinoceros hunting was a lucrative occupation. As the rhinoceros habitat and, consequently, the rhinoceros population were reduced, the hunting pressure on the survivors became correspondingly heavier.

By 1900 the Indian rhino's range had shrunk to two valleys at the foot of the Himalayas. The last rhinos then known to be in India were scattered in about a dozen isolated pockets along the Brahamaputra River, and the largest single rhino population was estimated at 12 individuals. An additional rhino population of unknown numbers lived in the Chitwan Royal Hunting Preserve in the remote Rapti Valley of the Kingdom of Nepal. A combination of habitat encroachment and hunting had brought this drastic reduction in a once-widespread population. At that time the authorities in India realized the situation and established a series of reserves and sanctuaries to protect the last rhinos. These reserves were large enough to provide the necessary habitat for the rhinos and well enough guarded to protect the rhino from hunting; and by 1959 the population of Indian rhinos in Indian reserves and sanctuaries had increased to an estimated 400 (Talbot, 1960).

Parallel to the problem of endangered single species is that of endangered species complexes or associations. Possibly the most outstanding example of this situation is in the Serengeti–Mara Plains region of East Africa. Great herds of migratory ungulates, along with their predators and scavengers, were common to most continents within historical times. With increases in human population and intensity of land use, with resultant habitat change and hunting, this phenomenon has largely disappeared, even from Africa. One of the last places where it can still be seen is in the region of the Serengeti National Park in Tanganyika and the adjoining Mara Masai Reserve area of Kenya.

In this area, over 1 million head of mixed ungulates, representing

nearly 30 species with hundreds of attendant predators and scavengers, are still free to follow their seasonal "migratory" movements (Talbot, Talbot, and Lamprey). The scientific values alone of the migratory wildlife phenomenon protected by this East African park and reserve complex are great, not only to East Africa, but to every other country where such a situation once existed. Small numbers of the animals represented here survive in many areas of East Africa, but without the protection of a large area, the species complex with its migrations could not survive. The need for a national park or equivalent protection to maintain and preserve this phenomenon is more easily seen here than the parallel need for parks in the preservation of a single threatened species.

The above are but a few of the examples that could be cited of situations where the timely establishment of national parks or equivalent reserves has prevented the extermination of a threatened species. It is occasionally possible and necessary to rely on specimens in zoological gardens to perpetuate a species, which has become extinct in the wild or which has no apparent chance to survive in the wild. Examples in point are Pere David's deer (*Elaphurus davidianus*), which has never been recorded in the wild (Harper), and the wild Arabian oryx (*Oryx leucoryx*), whose survival in its present habitat seems most unlikely due to hunting and to the political situation (Talbot, 1960).

However, much of the value—aesthetic, cultural, scientific, educational, and often economic—of the wild animal species is lost when the animal is removed from its habitat. A zoological garden may be a last resort for gravely threatened species, but it is not a substitute for a wild habitat. In an ever-increasing number of cases, the only way to preserve a threatened species with its habitat is in a national park or equivalent protected area.

To accomplish this protection, the park must be large enough to accommodate the entire habitat web of the species in question. In the case of large predators, this means enclosing an area large enough to accommodate not only the predators but their prey species as well. In the case of larger migratory ungulates, the area involved must provide their food and other habitat requirements throughout their yearly cycle. Unless the park includes and protects the entire habitat web of a threatened species, it will fail in its purpose. Consequently, parallel with—and often preliminary to—the need to establish parks to protect threatened species is the need for ecological study of the species

to determine their habitat requirements and to assure that they will be met by the contemplated park area.

Early endeavors in conservation or nature protection were local or national, and it was not until about 1900 that there began to be an acceptance of the concept that conservation problems, especially those dealing with threatened species, were an international rather than a purely national concern (Brouwer). The international nature of the problem of threatened species was central to much of the subsequent work that finally led to the establishment of the International Union for the Protection of Nature, now the IUCN, at Fountainebleau in 1948 (Coolidge). In 1949, as a result of proposals by Dr. H. J. Coolidge, the Union established its Survival Service, whose sole concern was the survival of species threatened with extinction.

There is no longer any question that threatened species ultimately are an international concern rather than a local one. The distribution of species had nothing to do with the establishment of present political boundaries; when a species becomes extinct the irreparable loss is equally great to all those concerned, whether they are in the country of extermination or on the other side of the world. The problem of endangered species is of urgent international concern, and the preservation of such species through national parks is of truly international significance.

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Section Five—A

RAPPORTEUR

Jean P. Dorst

In his introductory remarks, Ian McT. Cowan stressed the necessity of joining our efforts on a world scale to preserve wildlife, especially through national parks. He pointed out the different aspects of this problem. As wildlife is an inheritance belonging to all the people, we must keep in mind that our efforts must be made on an international basis. There are already several international parks; we have the duty of expanding this program.

Lee M. Talbot recalled to the audience that the world has lost 107 kinds of mammals since the time of Christ; nearly 70 percent of the losses has occurred in the past 100 years. This increased rate is parallel with the increase of human population and the subsequent habitat modification.

After giving some striking examples, he emphasized the fact that such a destruction would be by far more pronounced without national park organizations.

Robert Carrick stressed the great impoverishment of the environment in Antarctica and the high degree of specialization of the Antarctic species, which actually are at the extreme limit of their anatomical, physiological, ecological, and ethological adaptations. The impact of man into this ecosystem has been very great in two ways: direct destruction of animals, often tame and easy to catch; and destruction of habitats, mainly through introduction of exotic species.

In the past 2 years tremendous progress has been made, since the Antarctic treaty was signed in 1959. However we must not forget that this treaty excludes the high seas, where all the animal communities find their feeding grounds.

Walery Geotel showed how projects to create national parks on boundaries between states have been successful in the past. In former times many boundary districts have been preserved by the states to keep wild countries between them and their neighbors, often their enemies. We must take this opportunity to establish international parks in these

areas. The first park of this type was established across the boundary of Canada and United States of America in 1932. Poland established two similar parks.

After the panelists' summaries, various speakers took part in a general discussion; and all of them emphasized the urgent necessity to establish national parks as the only way to maintain threatened species in favorable natural conditions and at the highest suitable population level. Among them, Georges Ramanantsoavina of the Malagasy Republic stressed the importance of the protection of Madagascar wildlife, among which the number of endemic species is so high. Anthony Sayeh of Liberia insisted on the importance of basic research in national parks, the only untouched places in most African countries (especially population studies and the reproduction rate in wild animals). Maria Buchinger of Argentina deplored the encroachment of tourism, which could lead to a special kind of human erosion; this is especially obvious in Argentine Antarctic, where more and more tourists are now going every year. She suggests the creation of an international park in this area. But that seems impossible for political reasons, Dr. Carrick pointed out.

Rocco Knobel of South Africa gave the example of a close cooperation between the Portuguese territories and his own country, especially in the Kruger Park area.

Many speakers emphasized the very low level of populations of several threatened species of animals. One of the best example is given by Peter Scott of the United Kingdom, who indicated that the total world populations of rhinos have the following figures:

Black Rhino: 11,000–13,500
White Rhino: 2,500–3,000
Great Indian Rhino: 600
Sumatran Rhino: 100–150
Javan Rhino: 25–50

These populations are distributed in small pockets, largely scattered in the middle of completely modified environment. Mr. Scott also showed the importance of raising and breeding threatened species in captivity, which could increase their living populations and allow a re-introduction of these animals into their original range.

Other speakers stressed the greatest importance of international regulations for the protection of wildlife. Victor H. Cahalane of the United States gave the example of the Migratory Bird Act, passed in

1935, which protects the birds in the Western Hemisphere in a very efficient way. Professor Goetel spoke on the protection of the European wisent, in which several European nations cooperate.

As a whole, all the participants agreed that steps must be taken on an international basis to maintain the threatened species; the general wish, as expressed by the rapporteur, is that closer links be built up between nations with such programs in view. As national parks are among the most efficient ways to protect wildlife, it is hoped that the Commission on National Parks of the IUCN will be helped to face this problem.

Section Five—B

The second part of Section Five dealt with the role of international agencies in developing world park programs. The speakers on this subject represented the Food and Agriculture Organization of the United Nations; the United Nations Educational, Scientific, and Cultural Organization; and the International Union for the Conservation of Nature. With their thorough knowledge of the field, each speaker was able to explain the part these agencies can play in helping with the establishment of national parks. FAO, for example, will contribute to a program for the promotion of national parks, but it can do so more actively on a regional level. UNESCO is able to grant assistance to member states within the framework of its three programs: its regular program, the expanded program of technical assistance, and the special fund program. The IUCN, by virtue of the large number of nongovernmental and private organizations that make up an important part of its membership, is in a position to obtain an impartial picture of world conservation and to work closely with other organizations.

The discussion leader was M. K. Shawki of the Sudan. The rapporteur was Lloyd W. Swift, substituting for Fred M. Packard of the United States.

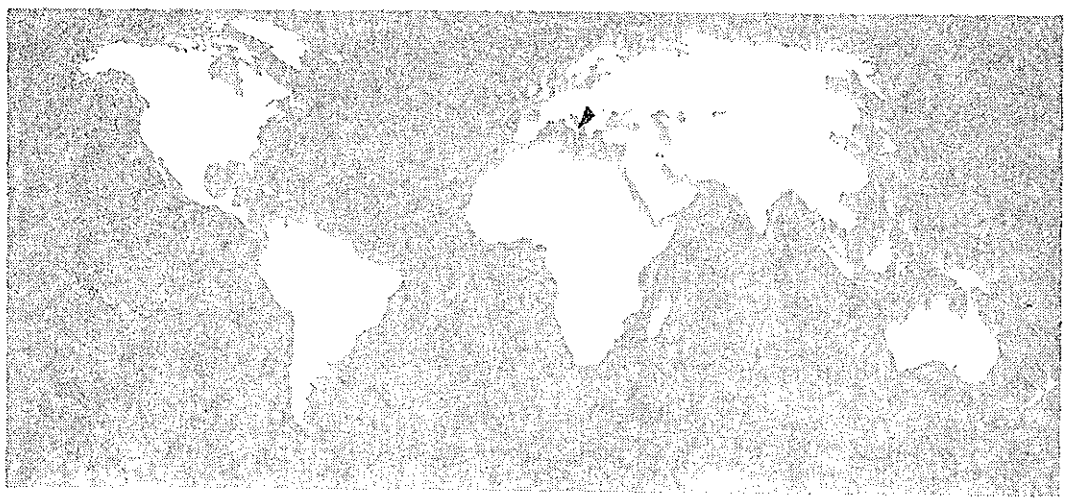
INTERNATIONAL AGENCIES AND PARKS

by

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R. G. Fontaine was born in 1911 at Savoie, France. He graduated from the National Agronomy Institute in Paris and the National School of Waters and Forests at Nancy. He joined the French Forest Service and, after several years in the field, was attached to headquarters in Paris. There he was responsible for economic and institutional forestry matters. He was a member of the French delegation to the Emergency Economic Committee for Europe in 1944–45.

In 1946, he joined FAO, where he dealt with European groups such as the European Forestry Commission and various other technical commissions. In 1951, he joined the Forest Policy Branch of the Forestry and Forest Products Division in Rome, where he specialized in forest policy, land tenure, and forest development. In 1962, he was appointed chief of this branch.



THE PART which international agencies might play in framing and operating national parks programs cannot be defined until the principal elements involved have been clearly stated. These will certainly be brought to light during the discussions at this First World Conference on National Parks, where the reasons leading to the establishment of national parks as well as the measures called for once they are established will have been carefully analyzed and precisely stated.

Nevertheless, without anticipating the conclusions of the conference, a program of work for national parks will undoubtedly include the following main items:

(*a*) A definition of the concept of national parks and a study of their international aspects;

(*b*) The devising of a methodology for fundamental and applied research to be carried on in the national parks and the coordination of such research. Applied research relative to wildlife management (conservation, harvesting, and "utilization") and to watershed management, together with their economic aspects, is particularly important at present;

(*c*) An evaluation of the benefits accruing directly and indirectly from national parks;

(*d*) A study of the educational and recreational values of parks, including the values of various possible park facilities and programs;

(*e*) A study of forms of administration and management of parks, including their financing and the granting of concessions, together with legal aspects of the matter;

(*f*) A comparison of national park policies; and a quantitative and qualitative study of present and future needs and of areas that are potential national parks;

(*g*) The devising of useful procedures for creating a series of parks covering the principal ecological regions of the world (arid, humid-tropical, antarctic, mountain, and temperate zones), and the framing of international conventions necessary to their proper implementation.

It is obvious that this program is of interest to many international organizations, whether worldwide or regional in scope, and that FAO in particular, under the terms of its constitution, may engage in most of the activities implicit in such a program. Nevertheless, without

neglecting fundamental research, matters of education in general, or information for the public at large, FAO's essential role is that of applied research and vocational training. But it is above all in connection with land management, planning for economic and social development at the national, regional or local level and in connection with sound land use that the FAO is interested in the matter of national parks.

In this connection, the conclusion of the report submitted by FAO to the Arusha Symposium on the Conservation of Nature and Natural Resources in Modern African States is pertinent:

"Populations will settle mainly in areas where the combined play of natural forces and the intervention of man, with his technical knowledge and labor, applied either directly or through mechanization, can lead progressively toward self-sufficiency, which in turn can lead to economic and social growth. Outside such intensively exploited areas there will remain regions of varying size, which should be kept as intact and stable as possible, both as a reserve for the future and also as areas for soil and water conservation, recreation, hunting, and leisure activities; their management should be as economical as possible. In this context management of wildlife and its habitat assumes permanent importance, particularly in East Africa, where tourism can constitute an important source of foreign revenue.

"However that may be, the immediate necessity of carrying out action on three fronts is obvious. First, the parks or nature reserves where the main objective will be the conservation of wildlife and its habitat for aesthetic, scientific, or touristic reasons should be demarcated. Secondly, management of wildlife and its habitat should be undertaken outside these parks, whether as a principal or a subsidiary form of land use, first in conjunction with nomadic agriculture, forest exploitation, and extensive stock-raising, and eventually combined with intensive stock-raising, tree plantations, or even agricultural settlements. During the transition periods, sanitary measures such as fencing must be taken so as to ensure that valuable domestic livestock is protected. Thirdly, there should be intensively developed areas in which wildlife would have no place.

"The parks and nature reserves thus demarcated should constitute a network covering the whole region under consideration and including all the species and habitats to be preserved. Outside these parks and nature reserves, wildlife management can be more or less inten-

sive, according to the economic and social development of the areas considered."

This very general statement, needless to say, must be qualified for different regions of the world. It does show, however, that outside managed or cultivated areas, the park constitutes a reserve, a laboratory, and a place for meditation and recreation; that its establishment is mainly the province of land-use planning, since it is part and parcel of the infrastructure of a country and should therefore be looked upon as an investment for the common good.

The concept of national parks along the lines of generally accepted criteria, as laid down in the report issued by the Economic and Social Council, has as its aim to set aside, for the propagation and protection of wild fauna and flora, areas where hunting, killing, or capturing of fauna and the destruction or collection of flora are prohibited. This concept is, however, susceptible of modification, particularly in the older developed countries which are now very densely populated, where it would be very difficult to withdraw from the economic and social life the areas necessary for the creation of national parks in the commonly accepted sense of the term. Thus, in France, a country with a long history of land improvement, a park has been defined as: "consisting of tracts of landscape which present an association of interesting biological constituents and balances, of which the present proprietors retain ownership but which are amenable to specific conditions appropriate to each individual case. Limited areas in the interior of parks could, further, be managed as strict reserves exclusively for scientific purposes, so that the evolution of various natural components or complexes can be studied without human interference. Finally, a buffer zone or 'green belt' could surround a park in the interests both of providing the proper conditions for study and for sojourn there for those who wish to avail themselves of the park, and also of contributing to the development of economically depressed areas, since it is in such areas that national parks will most probably be established."

In the U.S.S.R. and in the countries of Eastern Europe, the conservation of nature is highly regarded, but it is tightly linked both to the pursuit of a better understanding of the natural environment in order to allow its rational utilization, and to social use. In Poland, attention is being paid to the development of national parks and to opening them more widely to the public for recreation and education.

Such interpretations do not run counter to the currently adopted formula of the United States, the country where the idea of national parks was born and where land resources abound. In that country the trend is more and more toward the multiple use (limited, of course) of parks—as, for example, for grazing, harvesting of certain products and recreation. But the practice is to demarcate within these parks sanctuaries which, by law, must be left untouched by man and which are set aside for scientific observation and research. This evolution of ideas is not acceptable to everyone, but its chief proponents are those directly responsible for park administration, who are seeking realistic policies for the preservation of such parks.

Some people, however, may object that a broadened concept of national parks is debatable, since whatever precautions are taken, any action by man will have repercussions on the environment; and even the observation of the evolution of the natural environment implies disturbing it in some way. One answer might be that in many cases the proposed scientific observations for which the park was reserved are not always carried on, and that therefore a limited setting aside of a resource in this way can be tolerated, provided the future of the park is not jeopardized. But an even more effective reply is that, where man does not destroy, he protects, and that a study of his impact on the environment is not less interesting than a study of the evolution of the environment without such impact. Today, ecological studies as related to development programs are not directed so much toward the environment as such as toward determining in what measure, and within what limits, it would be possible to control the action of natural forces on climate, flora, fauna, and soil. Leaving aside irrigation, artificial rain, acclimatization chambers, etc., there are several "differential" methods which can be used in the field to enhance the potential of a given environment as regards animal, plant, or wood products by creating a new and improved biological milieu. FAO's special interest lies in this new direction that ecological studies are taking.

FAO does not, however, fail to recognize the value of studies and observations, especially in relation to watersheds, carried out in an environment free of all exterior influences. At the most recent FAO conferences, indeed, special importance was attached to the use of forest and agricultural lands in watershed management; and studies made in reference to watersheds situated in national parks would be of considerable value, since they would allow a comparison between observa-

tions made under modified and continually changing conditions and observations made in the selected watersheds used for reference.

Be that as it may, it will be the responsibility of each country to find its own best formula in the light of existing physical, economic, and social conditions, provided the main purposes of national parks are respected. Certain countries may prefer to establish a limited number of small strict reserves, while others may choose broader formulae, taking into account differences in density and distribution of population. It is on the assumption of such a flexible interpretation of the concept of national parks that FAO, jointly with the other international agencies concerned, will engage in any programs to promote the development of national parks.

How, then, can FAO contribute to the framing and developing of a work program for national parks? Without going into a detailed description of FAO's internal structure, and aside from what direct help it might be able to offer a given country in this matter, the following may be assumed.

In the first place, it is through FAO organs—general conferences, regional conferences, commissions, committees, working parties—that problems can be brought forward at the world or regional level and likely solutions outlined.

It would then be for the above-mentioned organs or for the Director-General of FAO to determine what means to employ to accomplish the tasks entrusted to the organization (under its regular program, through action by the appropriate divisions at headquarters or in the regional offices, under its Expanded Program for Technical Assistance [EPTA], or with the help of the United Nations Special Fund). Again, certain problems relating to parks could be raised in connection with any special project approved by the conference.

In most cases, the question of parks will arise as an aspect of some matter already being dealt with by FAO. Thus an expert in forest policy under EPTA might also concern himself with the administration of national parks, for example, when a forest law is being drafted; or an expert in land use could propose that some particularly interesting watershed be made a national park and that certain experiments be carried out there; or an expert in land settlement or agrarian structure might be in a position to propose that certain areas be set aside as reserves for subsequent conversion into parks.

However, it will perhaps be in the sphere of higher education in

agriculture and forestry and of vocational training (in related fields) that FAO may have its major role. In this connection FAO may be in a position to offer help, either as technical assistance or under special fund projects, by having the topic of national parks included in syllabuses for agricultural, forestry, and technical schools; or, again, in any detailed analyses or projections of the need for and recruitment of experts in various categories (including the administrative and technical staff required for the management of parks); or, finally, when it is a matter of expressing these needs in terms of academic personnel.

Lastly, there may be countries that will want to have national parks dealt with by a permanent organization, or they may prefer to provide the machinery for coordination of research and observation in national parks and for the collation of findings. In the former case FAO, by virtue of Article VI of its Constitution, is empowered to establish commissions, committees, and working parties open to all member nations and associate members, to advise on the formulation and implementation of policy and to coordinate such implementation. If the latter formula is adopted, FAO is likewise empowered, under Article XIV of its Constitution, to approve and submit to member nations all conventions and agreements that might be necessary.

However, more often the problems raised and the search for their solutions will extend beyond the framework of FAO, and liaison with other international agencies will have to be established. Coordination between international agencies is subject to certain procedures, which, briefly, are as follows. Liaison between the agencies of the United Nations family is ensured, either by the Administrative Committee on Coordination, which is under the Economic and Social Council and which has the use of a preparatory committee and specialized subcommittees, or by formal agreements of cooperation, particularly with UNESCO. As far as this later agency is concerned, periodic contacts between the members of the Secretariats allow concerted action in areas of common interest, especially education, natural resources, arid zones, and humid tropical zones. Formal agreements for cooperation exist also with intergovernmental agencies which are not members of the United Nations family but which are equally interested in the problems of the conservation of nature and its resources, in particular the Council of Europe, the Organization of American States, the League of Arab States. Finally, liaison is ensured with nongovernmental international agencies by the exchange of reports and the sending of repre-

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sentatives to various meetings in accordance with the rules related to the status granted by the international agency to the nongovernmental organization concerned: consultative status, special consultative status, liaison status.

While other international agencies are also concerned with the national parks programs, it seems that FAO is particularly qualified to implement a given policy or to promote national parks in the various regions. FAO has in fact a complete network of regional offices: Washington (D.C.) for North America; Mexico, Rio de Janeiro, and Santiago de Chile for Latin America; Geneva and Rome for Europe; Accra and Addis Ababa for Africa; Cairo for the Near East; Bangkok and New Delhi for the Far East. These regional offices are in close contact with the various national administrative services which deal with matters related to national parks: natural resources, forestry, fisheries, stock-farming, veterinary services, etc. Furthermore, meetings—such as regional conferences of a general nature and regional commissions of a technical nature—allow the periodic review of problems affecting the general use of land: colonization, land reform, development, clearing, afforestation, etc. It is in the framework of these discussions that the possibilities and limitations of national parks can be brought to light and realistic solutions be proposed. It should be recalled here that regional forestry commissions, which meet every 2 years, have been established for North America, Latin America, Europe, Africa, the Near East, Asia, and the Pacific.

This regional action, however, must give due attention to the economic and cultural cooperation which is now developing between the countries of a given region. Among regional agencies the following should be mentioned: the European Economic Community, the European Free Trade Association, and the Council for Mutual Economic Aid, in Europe; the Free Trade Association in Latin America, and the association resulting from the Economic Integration Treaty in Central America; the Association of Southeast Asian States in the Far East; the African and Malagasy Organization for Economic Cooperation in Africa.

This regional approach to the problems of national parks brings us to the investigation of the aspects peculiar to each region. In North America, national parks have received special attention, but increasing needs due to population growth and the greater use of automobiles—which in the United States resulted in a rapid increase in visits to the

parks, which doubled during the period 1950-60—cause some concern for the future of the parks; solutions have to be found for park management which, while satisfying the desires of the public, safeguard the objectives of the parks. In Europe, while a rural exodus gives some hope for the creation and development of national parks, recreational activities resulting from an increase in the standard of living raise many problems; but improved education and proper land planning should allow the maintenance and development of parks without permitting the large numbers of tourists to be prejudicial to the research programs undertaken. In Latin America a movement is taking place in favor of national parks, but this has to be supported not only by education of the public but also by planned land use, especially as far as colonization and improvement are concerned, in order to protect the necessary areas. In the Far East, the people are on the whole ready to respect fauna and flora, and the establishment of national parks should be easy; but it is possible that inadequate economic and social structures, certain disparities between the mountains and the plains, and a still shifting agriculture could jeopardize the future of national parks which exist or are in process of creation; and regional planning to remedy the imbalance between regions could bring valid solutions. Finally, in Africa, the attainment of independence by many countries and their desire for higher standards of living and of consumption could just as well promote the development of parks as contribute to their diminution; and it is principally at the level of government that solutions must be found for the maintenance and development of national parks.

It is thus on the one hand under such a broad interpretation of the concept of national parks and, on the other hand, as governed by its internal establishment and operational machinery, that FAO will contribute to a program for the promotion of national parks. It will, however, do so more actively at the regional level, where its existing offices and the problems they deal with daily will enable it to offer a more concrete contribution to making national parks a reality as well as to their upkeep and improvement as part of integrated agricultural development programs.

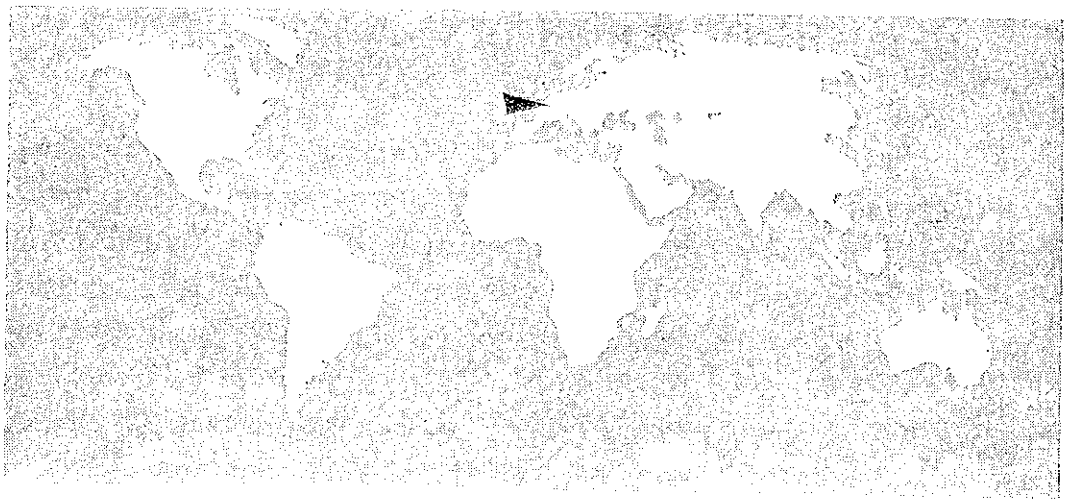
THE ROLE OF INTERNATIONAL AGENCIES

by

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A. Gille received his degree from the University of Montreal, Canada, and was a fellow at Cornell University in the United States. In 1949, he joined UNESCO as a consultant for the preparation of the United Nations Scientific Conference on the Conservation and Utilization of Natural Resources held that year at Lake Success. In UNESCO, he has been responsible for various aspects of the organization's conservation work and has served as its official representative to the International Union for the Conservation of Nature and Natural Resources.

He played an important role in the creation of the Charles Darwin Foundation for the Galapagos Islands, an international body set up in 1959 under the auspices of UNESCO to safeguard the islands' wildlife and habitats. In 1960, he was appointed Science Officer for Africa and now is responsible for UNESCO's program for the development of scientific research on the African continent.



THE HISTORY of the movement for the creation of national parks and equivalent reserves has been dealt with extensively, and it is not our intention to retrace it here. Although they were conceived at first on a purely local basis, it was soon observed that the value of these protected areas spread beyond this limited framework, and steps were taken at the national level, particularly in the field of legislation, to coordinate their creation and management. It was recognized at last, over a period of years, that nature could not adapt herself to political frontiers and that an exchange of views at the international level, between specialists from different countries and also between government representatives, with a view to the adoption of international agreements, was necessary.

The first International Conference on the Protection of Natural Landscapes, the meeting of a Consultative Commission on the International Protection of Nature (Bern, 1913), the First International Congress on the Protection of Flora, Fauna and Natural Sites and Monuments (Paris, 1923), the meeting in London in 1933, which led to the signature, by 9 governments, of the Convention Relative to the Preservation of Fauna and Flora in their Natural State in Africa, and the meeting in Washington in 1940, which led to the signature, by 12 governments, of the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere, may be considered collectively as an initial contribution to the awareness of the international character of the problem of the conservation of natural resources. The creation in Fountainebleau, in 1948 [1], under the auspices of UNESCO, of a body with an international vocation in this field—the International Union for the Protection of Nature which later became the International Union for Conservation of Nature and Natural Resources—established once and for all the worldwide character of the problem under consideration.

Since that time, national parks have been studied, in the framework of wider programs, by a large number of international meetings (conferences, symposia, congresses, etc.), such as the International Technical Conference on the Protection of Nature (UNESCO/IUPN, Lake Success, August 1949), the United Nations Scientific Conference on the Conservation and Utilization of Natural Resources (UNO, Lake Success, August 1949), the various technical meetings and General Assemblies of the IUCN, the International Conference on the Protection of the Fauna and Flora of Africa (CCTA/IUCN, Bukavu,

October 1953), the Symposium on the Protection and Conservation of Nature in the Near East (UNESCO Science Cooperation Office for the Middle East, Beirut, June 1954), the 27th Session of the United Nations Economic and Social Council (Mexico, April 1959), the Symposium on the Conservation of Nature and Natural Resources in the Modern African States (IUCN/CCTA, under the auspices of UNESCO and FAO, Arusha, September 1961), the Symposium on the Protection of Nature in Southeast Asia (UNESCO Science Cooperation Office for Southeast Asia, Djakarta, March 1962), etc.

During these discussions, national parks and equivalent reserves appeared as a meeting place for many and varied disciplines, including law, science, agronomy, medicine, and sociology. As the problems involved have grown more complex, the desirability of convening a worldwide conference exclusively devoted to their study has become apparent and was stressed during the sixth and seventh General Assemblies of IUCN (Athens-Delphi, 1958, and Warsaw-Cracow, 1960).

In granting its patronage, at IUCN's request, to this first worldwide conference on national parks, UNESCO merely confirmed the interest it has unfailingly shown, since its creation in 1946, in the cause of the conservation of nature and natural resources.

The General Assembly of IUCN, in resolution 246 adopted at its sixth session (Athens-Delphi, 1958), and the United Nations Economic and Social Council, in resolution 713 adopted at its 27th session (Mexico, 1959), both stressed the particular importance of national parks and equivalent reserves as a source of inspiration, culture, and welfare for humanity, as well as their importance from the scientific point of view. These different aspects are of particular interest to UNESCO, the United Nations Educational, Scientific and Cultural Organization; and in these specific fields which fall within its competence, it will be able to grant the assistance which may be requested by member states.

It should be recalled, in this connection, that the activities of UNESCO lie within the framework of three clearly defined programs; the regular program, the expanded program of technical assistance, and the special fund program. It should be noted, therefore, before the discussion of any of the items on the agenda takes place, that whatever recommendations may be adopted, the assistance UNESCO will be able to give to its member states will be provided in the framework of the three programs mentioned above. With this in mind, we will recall briefly their respective characteristics.

1. *Regular Program.* The regular program is established by the UNESCO General Conference, composed of representatives nominated by the governments of the member states of the organization, who meet every 2 years in ordinary session for this purpose and for that of determining the regular budget which will enable it to carry out the program. All member states make contributions to the regular budget.

Thus, during the financial year 1960–61 the two following resolutions, adopted by the General Conference at its 11th session, enabled the Secretariat to assist member states and associated states in their programs for the conservation of natural resources and the development of national parks.

(2.21) Member states are invited to encourage scientific studies and research on natural conditions, phenomena, and resources, and to promote measures at the national level necessary for the conservation and proper use of such resources.

(2.22) The Director-General is authorized, in cooperation with the United Nations, the specialized agencies and the International Atomic Energy Agency and with the competent international, regional and national scientific organizations, and on the advice of the appropriate advisory committees or committees of experts, to stimulate study and research on natural phenomena, conditions and resources on the international, regional, and national levels; to promote the necessary action for the conservation and development of those resources; and to participate, at their request, in the activities of member states which are pursuing those ends, with particular emphasis on the following fields:

(*a*) Scientific methods for the exploration of natural resources;
(*b*) Humid tropic research;
(*c*) Geological and seismological studies and their practical applications;
(*d*) Scientific study of soils, with particular reference to soil biology;
(*e*) Conservation of natural resources.

The program is implemented by the Secretariat at the organization's headquarters in Paris. Its work in the field of natural sciences is supported by four regional centers, whose task is to encourage research, to assist in the establishment of programs for the popularization of science, to bring scientists of the region into contact with one another, to supply information on scientific events in other parts of the world, to organize

lecture tours and visits of experts from other countries, as well as to organize advanced courses, study courses and other scientific meetings.

It should be noted that, in order to give this action concrete form, UNESCO is able to facilitate the creation of international nongovernmental organizations in the fields of its competence. Thus, in the field of the protection of nature, the International Union for the Conservation of Nature and Natural Resources was created in 1948, and the Charles Darwin Foundation for the Galapagos Islands was established in 1960, under the auspices and with the active participation of the organization. The regular program also enables UNESCO to grant annual subsidies to IUCN and to conclude agreements with that organization for the production of educational material (textbooks, pamphlets, posters, slides, etc.) destined to permit the teaching of the techniques of conservation, and for the organization of international meetings such as the Technical Meeting on the Management of Natural Reserves, held in The Hague in 1951, the meeting on the Management of Nature Reserves on the Basis of Modern Scientific Knowledge, held in Edinburgh in 1956, and the Symposium on the Conservation of Nature and Natural Resources in the Modern African States, held at Arusha (Tanganyika) in September 1961. It should be observed lastly that, in the framework of the regular program, UNESCO requested IUCN in 1950 to make a study of the position of the protection of nature and the situation of national parks and reserves throughout the world, the results of which were published in two important works [2]; and in 1960 it requested the eminent English biologist, Sir Julian Huxley, to study the situation with regard to wild life and natural habitats in Central and East Africa [3].

2. *Program of Technical Assistance.* In addition to its own regular budget, UNESCO receives funds under the United Nations expanded program of technical assistance. This program, in operation since 1950, was established by resolution of the United Nations General Assembly for the purpose of helping underdeveloped countries to strengthen their national economies. This technical assistance fund, which is made up of voluntary contributions from more that 80 countries, enables the organization to make available to member states, at their request, experts in the different fields of its competence, especially in that of the conservation of natural resources, fellowships for the training of specialists to relieve foreign experts and funds to enable experts to obtain the equipment essential for their work. Technical

assistance projects may be national or regional. The regional projects cover several countries which, in this case, submit a joint request for assistance, with the resultant advantage that the cost of the operation is appreciably reduced.

Technical assistance programs are established for 2 years. Once the program and the related budget have been approved by the United Nations General Assembly, the different projects are transmitted for implementation to the agencies affiliated with the United Nations, in accordance with their field of competence.

UNESCO's share of the technical assistance fund varies from year to year. For the financial year 1959–60, it was approximately $8,600,000, and for 1961–62 approximately $11,900,000.

It should be noted, by way of example, that, under the program of technical assistance, UNESCO sent two successive missions to the Galapagos Islands (Ecuador)[4] which led to the creation of reserves and national parks on a large part of the archipelago and the establishment of Darwin Station on the Island of Santa Cruz, where the remarkable fauna and flora of the islands are studied by technical assistance experts. A large number of other countries, such as Chile, Guinea, Madagascar, and Uganda, have also requested aid from UNESCO under the program of technical assistance to carry out research in existing reserves or to establish any new reserves, to produce audiovisual equipment for the teaching of conservation techniques, to institute courses on conservation in the universities, and so forth.

3. *Special Fund.* This fund, authorized by the U.N. General Assembly in 1958, is a further extension of international assistance to economic development and is therefore a prerequisite to productive capital investments. UNESCO received allocations from the special fund amounting to approximately $18 million for the financial year 1959–60 and $25 million for the year 1961–62, for the initiation of long-term projects. Although as yet no project related to the conservation of natural resources and the protection of natural habitats has been referred to UNESCO in the framework of the special fund, some preliminary studies are now being carried out.

I have endeavored, in the foregoing pages, to describe briefly the framework of UNESCO's activity and to illustrate, with some precise examples, the interest UNESCO has shown, since its inception, through its program relating to the conservation of nature and natural resources, in the problem of national parks and equivalent reserves.

What will be its role in the years to come?

Following consultation with member states and the international organizations with which the organization has consultative relations, the Director-General will submit the following draft resolution for the financial year 1963–64, to the 12th session of the General Conference:

"Resolution 2.211: The Director-General is authorized, in cooperation with the competent organizations of the United Nations system and the appropriate international, regional and national scientific bodies, and with the assistance of appropriate advisory committees or groups of experts, to promote studies, research and training in the earth sciences relating to natural resources and their conservation, in particular:

"(*a*) By the standardization and intercalibration of modern methods of research and exploration of natural resources, including the convening of an interdisciplinary conference on methods of land exploration;

"(*b*) By the synthesis of scientific knowledge relating to natural resources, including assisting in the preparation of international scientific maps;

"(*c*) By preparing a long-term program of international action in the field of scientific hydrology and organizing an intergovernmental meeting to this effect;

"(*d*) By developing a cooperative program of studies, exchange of information and training in the field of soil biology;

"(*e*) By conducting, in accordance with the plan defined by the General Conference at its 11th session and with the assistance of the Advisory Committee on Arid Zone Research, a worldwide program of studies and training relating to the scientific problems of the arid zones with particular emphasis on problems arising in Latin America;

"(*f*) By expanding the current program of studies and training relating to the scientific problems of the humid tropics, with the assistance of the Advisory Committee on Humid Tropics Research;

"(*g*) By convening an international conference on the organization of research and training in Africa in relation to the study, conservation and utilization of natural resources; and

"(*h*) By aiding member states to study their problems in the conservation of natural resources."

The Secretariat will thus be able to supply aid, under the program of technical assistance, to member states for the study of the problems raised by the conservation of natural resources, with particular emphasis on national parks and equivalent reserves. Such aid may take the form of experts (biologists for national parks, pedologists, teachers of conservation techniques, etc), equipment required by experts, or fellowships. Once missions in the field have established the validity of requests for aid and their value for the development of the countries concerned, assistance under the special fund program also takes the form of providing experts and equipment and granting fellowships. The sums allocated from the special fund, which are generally in the order of $500,000 or $1 million for each project, are considerably greater than those involved in the regular technical assistance projects.

The regular program also provides a possibility of facilitating the development of national parks and other reserves. The study of these natural biotopes, which has been carried out over the past 20 years in some countries, is of considerable interest to all branches of science (biology, medicine, agronomy, sociology, etc.), and may lead, as we know, to discoveries of interest to economics. The creation (and, in many cases, the maintaining) of a well-defined network of the main types of natural biotopes in each region of the world constitutes, therefore, an initial stage of development.

The organization of scientific research in each biotope and the coordination, at international level between existing stations, of research into such varied fields as the migrations of animal and plant species, the dynamics of populations, phenology, parasitims, etc., are activities to which an international organization such as UNESCO can make an effective contribution. Its program related to the study of natural resources, in fact, makes ample provision for the standardization of modern methods of research and exploration into natural resources, the establishment of scientific maps (soils, vegetation, etc.), the study of soil biology, etc., which are all problems relating in different degrees to natural reserves. Moreover, the conference on scientific research and the training of scientific and technical personnel in fields covering the study, the conservation and the utilization of natural resources—which UNESCO intends to organize early in 1964 under the Regional Program for Africa and in collaboration with the competent agencies of the United Nations system—may provide an opportunity to establish a coordinated program of research on parks and reserves. The con-

stitution, in 1963, under the auspices of the UNESCO Science Cooperation Office for Southeast Asia, of a regional committee to study the problems of conservation encountered in the tropical parks of this region, may also permit the establishment of a similar program in Africa. Items devoted to this question could also be included on the agenda of the symposia which UNESCO plans to organize, under its humid tropics research program, with member states and competent scientific organizations, on problems of lateritization, scientific problems concerning deltaic regions, and the encroachment of savanna on tropical forests.

The dissemination of the results of this research among schools, the general public, and information media is another task which UNESCO could facilitate in its programs, as was demonstrated above.

The cultural aspects of national parks and equivalent reserves and the possibilities they offer for the effective protection of natural sites have also received the full attention of UNESCO. At its session in 1958, the General Conference of the organization, taking into account the large-scale social and economic transformations which are taking place at the present time, requested the Secretariat to study means of encouraging member states to protect the more remarkable features of the landscape of their territories. The desirability of a recommendation concerning the "safeguarding of the beauty and character of landscapes and sites" was therefore examined by the Secretariat in response to this request. Following consultation with the member states and competent international organizations, a draft recommendation was established for presentation to the 12th session of the General Conference (November–December 1962). The recommendation is too long to be quoted in full here, but the measures advocated for safeguarding of landscapes and sites make ample provisions for national parks and natural reserves.

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(1) Preceded by a preparatory conference held in Brunnen in 1947.

(2) *The Position of Nature Protection Throughout the World in 1950.* Brussels, 1951. 538 pp. Idem. Addendum. Brussels, 1954. 150 pp.

(3) J. Huxley. *The Conservation of Wild Life and Natural Habitats in Central and East Africa.* Paris, UNESCO, 1961. 129 pp.

(4) I. Eibel-Eibesfeldt: *Survey on the Galapagos Islands.* Paris, UNESCO, 1959. 31 pp.
R. I. Bowman: *Report on a biological reconnaissance of the Galapagos Islands during 1957.* Paris, UNESCO, 1960. (2d ed.) 65 pp. (min.).
J. Dorst: *Rapport sur une mission en Equateur concernant l'établissement d'une station de recherches Charles Darwin dans les iles Galapagos.* Paris, UNESCO, 1959. 35 pp. (min.).

PARK PROGRAMS AND INTERNATIONAL AGENCIES

by

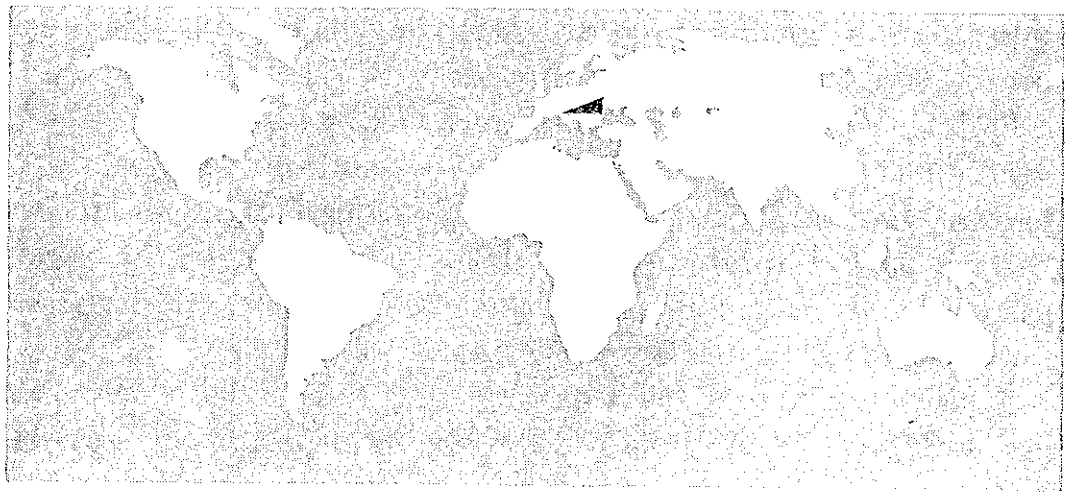
GERALD G. WATTERSON

Secretary General, International Union for the Conservation of Nature

MORGES, SWITZERLAND

Gerald G. Watterson obtained his degree in forestry at Oxford University, England. During World War II, he served with the Forestry Branch of the Royal Engineers. He worked for 5 years in the Sudan and was then employed by Unilevers, doing agricultural research in the Congo. He was the number one unit manager on the East Africa Groundnut Scheme, during the initial period when Unilevers was the managing agency.

In 1953, he joined the Food and Agriculture Organization of the United Nations. When FAO established a regional office for Africa in 1959, he was appointed Regional Forestry Officer. In this capacity, he carried out the first phase of the African Special Project of the International Union for the Conservation of Nature. He then took 18 months' leave from FAO to serve as Secretary General of the IUCN. During this period, he organized and was secretary of the Arusha Wildlife Conference, which was the second phase of the African Special Project, and helped staff and launch the third phase. In 1962, as he had planned, he returned to FAO. He is now FAO's Liaison Officer for Africa.



THERE ARE, we are told, prospects of finding substitutes for the world's nonrenewable resources. We cannot be as emphatic about the myriad and maybe indispensable forms of life that make up its natural renewable resources and contribute to their indirect values.

National parks and equivalent reserves constitute a plant and animal bank for future investigation in the service of mankind. They may, in the interest of soil and water conservation or on "marginal" areas, prove to be the most rational form of land use in some parts of a region. They certainly constitute "bench-marks" of what F. Darling calls "conversion cycles in pristine conditions"—a basis for comparative studies by organizations such as FAO, in a world where increasingly intensive land-use requires profound investigation, if our standards of living are to be increased, or even maintained, in the face of rising demands.

They are also of concern to organizations such as UNESCO as a bastion against the corrosion of our cultural standards at a time when greater leisure, enhanced spending power, and improved transportation facilities coincide with fewer natural amenities and less and less pleasure. Two major problems of our time are labor and leisure; and the latter is, in the long run, more important. For although at labor we earn a living, at leisure we learn to live (L. P. Jacks).

There is within the human individual an awareness of his relatedness to his total environment, which is one of the facts of living, the importance of which he ignores at the risk of his psychological well-being. The personality of the healthy individual cannot be considered apart from his nonhuman environment, and indeed this affects also his relatedness with his fellow humans.

Prof. G. M. Trevelyan, in his Rickman Godlee Lecture in 1931, said man "shuts himself up in cities and ceases to be a part of free, visible nature. And then, being cut off from these yearly sights and sounds that are natural to him by an infinitely long inheritance, he broods, grieves, is miserable, mutinous, wants often he knows not what, and goes off into follies, madnesses and meannesses innumerable."

A growing economy avails us nothing, if these indirect values are extinguished. The intrinsic value of such areas becomes inestimable under growing pressure from other uses. It is therefore perhaps neither wise nor necessary that parks or wilderness be given economic

justification. Their preservation is justified even if they contribute nothing to the gross national product.

For mankind is facing ecological imbalance and sickness. A cancer has set in. The mounting symptoms of air and water pollution, nervous diseases, juvenile delinquency, and other forms of deep unrest are already recognizable and uncomfortable precursors of the ultimate dealth of the whole organism—either by a major catastrophe that overtakes elements in imbalance (W. Vogt-R. B. Cowles) or by attrition of living standards by such an increase in cost of substitutes for cheap resources as to reach a state when life is no longer worth living (Starker Leopold). To this I would add a third eventuality—that of a growing and profound sense of the meaninglessness of a life impaired by a lack of relatedness to the natural environment, surrounded by uncherished substitutes and threatened by the alien and alarmingly increasing portion of our nonhuman, modern, manufactured environment, which is rising to destroy us.

Natural beauty is not a rival to cultural, economic, and social development, but an inspirer and nourisher of man and his aspirations. It has for centuries been held a sacrilege to destroy a church. How much more so is it then to destroy natural beauty and sacrifice it on the altar of the ugliness of base materialism. We are still outnumbered and overborne by those who place considerations of business or politics higher than consideration of its preservation. Yet standards of living imply the maintenance of these natural values, and the important thing is for us to avoid being overwhelmed by our inability to think things out in time.

In the words of our Chairman, the President of IUCN: ". . . it must be universally understood that active cooperation in this field of effort (conservation of nature and natural resources) is not only of perennial interest, but corresponds to the basic concept of the United Nations Charter and constitues an international obligation."

The need for international action in the field of nature protection and conservation was understood by such pioneers as Dr. Paul Sarasin and Dr. A. Van Tienhoven even before the First World War.

The League of Nations was next approached as an obvious vehicle for setting up such an institution, but numerous other matters claimed its attention; and it was therefore only in 1934 in Brussels that was created, by private initiative, the "Office International pour la Protection de la Nature." This was later merged into the "International

Union for the Protection of Nature" (IUPN) after it was finally established in 1948 as a result of a conference convened by the French Government at Fontainebleau, under the auspices of UNESCO, and attended by delegates from 33 countries. In 1956, at its Fifth General Assembly in Edinburgh, the Union's name was altered to "International Union for Conservation of Nature and Natural Resources" (IUCN), in order to reflect more clearly the dynamic role of "conservation through rational use," which the Union accepts as its responsibility in the light of mankind's "civilizing" influence.

At the Fontainebleau Conference, at which the Union was formally created, its services were engaged by UNESCO to assist in the technical preparation of a United Nations Scientific Conference for the Conservation and Utilization of Resources (UNSCCUR) to be held at Lake Success in August 1949. In the words of the Union's first Secretary-General, "It was immediately apparent that the concept of conservation, in the broadest sense of the term, had become and would remain one of the preoccupations of the United Nations specialized agencies. At a time when the hiatus between the productive potential of the natural world and the requirements of an ever increasing human population is getting perturbingly wider, the protective interest of these agencies brings much needed encouragement to the vanguard of enthusiasts throughout the world who often seem to be preaching in a desert in their crusade for respect of beauty and appreciation of living things as well as moderation in exploiting and developing resources."

The most important outcome of the 1949 conference was the promotion of studies on human ecology. The concept of interrelationship between all disciplines affecting man's welfare is particularly relevant in the observation of biological equilibriums, especially where the monovalent specialist interferes with such delicate balances in the name of "progress."

In the field of national parks *per se,* the problems arising from national parks bordering a frontier were also discussed. A resolution was passed that the Union recommend to governments or appropriate authorities the taking of immediate and vigorous action to protect areas supporting plant communities which contain rare or vanishing plant species; that an open list of such rare and threatened plant species with their areas, associations, and habitats be maintained; that ecological research be promoted or sponsored in the interests of determining the exact status of such areas; and that adequate and reliable advice

be thus available to governments and to interested local organizations on the appropriate measures for preservation.

Several conferences and meetings and a number of additional or complementary resolutions have since contributed to a growing awareness of the value of national parks to modern living. For the sake of brevity, we can now jump to the Union's Sixth General Assembly in Athens, Greece, in September 1958, at which IUCN's Committee on National Parks was established to "strengthen international cooperation in matters relating to national parks and equivalent reserves in all countries throughout the world."

Five general objectives were laid down:

1. To assist IUCN to further the development of international cooperation in the field of national parks and equivalent reserves, and to provide advisory and technical assistance to governments and appropriate organizations, when requested.

2. To assist IUCN to serve as an information center for the collection and dissemination of data based on the experience gained by all countries relating to national parks and equivalent reserves.

3. To encourage publication of IUCN's "atlas" (*Derniers Refuges,* Elsevier, 1956) in other languages.

4. To assist IUCN in the furthering of scientific research, especially ecological studies, in national parks and equivalent reserves on the basis of international and regional cooperation and maintain—

   (*a*) a central list of ecological, wildlife, and other scientific projects that are or have been undertaken relating to national parks and equivalent reserves, and

   (*b*) a roster of experts who might be available on request to governments or appropriate organizations for advisory and technical services.

5. To facilitate, upon request, visits of scientific, technical, administrative, and training personnel between national parks and reserves of various countries.

It was, I think rightly, decided to establish the commission with headquarters in the United States, where the modern philosophy of wilderness and parks as a public trust was first developed.

The Athens General Assembly furthermore felt that recognition of the "national parks concept" by the United Nations might help various governments obtain technical assistance from some of the specialized agencies and commissions of the United Nations. A resolution was

therefore adopted authorizing IUCN to approach the Secretary General with a request for a world list of national parks and equivalent reserves. In keeping with this resolution, the United States Government requested that an item on this subject be placed on the agenda of the April 1959 meeting of the Economic and Social Council.

Finally, in the light of the progress made in the establishment of national parks, a resolution was also adopted that thorough international discussion on the subject would further improve the situation, and that a conference on national parks be convened at an appropriate time and place in the near future.

The IUCN Commission on National Parks is the youngest in the Union's hierarchy, established to assist the Secretariat in fulfilling its international responsibilities. National parks and equivalent reserves are in a sense the surest testing grounds and the ultimate repositories for the efforts of the other commissions which IUCN has established during its 14 years of life. A brief review of these will serve to highlight their function in relation to national parks and will demonstrate the manner in which IUCN is equipped to pursue its objectives in promoting the maintenance and development of such areas.

At the outset of this presentation, I said that an important value of national parks lay in their use as outdoor laboratories and "benchmarks" for the comparative studies of different forms of land-use, the interrelationships of the climate, soil, vegetation, and fauna of various habitats, the effect on human ecology, and the need for close coordination of methods and areas of research. The international aspects and significance of such work are obvious, and the IUCN Commission on Ecology is designed to accept as one of its chief responsibilities the task of promoting and coordinating this work.

In all countries, whether they be subject to intense urban and industrial pressure or are witnessing initial and rapid expansion, measures for comprehensive landscape planning and coordinated public control over changes in land-use must be recognized and maintained as an essential feature of good government.

The Landscape Planning Committee of IUCN's Ecology Commission has a vital function to fulfill, particularly in heavily industrialized and populated countries, since the best way of avoiding excessive pressure on parks and wilderness areas is to provide an adequate supply of other resources for the amenities and recreation of its populations by good multiple-use in nonwilderness areas.

In rapidly developing countries, where indigenous and unique species of plants and animals still exist, it is IUCN's Survival Service Commission that has a special role to play in drawing attention to the value of their protection, not only from the aesthetic and cultural points of view, but in the interests of scientific study.

The survival and development of national parks is ultimately dependent upon an informed, interested, and aroused public. The comment that an IUCN Commission on Education has long been established to collect and disseminate such information, and promote its use in schools, will suffice.

Finally, the record would be incomplete if mention were not made of the IUCN Committee on Legislation and Administration, charged with the collection and eventual analysis of national policies, legislative measures, and administrative machinery for the conservation of local natural resources. Its utility in supplying such information to governments that wish to safeguard or expand their national parks programs needs no emphasis.

A vital work of reference for this present conference, and a basic tool for the elaboration of a world parks program, is the United Nations' *List of National Parks and Equivalent Reserves,* parts I and II, compiled with the assistance of IUCN's Commission on National Parks, as a result of a recommendation emanating from the already-mentioned Sixth Session of IUCN's General Assembly at Athens in 1958. The material is presented in provisional form, for there has not yet been time to examine, evaluate, and standardize its contents. Another point that requires stressing is that the Executive Board of IUCN has felt all along that the UN list is, among other things, a working document which must now be taken up by IUCN's Ecology Commission. It should be used in making a worldwide assessment of habitats that have been covered and in determining the types and possible locations of those that have not yet been adequately protected. This would be a part of a larger international effort to agree on an inventory of habitat types, both terrestrial and aquatic, that need study or protection. It is closely related to the International Biological Program, which is directed toward consideration of the productivity of natural communities and its alteration by human interference.

At this point we must begin to look into the future and attempt to define a program which will receive the active support of governments and private interests in all member countries of the United

Nations. This brings us surely to the principal objective of this world gathering on national parks—the development of an action program in the parks field. IUCN believes it can play a significant part in such a program, details of which should be worked out by this conference.

It is perhaps opportune to summarize the general machinery that has already been introduced in some regions or subregions of the world as examples of the ways in which the problem has been tackled under different circumstances and under varying degrees of political, economic, and social awareness.

IUCN's African Special Project was launched at the Union's Seventh General Assembly in Poland in 1960. After a general assessment and evaluation of worldwide conservation problems, this conclusion was reached. The accelerated rate of destruction of wildlife and habitat in Africa was the most urgent problem requiring concerted international effort. The African Special Project was designed to tackle the problem in three stages. The first consisted of preparatory visits to a number of key countries to arouse interest in the thought that, for vast areas of marginal, submarginal or tse-tse infested country, wildlife tourism and wildlife management for protein production should be considered as two of the most rational long-term forms of land use. The second stage was to bring representatives of interested governments together to a conference, where they could convince themselves that wildlife as a heritage and local resource could be profitably managed, and where they could discuss among themselves the administrative and social problems of integrating wildlife management into their overall economic development plans. Such confrontation between East and West Africans served to promote interest and the desire for action. The independent West, with its anxiety to revive and develop a heritage which it has in great part almost extinguished, met with representatives of East and Central Africa, more richly endowed with a less seriously depleted resource, which is already proving an economic asset but which, until such confrontation, was largely considered as inexhaustible.

The third stage follows logically. Interest having been aroused and strengthened by proof of the value of Africa's wildlife heritage, a highly qualified consultative team was recruited to ensure that interested governments, upon request, could be shown how to help themselves maintain and develop it. Also, outside aid could be directed to where it could do the most good in working out plans which would

ensure a permanent place for African wildlife in the overall economy of the region. FAO and UNESCO have both contributed substantially in material and moral support of the project to date, and the mission is being financed by UN/TAB Contingency Funds, during 1962 at least. In turn, although private sources of aid will certainly also be approached, it will be largely to the UN and its agencies that African governments can be expected to turn for further, specialized assistance.

IUCN and the Council of Europe were faced with a very different situation. Mounting industrial and urban development has now resulted in substantial inroads being made on the countryside. An awareness of the need for effective action to preserve the character of the region's landscapes and protect its fauna and flora has fast developed; and the establishment of the Council of Europe has brought with it the realization that such action could be facilitated greatly if carried out multilaterally, as a joint endeavor.

The Committee of Ministers, in late 1960, therefore decided to accept this problem as their own and, through the Cultural Committee, to set up appropriate machinery for the study and implementation of projects of European interest. The present situation is this: After study of the most effective means of ensuring a permanent system of cooperation, an *ad hoc* Committee of Experts, which met in February 1962, has put up the following proposals to the Committee of Ministers: A permanent committee of experts is to be created, consisting of two delegates from each member country of the Council of Europe. To its meetings would be invited observers from other countries of Western Europe and from interested international organizations. This committee would have at its disposal a dependable source of scientific advice, intelligence, and documentation, tailored to meet impartially the requirements of the European region, yet equipped to offer a wider basis of experience culled from other regions of the world. IUCN has been selected as that advisory body.

From the point of view of the European region, the creation of this permanent Committee of Experts will, in the first place, serve to promote joint action in the broad field of nature conservation, a trend which it has hitherto not generally been possible to achieve. It will moreover stimulate, at the national level, through the creation of committees made up of both governmental and private interests affecting issues in this field, the formulation of a consensus on the situation and needs within each country. Finally, the periodic exchange of views

among its members should lead the permanent committee to an assessment, and subsequent reviews, of policy and priorities for projects where regional cooperation is needed.

In regard to IUCN, it retains its independence and freedom of action, and the results of such collaboration will not only benefit member countries of the Council of Europe, but indirectly all other European countries as well, and thus reflects the truly international status of IUCN.

As to the Scientific Council on Antarctic Research, the example of international cooperation in Antarctica further illustrates the obvious advantages of minimizing interference by man and preserving for detailed scientific study of the flora and fauna of Antarctica, which displays some of the most perfect biological adaptations to an extreme environment. Although particularly vulnerable to interference due to a high degree of specialization and a lack of defense against unaccustomed predators, the situation to date has been little impaired and therefore constitutes one that is unique among the great land masses. It thus merits preservation as a world heritage.

In 1957, the 12 nations participating in the International Geophysical Year Antarctic program decided to establish what is now known as the Scientific Council on Antarctic Research (SCAR), consisting of a delegate from each nation actively engaged in Antarctic research and representatives from a few interested and appropriate international unions. At the fourth meeting of SCAR in 1960, and as a result of an Antarctic symposium at Buenos Aires in 1959, a report and a series of recommendations on this matter were provisionally accepted subject to approval by national committees. Following these recommendations and the signing of the Antarctic Treaty, a consultative meeting of the treaty powers made recommendations which, to a large extent, adopted the SCAR policy on conservation.

The Tenth Pacific Science Congress, in August–September 1961, was concerned over the deterioration of natural resources in the countries of tropical southeast Asia, as revealed in the reports of the delegates from these countries. The council felt there was an urgent need for closer cooperation among the countries of the area to deal with problems of conservation. A resolution was therefore adopted to ask UNESCO's Science Cooperation Office for Southeast Asia to convene a regional meeting of specialists from each of the countries to find ways of dealing with this problem. In February 1962, in collaboration with

the government of the Republic of Indonesia, a regional working group was convened in Bogor, to which were invited Australia, Burma, Cambodia, Indonesia, Laos, Malaya, North Borneo, Philippines, Sarawak, Singapore, Thailand, and the Republic of Vietnam. The meeting was an exploratory one, to exchange information on work done and results achieved, and determine the possibilities of closer regional cooperation in this field.

IUCN was invited to be represented, and to submit suggestions for the meeting. Drawing upon experience in Europe and Africa, these included—

(*a*) the setting up of a representative regional committee;

(*b*) government support of IUCN as the technical advisory body to the committee and whose initial action might, for certain countries at least, be along the general lines of IUCN's African Special Project.

The official report on the outcome of the meeting is awaited.

National parks and wildlife management in a region like Latin America which is undergoing rapid economic and industrial expansion, and still possesses an important and in some instances almost unknown heritage of natural resources of aesthetic, scientific, and economic value, must plot a more active part in development plans. FAO's regional office for Latin America has recently taken the lead in attempting to promote international action, based upon national consciousness aroused in 1948 by the Inter-American Denver Conference, and by the Third General Assembly of IUCN held in Caracas, Venezuela, in 1952. Resolution No. 22 of the IUCN Caracas meeting stressed the fact that conservation embraced a whole range of activities in a region's development, from the construction of hydroelectric dams and malaria control for better land use to timber management, the promotion of aesthetic values, and of scientific research. It underlined the need for coordinated effort by private and public, urban and rural, agrarian and industrial interests, each working toward a common objective.

Resolution No. 23 urges that attention be given to natural areas as the basic unit for conservation, improvement, and utilization of the region's natural resources.

National machinery has, in most countries, been set up in the form of a section, division, or department on national parks and wildlife management within the framework of the Forest Service. Latin

America remains one of the world's greatest reservoirs of forest produce, and the connection between forestry and national parks requires no emphasis. In fact, there are several instances where the establishment of parks and reserves was motivated by the need for more specific protection of state forests.

In summarizing IUCN's position in regard to the role of international agencies in the world parks program, it is clear that the Union's hand needs to be strengthened by close cooperation with intergovernmental and private organizations. By virtue of the large number of nongovernmental and private organizations that make up an important proportion of its membership, IUCN is in a position to obtain an impartial picture of world conservation. The screening of its consequent action by its truly international commissions and committees, composed of some of the leading scientists in their various fields of work, further ensures that IUCN's interpretation of a situation is unimpaired by political or economic bias.

The Union's nongovernmental status does not restrict its ability, on the one hand, to accumulate and benefit from experience acquired in areas such as the United States of America, where an enlightened policy on various aspects of conservation has long obtained, and on the other, to pass this on through qualified channels to other areas where the need for guidance is urgent.

But without government support and interest, and without the active cooperation of all the technical services interested in national and regional development, IUCN's role necessarily is restricted, unless it can obtain an impartial hearing and cooperation through intergovernmental organizations such as FAO, UNESCO, the Council of Europe. Many of these countries are represented here by their governmental delegations, and IUCN looks to the conference to give it the kind of cooperation and sustained support that is required to enable us to do the job for which we are equipped and which needs to be done.

Section Five—B

RAPPORTEUR

Lloyd W. Swift

In the absence of Gerald W. Watterson, the role of IUCN was summarized by Jean G. Baer, President of IUCN. Topics discussed were the purposes and programs of IUCN. The African Special Project was outlined, and mention was made that the third stage is now under way with two ecologists. The work of the Ecology Commission, and its relation to international biological science, was explained. With regard to national parks, there has been the IUCN's International Commission on National Parks, which spearheaded this conference. These interests will be continued by the IUCN.

R. G. Fontaine spoke for FAO, pointing out that FAO worked in the U.N. formerly, and was concerned with wise land use. FAO provides technical assistance to member nations; they cooperate with UNESCO and IUCN.

A. Gille, in speaking for UNESCO, said his organization works with member governments in cultural, education, and scientific fields.

Peter Scott explained that the World Wildlife Fund, as a non-government agency, hoped to receive 1.5 million annually in voluntary donations for wildlife work in critical areas. The fund is headquartered with IUCN in Switzerland. The World Wildlife Fund would make grants rather than having its own staff of field experts. Applications will be considered twice a year.

M. Acosta-Solis of Ecuador commented on his country's cooperation with the Charles Darwin Foundation for the Galapagos Islands. In this, Ecuador has made land available for use of the Foundation and facilitated the moving of materials to the islands.

John S. Owen of Tanganyika expressed concern that the conference seemed to have overlooked the fact that countries are run by politicians, who are usually taking the short term view—yet conservation is a long term matter. They would have to be shown that they can afford parks and reserves. He commented favorably on the leadership of the

United States National Park Service and mentioned specifically the control of excess animals, such as the Yellowstone elk.

Lloyd W. Swift, as rapporteur, pointed out that the previous day's sessions had covered principles, values, standards, and related background material on national parks. Today's session on the role of international agencies was moving into the area of implementation. From the statements of the panelists, it could be concluded that:

(1) Agencies have rather distinct areas of responsibility—FAO and UNESCO in the U.N. family, IUCN and World Wildlife Fund as non-government organizations.

(2) Each country must adapt the national park movement to its conditions and needs.

(3) A country's own interest and desire to be active in conservation is important.

(4) Countries desiring assistance should avail themselves of the services the international agencies have to give.

SESSION ON IMPLEMENTATION

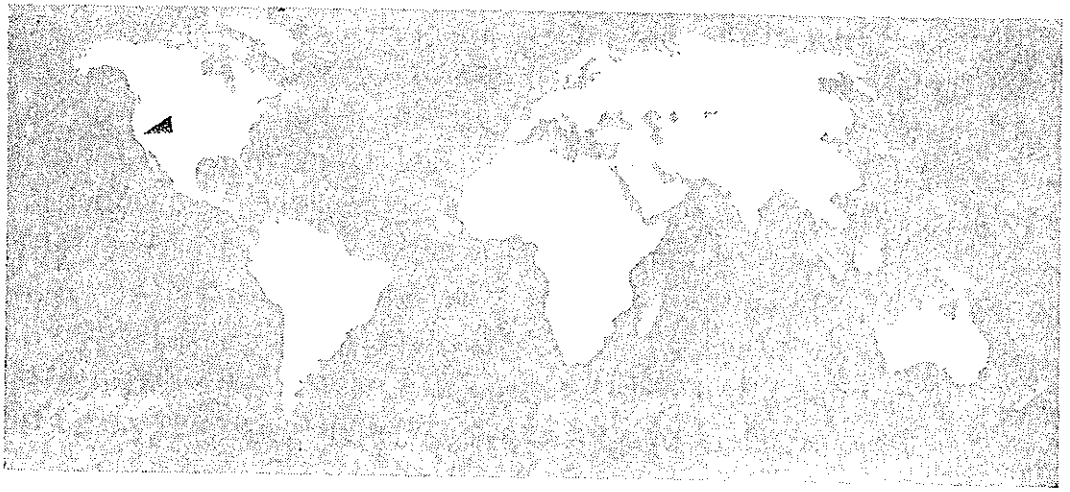
As the First World Conference on National Parks drew to a close, the delegates were gripped by two conflicting emotions: sorrow that the unique experience of exchanging views with park men around the world was coming to an end and enthusiasm over what they had learned at the meeting. In this atmosphere, the session on implementation met during the afternoon of July 6 under the chairmanship of Harold J. Coolidge. The delegates listened to a review of the conference proceedings, a discussion of the role of non-governmental agencies in park activities and an exposition of future prospects for international cooperation in the field of national parks and reserves. They then listened to and discussed the reports of the conference committees. Before they adjourned to attend the special evening arranged for them at the Seattle World's Fair, they shared with each other a further understanding of their mutual problems and a new sense of international cooperation.

REVIEW OF THE CONFERENCE DELIBERATIONS DURING THE FIVE SECTIONAL MEETINGS

by

RICHARD M. LEONARD
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A lawyer by profession, Richard M. Leonard has maintained a lifelong interest in conservation and the outdoors. As a boy, he was an Eagle Scout, and he has served as a Scout leader and a leader of one of the Scout Naturalist Expeditions to the Pacific Southwest. During World War II, he served for 2 years in Burma and India. On his return to the United States, he continued to practice law and, at the same time, devoted himself to the cause of conservation. He has long been a member of the Board of Directors of the Sierra Club and is a past president. He is now president of the Sierra Club Foundation. He is also vice president of the Wilderness Society and a member of the Board of Directors of the Izaac Walton League and the Save-the-Redwoods League. His long record of conservation activity admirably equipped him to fill the duty of summarizing the conference proceedings.



AT THE VERY FIRST SESSION of the conference concerning the purposes, principles, and policies of national parks, Harold J. Coolidge wisely reminded the delegates that a great deal of international study has already been given to this subject. He cited the 1933 London Convention for the Protection of African Fauna and Flora, and the 1940 Convention on Nature Protection and Wild Life Preservation in the Western Hemisphere. Since these international treaties are already law and binding in the countries that have ratified them, it is best to use the definitions of those treaties as the uniform international base to work from. Quotations from both treaties and from the national park law of the United States are contained in the IUCN pamphlet on the International Commission on National Parks.

In considering such fundamental principles of national parks, the discussion quite properly became philosophical. Some say conservation and national parks are for man alone, to preserve himself, or for his enjoyment, or benefit, or welfare. There was strong support, however, for a true ethic of right and wrong, for a living species to survive as a species. This implies a fundamental "natural" right of wildlife of the moral quality stated and provided in the Declaration of Independence of the United States. One speaker stated it as an "ethical value, a responsibility on our part to the animals themselves for their inalienable natural rights." It was the consensus that an International Charter for National Parks should state such fundamental rights for wildlife and for nature.

The philosophical discussion of the purposes, principles and policies of national parks the next day led into the practical problems and ethics of research under natural conditions undisturbed by modern man. The title of the section was "National Parks and Reserves are Indispensable to Research Under Undisturbed Natural Conditions."

All agreed that ecological research is urgent both for science and economics. A long time is required, and large areas are needed. Several scientists pointed out that observation alone is not enough. Changes in natural conditions through experimental management must be planned, such as the effects of fires, the introduction of exotic species, chemical controls, or watershed management. It was of course agreed that because of the changes in natural conditions which would be brought about by such experiments and due to their sometimes unforeseeable results, it would be best to try to conduct such experiments outside the national park, but nearby.

Other speakers, however, vigorously pointed out that "undeveloped and untouched areas are essential, should be disturbed by no one, not even research personnel." The rapporteur, a brillant research scientist of many years experience, summed up the fascinating discussion by concluding that "we must be certain that the researchers who come after us have the same opportunities as we have for research on undisturbed natural areas."

After the brilliant and stimulating philosophical discussion of the two opening sessions, the conference was reminded by a delegate that such ideals were lofty and interesting, but many countries needed practical advice. Hence the session on economic aspects and values pointed out that it takes money to acquire, develop, and protect parks. Budgets are necessary and have to be justified. Parks stand solidly on human values, but esthetic and humanitarian values are not always convincing enough to those responsible for budgets. While economic facts alone are not of great value, they are important to a balanced understanding of parks. Direct economic benefits from parks were listed and carefully documented by two of the speakers. The indirect economic benefits from parks are for broader and long range effects. It was pointed out that the genetic bank of an immense variety of plants and animals in natural areas had already provided important provable economic benefits to humanity. Possibilities in the future seem even more dramatic, as knowledge in this field improves.

In East Africa, the leaders seem to recognize the economic value of the huge herds of animals in the parks. Cropping of the animals is used to keep animal populations within the carrying capacity of the range and to provide protein for the people of the country. Native animals and foreign tourists are often of more economic value to the local people than exotic cattle, which have survival problems.

An old man near Great Smoky Mountains National Park in the United States summed up the economics by stating that "One hundred tourists equal the income from one acre of potatoes and are a darn sight easier picking!"

The First World Conference on National Parks was then brought back to the lofty ideals of the mind by an exceptionally brilliant paper from Uganda on the cultural aspects of national parks and equivalent reserves. It was pointed out that "politicians are not people apart from their human community. The community is continually evolving, and people can be reached through their souls more effectively than

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through economics. The economic argument may too easily fail through sudden changes. The cultural values are more deep seated and permanent. That is what will last. Once the soul of man is uplifted to the state where he looks at things with the spiritual point of view, we have reached the basis for real protection for our national parks. Moreover, tourism not only brings money, it brings intelligent curiosity and question to stimulate the development of the people. This immensely strengthens the cultural basis of the local people, and of the tourists themselves."

Although delegates stated that some countries wished to be "flooded" with tourists to support and justify their national parks, most realized the difficult dilemma of the subject of Section Three, "Optimum Use of National Parks and Equivalent Reserves." The dilemma is phrased very well in the basic National Park Act of the United States adopted in 1916. There it is stated ". . . the fundamental purpose of the . . . parks . . . is to conserve the scenery and the natural and historic objects and the wildlife therein, and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations."

How to provide for such "enjoyment" and still conserve the values "unimpaired" for future generations constitutes the great challenge to park planners and administrators. It was agreed that careful, continuing research is needed, not only as to the effect of tourists on each park values to be protected, but also as to the effects of tourists on each other. An international "charter" of standards of protection for national parks should be developed, as an international ideal, to supplement the "definitions" of the "United Nations List of National Parks and Equivalent Reserves."

Again, the section chairman in his own words led the conference back "from the abstract to the concrete—from idealism to realism," and thus to the administration of national parks and equivalent reserves with practical experience gained from standards, policies, and planning practices in various parts of the world. The delegates were fortunate in receiving an exceptionally fine paper on this subject based on 90 years of practical experience in the world's first national park.

This led into the next subject: "Public Education as Furthered by National Parks Through Interpretive Services." The speakers promptly restated the title to emphasize the mutuality of the subject, in that national parks were themselves strengthened through the education

of the public by national park interpretive services. The national parks of Japan have in the past year been visited by 5 million children on organized trips from 45,000 schools. To assist in the interpretive services, Japan has also had 400 volunteer ranger-naturalists in the past year.

In Indonesia an American national park naturalist thrilled an audience of simple rice farmers by pointing out that their nation had the last Javan rhinoceroses on earth—theirs to preserve, and theirs to show to the world.

All agreed that the conference should petition the International Biological Program to prepare a world list of habitat biotypes, representing areas urgently needing preservation as strict natural reserves to be as representative as possible of all ecological habitat types on earth. Among the types most frequently urged for full protection and preservation were the many underwater areas of the earth with their rich and varied life which, as on the land above, is subject to the ruthless competition of man himself.

Even more urgent were the special problems involving particular vanishing species of life. Through careful field work by representatives of IUCN, dramatic statistics have been obtained, showing the extreme urgency in many cases and providing recommendations to assist in the protection of the threatened species.

Often the most effective action involves the cooperation of several nations or investigation and assistance by the international bodies. The program, therefore, led most logically into an excellent presentation by a representative of FAO of the United Nations and by a representative of the Natural Sciences Department of the United Nations Educational, Scientific and Cultural Organization.

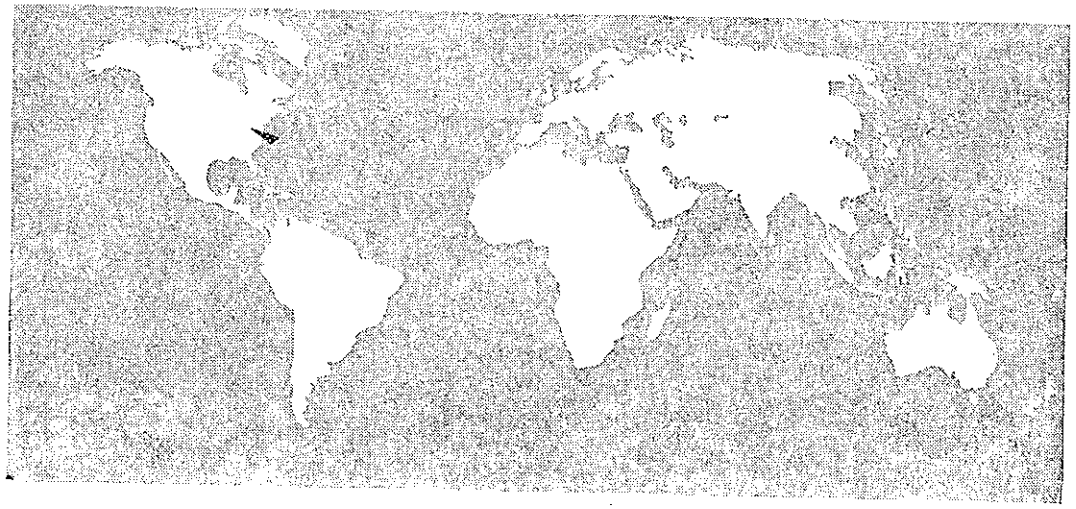
In conclusion, I strongly share the views of that wise Antarctic expert from the Antipodes and that "patron saint" of wilderness preservation, who guided the fascinating discussion on the values of wilderness. As they do, I count myself a "realistic optimist." Even considering the tragedies of our losses, the shortness of time and the truly desperate competition of the human population explosion for money and for land to live upon, nevertheless, there is a realistic basis for optimism in conferences such as this. Particularly is it encouraging to have the younger nations participate so vigorously and so competently in this truly international field of preservation of national parks and equivalent areas.

ROLE OF NON-GOVERNMENTAL AGENCIES IN PARK ACTIVITIES

by

RICHARD H. POUGH
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PELHAM, N.Y., U.S.A.

Richard H. Pough was trained in engineering at the Massachusetts Institute of Technology, Cambridge, Mass. However, he soon forsook the business world to devote his entire time to the preservation of wildlife. A tireless worker for conservation, he conducted an educational program on behalf of persecuted species for the National Audubon Society and at the same time wrote their *Audubon Bird Guides*. While on the staff of the American Museum of Natural History, he developed an ecologically oriented hall on the forests of North America, which has been widely acclaimed. He has served as chairman of many successful campaigns to preserve tracts of undisturbed forest and grassland for both research and public enjoyment. He is President of the Natural Area Council, Inc.



IN THE UNITED STATES, it has been our experience that governmental agencies can accomplish very little without public support. It is often said that the best laws are those that represent crystallized public opinion. In this country, the development of public opinion in support of nature preservation and parks has been largely the work of nongovernmental agencies.

Our park movement was initiated about a century ago by a relatively few talented and vocal men of great vision. Their books, magazine articles, and lectures made Americans increasingly conscious of the magnificance of their natural heritage. These men soon aroused the interest of others, who were eager to help and provided the nucleus around which our various non-governmental conservation organizations developed. Some were concerned largely with forest and watershed protection, others with big game or birdlife. Still others had as their objective the protection of an area of outstanding scenic beauty. However, they all found themselves on common ground in supporting state or national park programs.

It is a mistake to think that civic organizations must be large to do effective work. Many of ours did some of their best work with only a few hundred dedicated members. Even today, although they express the sentiments of probably millions of Americans, their membership is a minute fraction of our 180 million population.

The effectiveness of these organizations, despite their small membership, has been due at least in part to their success in enlisting the active cooperation of civic organizations of a more popular nature, such as women's clubs, garden clubs, men's service clubs, and even fraternal orders. Some of these require each local chapter to have a standing committee on parks or conservation.

Many non-governmental organizations have made useful studies of the park needs of certain regions or the opportunities that still remain for the establishment of parks of a certain type. Frequently, such studies have provided all the impetus needed to spur governmental agencies into action. In others, they have provided non-governmental organizations with the ammunition they needed to campaign successfully for the creation of needed park areas. In general it may be said that the more clearly such studies indicate that the last remaining opportunity for the establishment of a park in the area has arrived, the greater have been the chances of success.

In recent years scientific societies have played an important role in

broadening the concept of the national park system. Especially the interest of the ecologists has led to a conscious attempt to include in the system at least one outstanding example of each major biotic community to be found in the United States. Ultimately, they hope that the various units of the national park system will constitute a fairly complete "living museum" of the ecological spectrum of the continent.

Much of the research on the ecology of national park areas and of the wildlife on them has been carried out by non-governmental agencies. In this, our universities have played the chief role, often with financial help from civic groups interested in conservation or from other non-governmental sources.

The educational effort needed to insure continued public interest in parks, so that there may be adequate support for their maintenance and enlargement, is in large part the work of non-governmental organizations and the press, which in the United States has generally followed the lead of interested civic groups in backing park programs.

Summer programs of teacher indoctrination in conservation and methods of interesting children in nature and parks are carried on by many organizations at summer schools located in an outdoor camp setting. They also carry on general adult education programs through their publications, the distribution of motion picture films, and the sending out of lecturers. Our natural history museums have played a major role in the education of both children and adults in the appreciation of nature and national parks. In constructing a diorama display dealing with an important mammal species or the biota of a region, a national park is frequently chosen. This has caused our national parks to be well known vicariously to many millions of Americans who have never visited them.

And now a few words about foundations. It is customary in the United States for very wealthy men to place part of their capital assets in the hands of such an organization or to transfer to it a certain part of their annual income. Frequently, on their death, the bulk of their fortune is willed to their foundation. The management of the larger foundations is usually in the hands of a board of trustees, aided by a professional staff of advisers.

Foundations have played a very important role in financing the cost of land acquisition for parks, especially in the eastern part of the United States where most of the land is privately owned and parkland

has had to be purchased. The land for a very high proportion of our state parks, as well as a number of national parks, has been either a gift or has been purchased with foundation funds. Some such parks bear the name of the donor; but whether they do or not, it is widely recognized that few benefactions are likely to be as long lasting, benefit more people, or perpetuate for a longer period the name of a generous donor.

Non-governmental agencies also play a key role when the funds to purchase park land must be appropriated by their legislative body. If all the members of these groups make their wishes known in a forceful manner to their elected representatives, the chances are good that the needed funds will be provided. Most legislators assume that for every person who writes, there are hundreds who feel the same way but are too lazy to write.

Where bond issues for the purchase of park lands must go before the voters for approval, a well organized campaign of public information by non-governmental agencies has proved most effective in securing this approval. In several recent cases, where such campaigns were well organized, the voter approval was overwhelming.

The task of securing adequate annual appropriations for the care and maintenance of parks is the most difficult task of all. Many people who will occasionally communicate with their respresentatives in support of land purchase appropriations do not have a sufficient continuing interest to support vigorously each year the budget appropriation for park development and maintenance. It is in this field especially that "friends-of-our-parks"-type organizations play such an important role.

I should like now to speak briefly about another role of non-governmental agencies—what I call the "watchdog" role. Occasionally the non-governmental group supporting a park will be wholly commercial in character. Business men's organizations, noting the way the public flock to any area bearing the magic name national park, will seek to have some nearby area so designated. So while the help of economically motivated groups can be useful in securing parks, it has its distinct dangers.

A proposed park area may have little to recommend it except proximity to the town whose businessmen want it established. Once established, there is likely to be intensive pressure to develop it so intensively as to seriously impair its naturalness and destroy its value as a home for wildlife.

In fact, as our population grows, all our parks face this danger in greater or less degree. It has been said that if the fate of any national park were put in the hands of those who live within 50 miles of it, they would so overdevelop it as to virtually destroy it.

Another growing threat to parks that requires eternal vigilance by civic organizations derives from the growing value of the exploitable resources they contain. These range from timber and wildlife to minerals and reservoir sites. As human populations are allowed to soar unchecked, such resources become more and more valuable and in short supply, with the result that pressure on government to permit their exploitation grows correspondingly.

It is essential that park administrators and members of legislative bodies, who must face these pressures from small but often politically powerful interests, be able to point to a flood of public protest, stirred up, of course, by nongovernmental agencies concerned with the park's protection. They can then say quite truthfully that it would be political suicide for them to accede to the demands of those who would invade and despoil the park.

Under our legal system, it is possible for non-governmental agencies to turn to the law courts as a final step in the defense of a threatened park area. It is wise, therefore, for conservation organizations to accumulate sufficient resources to make their ability to prosecute such a suit quite evident.

Experience in the United States has shown that the courts are inclined to interpret quite strictly the laws protecting dedicated park land. They have also construed quite strictly the implied terms surrounding gifts of park land, even though the donor did not spell out his wishes in precise legal terms.

I have the honor to be president of a watchdog organization set up some 60 years ago to protect New York State's great mountain parks. Even though small, we have time after time secured the overwhelming support of the voters of the state at the polls as well as that of the courts in defeating all attempts to alter that section of our state constitution that provides that the lands of the Forest Preserve—which now constitute over 2½ million acres—shall remain forever wild.

Some of our great business corporations have used part of their advertising budgets to support park programs. Operating in highly competitive fields, they have found it good business to foster appreciation of America's great heritage of scenic and natural beauty in mag-

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azine advertisements aimed at gaining public good will for the corporation. In a recent series of advertisements, a corporation mentioned by name and praised the work of one after another of the country's non-governmental agencies concerned with the preservation of natural areas and wildlife.

A group of corporations involved in the manufacture and distribution of packaging materials has recently taken the lead in establishing an organization that concerns itself with the prevention of litter—that modern destroyer of natural beauty. With a very substantial budget subscribed by these corporations, an extensive advertising campaign has been conducted under the slogan, "Keep America Beautiful."

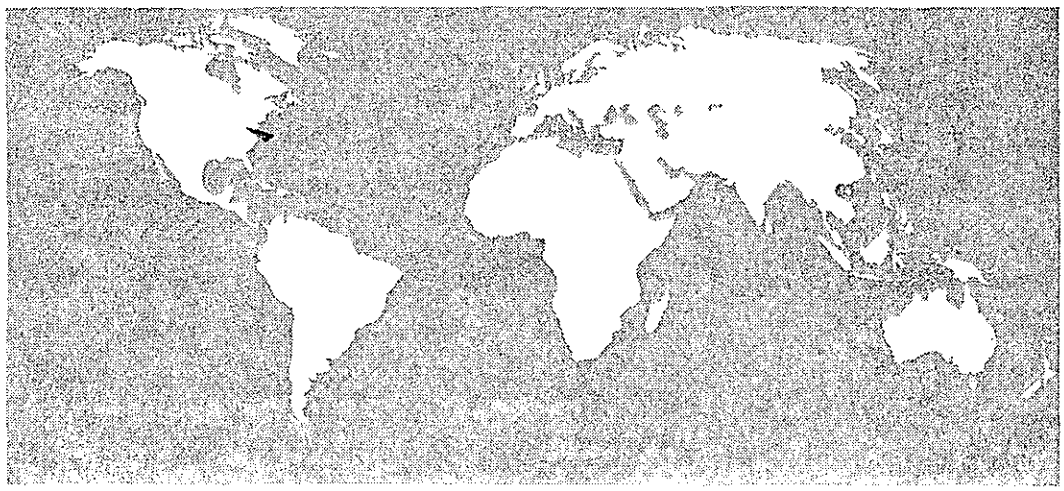
Because we are talking not only about national parks but "equivalent reserves," it is well to point out that, in the United States, conservation organizations own and manage many outstanding nature reserves. These range in size from a few acres—often all that is left undisturbed of some rare biotic community—to many thousands of acres. To insure the continued availability of many "outdoor laboratories," our universities and scientific research institutions are increasingly seeking to acquire natural areas close enough to the institution to be useful in connection with their teaching programs. Where only a small remnant of such a community survives it may be safer in such ownership than if made a park under governmental auspices. In the United States, the public has a tendency to demand full and free access to any natural area in governmental ownership, especially if it is called a park.

FUTURE PROSPECTS FOR INTERNATIONAL COOPERATION IN THE FIELD OF NATIONAL PARKS AND RESERVES

by

HAROLD J. COOLIDGE
Chairman, International Commission on National Parks of the IUCN
WASHINGTON, D.C., U.S.A.

After attending the University of Arizona, Mr. Coolidge received his degree from Harvard College in 1927. He spent a year as assistant zoologist on the Harvard African Expedition to Liberia and the Belgian Congo and then studied zoology at Cambridge University in England. He led the Indo-China Division of the Kelley-Roosevelt Expedition for the Field Museum of Chicago. With three assistants, he made the first zoological survey of Northwest Tonkin and Northern Laos. Since 1929, he has had an appointment with the Mammal Department of the Museum of Comparative Zoology at Harvard University, where he served as assistant curator until 1942. During World War II, he served with the Office of Strategic Services and saw overseas duty as a major in the army of the United States. At the close of the war, he was called to Washington to become executive director of the Pacific Science Board, established by the National Research Council. In addition to his many other responsibilities, Mr. Coolidge is chairman of the International Commission on National Parks of the IUCN.



THE THEME OF THIS MEETING, that "National Parks are of international significance" must be inscribed in all of our thoughts and mind. Whatever each of you can do in your own countries to strengthen existing park and reserves and to increase their numbers will contribute to our joint common effort in this field.

Here at this conference, we have delegates from countries such as South Africa, Japan, Canada, and Australia who have well established, sophisticated park systems. We have participants from other countries that are just starting in their national parks and reserve programs. And then we have delegates from countries that represent all conditions between these two extremes.

While there were promising beginnings at the London Convention for the Protection of Fauna and Flora in 1933, which paved the way for increased parks in many parts of Africa and, in fact, for the present park system in Africa, and while there also was important progress made at the Western Hemisphere Convention of 1940, which did the same for some of the American Republics, nevertheless I feel confident that the world's first effective and concerted effort to create and strengthen national parks and reserves is now taking shape.

The United States, where the national parks concept was kindled by the flame from a Yellowstone campfire in 1870, took further action to implement national parks in an international sense only 4 years ago. At that time, our delegation to the Economic and Social Council of the United Nations, at its meeting in Mexico City, joined with several countries to bring this whole subject before the U.N. This was to implement essentially a recommendation that was made by the IUCN at its Athens Assembly in 1958, with the result that we have now established the U.N. world list which, in its incomplete form is nevertheless a basic conference document. I say "incomplete form," because we expect to refine this list and put it in a closely edited form after checking the information with the countries which sent it in. But for all intents and purposes, it is extremely useful in the form in which we now have it. Eighty-one governments around the world have indicated their interest in being officially included in the U.N. list, and this list will certainly be made an important instrument for furthering our joint objectives.

Someone asked me whether I felt that the U.N. world list had achieved anything up to the present time. Last summer when I was in Honolulu, helping to organize the Tenth Pacific Science Congress,

the governor of a province in East Java was on his way to the United States on our Government Leader Program. He found me in my small office in the Bishop Museum, and we talked for a few minutes about the part of Java from which he came. I mentioned two reserves that really have the status of small parks in the province where he lived, and he was absolutely amazed that I should know these parks. I told him that of course I knew about them, because they were in the U.N. world list. I happened to have a copy with me, and I turned to the page and showed him. You never saw an Asian who seemed to be more moved; and he said, "This means a great deal to me. In all of the years I have been struggling to hold on to areas there and maintain them as parks and reserves in the spirit in which they should be maintained, I have had great difficulty in getting guards and getting money. I am perfectly sure that now we are in the U.N. world list, this will have considerable influence on my government and it will be a great help to me and also to the governors of other provinces in Java who are trying to maintain the same kinds of areas." And I am quite confident that it will be, because I have talked to Sukarno on certain occasions about the parks and reserves in Java; and he has said "I have ordered that they shall be maintained." They do not have enough money to maintain them as they should, but nevertheless great efforts are being made to hold them together and I think that the world list will be a help.

The IUCN Commission, which concerned itself with the list and with organizing this conference, now looks forward to increased future activities along the lines to be recommended by this conference. I hope that all delegates and observers will feel that they have the responsibility as members of this launching conference to carry out its mandate and to work with the IUCN, FAO, UNESCO, World Wildlife Fund, International Committee for Bird Preservation, and other international agencies on a worldwide program.

Secretary Udall, in his inspiring Fourth of July message to us, gave us great reason to hope that the United States Government will supply vital assistance, if requested, in this field. You may recall that he said, "We must, if we are wise, establish an exchange program of conservation thinkers and planners. Nothing gives greater satisfaction to the American people than an opportunity to share the knowledge of their landscape architects, park interpreters, management specialists, biologists, and ecologists" and "One measure towards our goal is the fact

that we have started a new section within the National Park Service to handle international coordination, and this function will be increasing in responsibility." I propose that Conrad L. Wirth, Director of the Park Service, will be so flooded with requests for things that have to be done that he will have to set up quite a large section, and I hope that it will be a very effective one to carry out this mandate.

Looking ahead, I see a need for educational booklets prepared for regional use in the schools and international agencies pointing out the values of national parks from a cultural, economic, and scientific point of view. UNESCO and FAO are both working with us in this field. I also see the need for furnishing basic technical information on park planning to countries like Liberia, Korea, Bolivia, Costa Rica, and Guatemala, whose delegates or observers at this conference have expressed an interest in receiving such help.

I hope that such international programs as those of the U.N., the Technical Assistance Board, the Colombo Plan, the Council of Europe, and the OAS, as well as bilateral technical assistance programs, like that of Point Four of the United States, and similar programs in the United Kingdom, France, Germany, Japan, and other countries may assist in encouraging a long range world parks program through an interchange of specialists, the encouragement of research, and cooperation with the plans for the International Biological Program.

In fact, just as Mr. Wirth has strengthened our park systems through his Mission 66, why could we not support an International Parks Year to take place in 1972 as part of the Yellowstone National Park's 100th Anniversary Jubilee? Professor Goetel of Poland has already suggested a plan for countries whose parks were inspired by the Yellowstone to honor that occasion.

From now on, the scene will shift from here and Washington, D.C. to Morges, Switzerland, which will be the nerve center of our commission's future operations. There, in conjunction with other conservation activities of IUCN, we are constructing a permanent information center to serve you and for which we will need your contributions. This center will be based on the celebrated van Tienhoven Library. Other information services being developed include the Union's Bulletin, special documentation in many areas and a reference service to answer inquiries and to speed the collection and dissemination of information among all of you.

These information services will be of greater value to all, if each

of you will keep us informed, not only of your own activities, but of the activities of the institutions you represent and of your respective countries. To facilitate communication, we hope to keep a record of your whereabouts and the names of other contributors to world national parks. This is of utmost importance since, from now on, our International Parks Commission with its 15 members is going to depend on the 145 conference members from overseas and the 117 conference members from the United States for the implementation of our program.

In closing these remarks, may I pay tribute to our elder statesmen who are the four Honorary Vice Chairmen of this conference—Horace Albright, a former Director of the U.S. National Park Service and known to many of you, who has been an inspiring leader in all that has to do with national parks in this country and has taken a great interest in the international development of national parks; Tsuyoshi Tamura, founder of the national parks system in Japan, whose inspiration and guidance has led to the establishment of a remarkable number of very beautiful parks in Japan. Dr. Tamura is a tireless worker and a dedicated person, and we are very much honored that he is with us here at this meeting. Two of our Honorary Vice Chairmen were unable to be here, but I want to mention them. One is an old friend, Victor van Straelen, who is responsible for the splendid system of parks in what was formerly the Belgian Congo and is now the Republic of the Congo. These magnificent parks are being maintained by the Congolese Government and they deserve our fullest support. Dr. Straelen is a very inspiring leader, one of the outstanding zoologists in Europe, highly regarded by everyone and he has been carrying the torch for international parks for many years. Finally I want to mention Wladyslaw Szafer of Poland, who is the founder of the national parks system in Poland, and who works very closely with our IUCN board member, Walery Goetel. He is an outstanding leader in the parks field. He maintains a card file of the parks all over the world, and if you want to know what is going on in your country in parks, you have only to visit his institute at Krakow and you may find some very up-to-date information and wonder how he got it, but it is because he is so interested in what is going on in this field.

Now since you are all flying home to more than 60 countries of the world, may I express a wish in terms of an old Samoan legend—Like seagulls that have been on a successful fishing expedition, may you each return home with a fish in your mouth!

COMMITTEE REPORT

PROBLEMS OF NATIONAL PARK PLANNING

Co-Chairmen: Joseph L. Fisher and Gert Kragh

An interim Committee on National Park Planning was established July 2, 1962, at the opening session of the First World Conference on National Parks. Joseph L. Fisher and Gert Kragh, who were appointed co-chairmen, invited persons at the conference, who would be interested, to meet informally for the purpose of considering problems of national park planning in the various countries of the world and developing a recommendation on the subject to present to the Recommendations Committee of the conference. Subsequently several further meetings were held of this group, each member of which expressed an interest in the subject. These persons included E. O. A. Asibey, Luis A. Bolin, Gerardo Budowski, Alfred B. LaGasse, Banijbatana, Charles A. DeTurk, Arturo Eichler, E. P. Gee, Kim Jung-Up, Joyce E. Lyndon, Tetsumaro Senge, David P. S. Wasawo, Amotz Zahavi, Clayton E. Anderson (Secretary), and Gert Kragh and Joseph L. Fisher.

A paper on planning national park systems by Marion Clawson and Joseph L. Fisher of Resources For The Future had been prepared, outlining the subject and presenting concepts and possible methods for planning national park systems. Copies of this paper were distributed for guidance and such use of the committee as might seem desirable.[1]

The following main points emerged from the discussions:

1. National park and park system planning should be concerned with land use and related water planning in a comprehensive way, including the size and location of areas, the flora and fauna existing in the areas, and the kinds of uses to which the area might be put. It should be concerned with the variety of parks and equivalent reserves making up a system of areas, as well as with individual parks.

2. National park and park system planning will have to give careful consideration to the rather different modes of life prevailing in the different countries of the world. A kind of park development that

[1] This report is included in Appendix E.

might be desirable in one country will not necessarily be equally desirable in another. Despite the differences, however, general principles of park planning and, to an extent, methods of carrying them out can probably be found which would have wide applicability over the world.

3. A national park planning committee would, of course, coordinate its work with other commissions and committees of IUCN and would take care not to duplicate other efforts. The committee should aim to provide a unifying element in park planning to foresee and remove sources of conflict.

4. A national park planning committee should be ready to provide consulting services in this field whenever a country requests it. This consulting service would not be concerned merely with the technicalities of site design, but also with the formulation of systems of park areas to meet a variety of legitimate needs.

5. A program of studies should also be undertaken to establish a better basis for park planning. These studies might include financing of park systems, location and use studies, and case studies in park administration.

6. From the beginning, the park planning committee would need a secretary through whom correspondence could clear and who could see to the administrative needs of the committee.

7. The question of financial support for the work of the committee was discussed but not in depth, and it was concluded that this subject could better be left until after the recommendation had been presented to the general session. Suffice it to say here that the operation of the committee could begin with very modest financial support with the expectation that the advisory service would be financed mainly by countries requesting advice.

Out of these discussions came a recommendation that was adopted unanimously for presentation to the Recommendations Committee at the conference.

The Recommendations Committee subsequently presented a slightly revised version to the general session of the conference. After discussion it was passed by the general session.

COMMITTEE REPORT

MANAGEMENT IN NATIONAL PARKS

Chairman: F. Bourlière

Members of this committee were M. A. Badshah, Irven O. Buss, Clarence Cottam, Antoon de Vos, L. A. Garrison, I. R. Grimwood, Rocco Knobel, A. Starker Leopold, Albert Ory, John S. Owen, Lee M. Talbot, Martha H. Talbot, Jacques Verschuren, and Jack Vincent.

1. Management is defined as any activity directed toward achieving or maintaining a given condition in plant and/or animal populations and/or habitats in accordance with the conservation plan for the area. A prior definition of the purpose and objectives of each park is assumed.

Management may involve active manipulation of the plant and animal communities, or protection from modification or external influences.

2. Few of the world's parks are large enough to be in fact self-regulatory ecological units; rather, most are ecological islands subject to direct or indirect modification by activities and conditions in the surrounding areas. These influences may involve such factors as immigration and/or emigration of animal and plant life, changes in the fire regime, and alternations in the surface or subsurface water.

3. There is no need for active modification to maintain large examples of the relatively stable "climax" communities which under protection perpetuate themselves indefinitely. Examples of such communities include large tracts of undisturbed rain-forest, tropical mountain paramos, and arctic tundra.

4. However most biotic (or natural) communities are in a constant state of change due to natural or man-caused processes of ecological succession. In these "successional" communities, it is necessary to manage the habitat to achieve or stabilize it at a desired stage. For example, fire is an essential mangement tool to maintain East African open savanna or American prairie.

5. Where animal populations get out of balance with their habitat and threaten the continued existence of a desired environment, population control becomes essential. This principle applies, for example,

in situations where ungulate populations have exceeded the carrying capacity of their habitat through loss of predators, immigration from surrounding areas, or compression of normal migratory patterns. Specific examples include excess populations of elephants in some African parks and of ungulates in some mountain parks.

6. The need for management, the feasibility of management methods, and evaluation of results must be based upon current and continuing scientific research. Both the research and management itself should be undertaken only by qualified personnel. Research, management planning, and execution must take into account, and if necessary regulate, the human uses for which the park is intended.

7. Management based on scientific research is, therefore, not only desirable but often essential to maintain some biotic communities in accordance with the conservation plan of a national park or equivalent area.

COMMITTEE REPORT

PROBLEMS OF NOMENCLATURE: THE NEED FOR DEFINITIONS

Co-Chairmen: C. Frank Brockman and Kai Curry-Lindahl

Many countries have passed various types of legislation aimed at the preservation of significant geological, biological, archeological, and historical interests for posterity. Such legislation has resulted in the establishment of specifically designated areas known by the multiplicity of terms such as national, state, provincial, or prefectural parks; quasi national parks; nature parks; reserves of various kinds; natural or national monuments; wilderness or wild areas; forest parks; and conservation areas. All these have closely related fundamental objectives but their varied designations imply certain differences in philosophy of administration and public use. As yet none of these designations are universally defined and accepted; some have quite different meanings in different parts of the world. There are many reasons for this lack of uniformity in nomenclature, not the least of which are differences in legislative procedures which brought them into being.

To the layman this varied nomenclature is confusing. Elimination of this confusion is important for at least two reasons. First, adequate preservation of natural land values and related significant interests throughout the world is dependent in large measure upon general public understanding and support of the objectives which such areas serve. Second, in this age of rapid and improved travel, people interested in visiting such areas which may be open to them should understand the particular functions implied by each of these various terms with relation to similar areas elsewhere. Thus, it seems that an effort should be made to standardize the nomenclature for various types of specifically reserved areas or, failing that, to properly relate these terms so that similar objectives of differently designated areas will be readily recognizable. However, the committee feels that the technical difficulties of this assignment are such that the time available

at this short meeting precludes the necessary study for proper accomplishment of this task.

In his address on July 4th, Secretary of the Interior Udall stated that "each country must develop the kind of park or nature reserve system that suits the needs and aspirations of its people—and the economics of its land base." In countries with well established systems of national parks and equivalent reserves this has been the case. The names used for such areas are well established by law; arbitrary changes—or even suggestions of changes—at this juncture are inadvisable or impossible. In some cases—as with the Pan American Convention of 1942—various designations are defined by treaty. But while changes in existing nomenclature of well established areas are impossible without careful deliberation it is important that countries initiating or contemplating establishment of national parks and equivalent reserves give careful consideration to the type of preservation to be followed and the implications of such programs as expressed by the titles by which such areas are designated.

The London Convention for the Protection of African Fauna and Flora in 1933 and the Pan American Convention on Nature Protection and Wild Life Preservation in the Western Hemisphere of 1942 have provided excellent guidelines for the definition of a national park, strict natural reserve, national reserve, strict wilderness reserve, and nature monument.[1] Until such time as careful studies can be completed it is suggested that designations of new areas be related to careful examination of the objectives set forth at those conferences.

In the meantime the committee suggests that this conference recommend that the International Commission on National Parks, IUCN, establish a clarification of terms concerning national parks and equivalent reserves in different parts of the world. The committee also finds it desirable that a reconsideration of the already existing terms in this field and their definitions should be made on an international basis.

[1] See Appendix E.

COMMITTEE REPORT

LATIN AMERICAN COOPERATION IN NATIONAL PARK MATTERS

Chairman: Enrique Beltrán

It is a great pleasure for me to inform the conference that the Regional Committee on Latin American Cooperation in National Park Matters met with all its members. It is satisfactory to note that the number of those present was 26, representing more than one-half of the Latin American countries. We believe therefore that we have had good regional representation.

After discussing our problems of a regional nature, the Latin American Committee drew up a report, which will be delivered to the Committee on Recommendations for its consideration. In this report we included solutions of a broad nature. These we consider as a contribution by the Regional Committee for wider use than just Latin America. The report includes, at the same time, a series of specific recommendations which refer specifically to Latin America. Since the others will be presented with those of a general nature, I am only going to refer to the basic points which were proposed with reference to Latin America.

Concerning Latin America, one proposal is that the countries that have not ratified the Pan American Convention on Nature Protection and Wild Life Preservation in the Western Hemisphere of 1942 should do so and take due action.

In addition, we recommend that in each country the highest possible priority and all necessity authority be given to the National Park Commissions which, in several countries, still lack status, thereby hampering their activities.

Next, in view of the success of this Latin American committee meeting, it is recommended that the committee be made permanent. Since there already exists a regional organization of the FAO (the Latin American Forest Commission which will meet in Santiago, Chile, next November), this group should consider the possibility of working together with the Latin American Forest Commission. (In many

countries the forest authorities and national parks are united.) It should also work with the International Union for Conservation of Nature and Natural Resources through the International Commission on National Parks.

Finally, the wish was expressed (this is not a recommendation) that a meeting could be held before the meeting of the Forest Commission in Santiago, Chile, for example in October (1962), during which there could be made a specific proposal for the establishment of national parks, which is a subject which up to the present time (and throughout the seven previous meetings of the commission) has not received the attention that it deserves.

I am very pleased, not in my role as chairman of this committee, but as a delegate of Mexico, to offer the assistance of my country's government, which will be pleased to pay the expenses of this meeting, if it is held in my country, and if it is possible for the delegates to come.

These, gentlemen, are our basic recommendations.

COMMITTEE REPORT

UNITED NATIONS LIST OF NATIONAL PARKS AND EQUIVALENT RESERVES

Co-Chairmen: Théodore Monod and Jean-Paul Harroy

The Committee on the United Nations List:

(a) Considers that the list of national parks and equivalent reserves, which the ECOSOC of the United Nations requested IUCN to prepare and to study the needed contents of, must provide not only an enumeration of the protected areas as described by governments, but also an evaluation of their significance.

(b) Recognizes the importance and value of the work already done by the secretariat of the International Commission on National Parks toward the preparation of this list.

(c) While congratulating the secretariat on the large amount of material already gathered, even if in provisional form, the committee is convinced that careful and detailed revision of this material is imperative.

(d) Has no illusions about the difficulties of such an enterprise, which will require prolonged efforts, the continued employment of a qualified person, and perhaps in certain cases the collection of complementary data and information in the field.

(e) Wishes to stress with particular emphasis the need to have available, if not a single nomenclature of universal application, at least the definition of a method regionally or nationally adequate for comparative evaluation as correct as possible of the several types of protected territories.

(f) Suggests, to this effect, that independent of any question of terminology, such a classification should be searched for in the spirit of the proposals expressed in the Annex in order to define on the one hand the statute controlling the territory involved, and on the other to what degree the terms of the statute are being effectively applied.

(g) Recognizing the need for revision of the list to make it as complete a documentation as possible, expresses the wish that the secretariat of the IUCN should be instructed to study the possibility

of carrying out in the course of the next years (perhaps two) the whole project of researches, inquiries, and recording needed for the revision of the list, so it will receive recognition by the United Nations as an official publication, which could later be kept up to date by periodic supplements.

Annex

Tentative Classification:

i. For the time being it appears necessary to restrict the project to a tentative classification, limiting to renewed efforts toward a nomenclature.

ii. Among other less essential criteria, three categories of criteria might be used for the establishment of such a classification:

Size of protected territories

The statute authorizing them

The degree of effective application of this statute

iii. The factor "size" could be used to establish a first basic classification, allowing the elimination from the list proposed for U. N. recognition of the reserves that do not qualify:

I: "Large" national parks and equivalent reserves (more than 400 square miles of 100,000 hectares) N.B. Such parks of fairly large size would justify a more detailed analysis of the secondary criteria.

II: "Medium"-size national parks and equivalent reserves (between 4 and 400 square miles, that is 1,000 to 100,000 hectares).

III: A selection of "small" national parks and equivalent reserves (less than 4 square miles or 1,000 hectares) that deserve to be listed for a particular reason.

iv. Each of the first two classifications should be subdivided according to the nature of the statute controlling their purpose and use. This differentiation could, it seems, be limited to utilizing the two main subdivisions of the classic table of Edward Bourdelle (Paris, 1947):

A. General natural reserves (integral natural reserves, managed natural reserves, national parks)

B. Natural reserves with specialized aims (partial reserves, such as geological, botanical, zoological, and anthropological reserves; and special reserves, such as natural sites, natural monuments, protected areas in forests, game reserves, and fish reserves)

v. As to the evaluation of the degree of effective application of the statute, it could be very empirically characterized by the density of the supervising staff.[1]

1. More than one full-time control agent per 40 square miles or 10,000 hectares

2. Less than the above figure

This would result in the following classifications:

Large protected territories (more than 400 square miles or 100,000 hectares)

Large general reserves

With strict control — I A 1

Less strict control — I A 2

Large reserves with specialized aims

Strict control — I B 1

Less strict control — I B 2

Medium-sized protected territories (between 4 and 400 square miles or 1,000 and 100,000 hectares)

Medium-size general reserves

With strict control — II A 1

Less strict control — II A 2

Medium-sized reserves with specialized aims

With strict control — II B 1

Less strict control — II B 2

Small protected territories (less than 4 square miles or 1,000 hectares) which deserve mention for special reasons explained in the list — III

[1] Upon reflection it seems preferable to limit ourselves to this single easily applied criterion and to abandon all the others, however attractive they might appear at first sight: size of maintenance budget per unit of area, number of inhabitants authorized to live and to have an economic activity within the protected territory, number of visitors entering annually, etc.

RAPPORTEUR

Lloyd W. Swift

Richard Pough told how non-governmental agencies play an important role in shaping public opinion, supporting desirable legislation and projects, and opposing undesirable programs. The size of an organization is not a measure of its effectiveness, as effective leadership is a key consideration in working with service and garden clubs, scientific societies and the press. Often, he said, the watchdog role on unwise proposals is of great importance in conservation.

Harold J. Coolidge said that in this conference the objectives of a wide exchange of information on the international significance of national parks had been achieved. Several developments in the past few years have focused world attention on the national park movement. In this connection, there is the United Nations List of National Parks and Equivalent Reserves. This will be updated and reissued. Secretary Udall's address of July 4th made reference to the exchange of conservation workers, a program which would be helpful to all nations. Recently the United States National Park Service has moved to implement the international aspects of its work by setting up in the director's office a section on international relations. At the Morges headquarters of IUCN, there will be maintained an information service on national parks. In the future, Coolidge said, we might look forward to an international park year, possibly at the 100th anniversary of Yellowstone. Special tribute was then paid to the four Honorary Vice-Chairmen, Messrs. Albright, Szafer, Tamura, and van Stralen.

The committee chairmen then gave their reports, following which E. N. Nicholson, the moderator, began the discussion on implementation by pointing out that the conservation and nature protection movement had attained stature, that it was no longer a minor voice, yet neither had it reached its full development. A strong ally, he said, is to be found in organized science. But he chided the United States National Park Service for not doing more to make its system and management better known to the world.

F. Bourlière then said that there are several steps to consider in implementing conservation and the establishment of parks. One of the first is educating public officials and the public about the values of parks.

Peter Scott said that most of the conference has been at a high level, so there may be a feeling that we need to give more attention to practical aspects in closing sessions. Of immediate concern is, how do you obtain governmental support, including the vital matter of finances. The notable accomplishments in national parks and equivalent areas have often been the outgrowth of a display of courageous leadership.

Roger Peterson said many delegates will go away without the answers they desire. Some follow-up from the IUCN might help fill this need. For example, a "how to do it" handbook might be issued on the establishment and administration of parks and reserves. As a group, we should court publishers, radio, and TV people. A traveling team of experts would be helpful. In any event, aggressive action is needed. Moreover, all things considered, obtain the land first even though administration may be weak to begin with.

Jean-Paul Harroy said that as the first Secretary General of the IUCN he felt the work of the conference had a special meaning—it had been well done. The discussions had been helpful. Now it is important that the recommendations to be considered at the closing session should be drawn in a manner to distill the many, and sometimes divergent, ideas, conditions, and desires, so that they will serve as useful weapons for IUCN to forge ahead in world leadership of national parks and equivalent areas.

In closing the Session on Implementation, Harold J. Coolidge made reference to the thoughtful remarks of the participants and to President Kennedy's message to the conference, saying that land should be reserved for national park and similar conservation purposes.

CLOSING PLENARY SESSION

At the opening plenary session of the conference, C. R. Gutermuth of the United States had said:

We do not intend to have any voting in this conference until the final plenary session on Saturday morning, July 7, when action will be taken on conference recommendations. It is hoped that the recommendations, which will be presented at that time, will represent the general feeling of the majority of conferees. We propose to have recommendations, rather than resolutions, and when we call for an expression of opinion at that time, it will be by requesting a show of hands from the delegates first, both for and against, and a separate show of hands from the observers. We do not propose to use a roll call voting procedure.

"We intend to limit the number of recommendations that will be considered. This will be the task of a committee headed by Edward H. Graham. It is expected that all of the conference recommendations will relate to subjects discussed in the conference, which may arise from the panel meetings, and that they will deal with subjects of international significance and will not apply primarily to a single country. We realize that it would be helpful to each delegate to have the conference endorse a park or reserve project within his own country, but if we attempted that, we would accomplish nothing else in this 5-day meeting."

On the morning of July 7, Graham's committee presented their recommendations. The other members of the committee were: Jean Dorst, France; Jean-Paul Harroy, Belgium; Jean G. Baer, Switzerland; C. R. Gutermuth, United States; M. Kamil Shawki, Sudan; Peter Scott, United Kingdom; Boonsong Lekagul, Thailand; A. Gille, representing UNESCO; and René G. Fontaine, representing FOA.

It was agreed that the recommendations could not be edited from the floor and so, if a recommendation were unacceptable to the majority, it would have to be completely rejected. With this understanding, Graham proceeded to summarize each recommendation and then ask the delegates to vote. In a few instances, suggestions were made

concerning the use of particular words. In others, changes were necessary, to fit particular situations in some of the countries concerned. But what was remarkable was the unanimity of purpose that existed among representatives from so many countries.

These are the recommendations, as they were approved:

Recommendation No. 1

WHEREAS the preservation of natural areas for parks and reserves is inseparable from the conservation of wildlife and its habitat,

THE FIRST WORLD CONFERENCE ON NATIONAL PARKS **supports** the World Wildlife Charter; **endorses** the efforts being undertaken in various countries of the world to implement the purpose and objectives of the Charter; and **welcomes** the establishment of the World Wildlife Fund.

Recommendation No. 2

WHEREAS this Conference has learned with satisfaction of plans for an International Biological Program, and of the recognition thus given by international science to problems created by man's impact upon natural communities of living organisms,

THE FIRST WORLD CONFERENCE ON NATIONAL PARKS **recommends** that IUCN work closely with the IBP to bring into existence a series of natural reserves providing permanent examples of the many diverse types of habitats, both natural and semi-natural, so as to preserve them permanently for world science.

Recommendation No. 3

WHEREAS there is an urgent need to constitute on a world scale a systematic collection of type habitats, as varied and representative as possible, which could be permanently protected and so serve as standards for the future, and believing that the appropriate status for these type habitats where possible should be that of strict nature reserves,

THE FIRST WORLD CONFERENCE ON NATIONAL PARKS **recommends** that:

1. A working group be set up within IUCN to study this project with a view to establishing for each main bio-climatic region a preliminary list of the most representative habitats, which should be included in an official world list, and

2. This project be brought to the attention of the scientific authorities responsible for the establishment of the International Biological Program, and in particular to the International Union of Biological Sciences and UNESCO, so that examples of such habitats may be selected and legally established at an early date.

Recommendation No. 4

WHEREAS the draft recommendation concerning the safeguarding of the beauty and character of landscapes and sites which the Director General of UNESCO intends to submit to its forthcoming General Conference,

AND WHEREAS, as stated in this recommendation, the beauty and character of landscapes and sites are necessary to the life of man, provide a powerful physical, moral, and regenerative spiritual influence, and contribute to the artistic and cultural life of peoples,

THE FIRST WORLD CONFERENCE ON NATIONAL PARKS (a) **notes** with great satisfaction the UNESCO draft recommendation, (b) **underlines** the importance of national parks and equivalent reserves for this purpose, and (c) **recommends** that participants in the First World Conference on National Parks urge their respective countries to support the adoption and implementation of the UNESCO recommendation.

Recommendation No. 5

WHEREAS proper interpretation of the features and values of national parks and equivalent reserves is an integral and important part of adequate park programs and can contribute materially to a nation's total educational effort,

THE FIRST WORLD CONFERENCE ON NATIONAL PARKS **draws the attention** of participating governments to the importance of developing national park interpretive or presentation services as integral parts of conservation education programs, with attention to persons of all ages, and **recommends** that the Education Commission of IUCN stress the importance of international regional education committees as a means of providing both counsel and materials needed in developing conservation education programs in all countries.

Recommendation No. 6

WHEREAS national parks and equivalent reserves afford exceptional opportunities for research in undisturbed biotopes,

THE FIRST WORLD CONFERENCE ON NATIONAL PARKS **recommends** that such research be carefully planned and coordinated on an interdisciplinary basis and be correlated between institutions and agencies on a national, and where necessary, on an international scale.

Recommendation No. 7

WHEREAS few of the world's parks are large enough to be in fact self-regulatory ecological units but are more likely to be ecological islands subject to direct or indirect modification by activities and conditions in the surrounding areas,

AND WHEREAS management based on scientific research is not only desirable but often essential to maintain some biotic communities or to achieve a desired successional stage in these communities in accordance with the conservation plan of a national park or equivalent area,

THE FIRST WORLD CONFERENCE ON NATIONAL PARKS **believes** that the need for management, the feasibility of management methods, and the evaluation of results must be based upon current and continuing scientific research; that both research and management should be undertaken only by qualified personnel; and that research, management planning and execution must take into account, and if necessary regulate, the human uses for which the park is intended.

Recommendation No. 8

WHEREAS there are inherent in national parks and equivalent reserves ethical and esthetic values which must always remain separate from political expediencies,

AND WHEREAS continuity of purpose is necessary to protect such values,

THE FIRST WORLD CONFERENCE ON NATIONAL PARKS **recommends** that, wherever appropriate, the executive administra-

tion and control of national parks and equivalent reserves be vested in a statutory organization charged with the duty of permanent trusteeship.

Recommendation No. 9

WHEREAS it is recognized that in densely populated countries national parks of considerable size do not exist and cannot be set aside because of the existing shortage of land,

THE FIRST WORLD CONFERENCE ON NATIONAL PARKS **acknowledges** the efforts being made in such countries by creating nature reserves, landscape reserves, natural areas, and other substitute areas, and **commends** such efforts in view of their valuable potentialities in areas where the creation of extensive national parks is not practicable.

Recommendation No. 10

WHEREAS many sanctuaries and reserves throughout the world are owned outright by non-government institutions and by private individuals but are nevertheless dedicated in perpetuity to the conservation of wild life and of natural resources,

AND WHEREAS, it is desirable to increase the number and diversity of such areas, and to contribute to their long range stability and management,

THE FIRST WORLD CONFERENCE ON NATIONAL PARKS **recommends** that such areas, provided they are secured to their basic purposes by Irrevocable Deeds of Trust and are controlled and administered by representative Boards of Trustees, shall be considered to be as important as statutory national government-owned parks and equivalent reserves,

AND IT FURTHER **recommends** that such individuals and institutions who have already taken such action are to be commended for their activities and that others are urged to do likewise.

Recommendation No. 11

WHEREAS, national parks are important nature reserves,

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THE FIRST WORLD CONFERENCE ON NATIONAL PARKS **recommends** that structures such as dams and reservoirs for hydro-electric and other purposes which would be in any way prejudicial to the purpose of a park should not be allowed in a national park, and that buildings and other tourist facilities should, wherever possible, be made available outside of the parks, in order to preserve those values for which the parks were established.

Recommendation No. 12

WHEREAS the present and future preservation, development and appropriate use of national parks, equivalent areas and park systems are all vital to the economic and cultural progress of the countries of the world and to the welfare and enjoyment of people everywhere,

AND WHEREAS the planning of new and existing parks and the proper management and preservation of areas which together make up a comprehensive system of parks and nature reserves are essential to this objective,

THE FIRST WORLD CONFERENCE ON NATIONAL PARKS **recommends** that IUCN study the need to establish a Committee on Park Planning (this planning to include nature reserves, scientific areas, prehistoric, historic and cultural sites, wildlife sanctuaries, outdoor recreation areas, and other natural areas) for the purpose of assisting countries to develop programs with emphasis upon:

1. An advisory service available to all countries to aid in the planning of parks and park systems, and

2. A research program for collecting park planning data, for conducting studies on the development and use of parks and park systems, and for other activities relating to the purposes, policies and practices of park planning.

Recommendation No. 13

WHEREAS present economic development involving renewable natural resources is proceeding at a very fast rate, particularly in young emerging nations using bilateral or international aid funds or national budgets,

AND WHEREAS too much emphasis is now laid on immediate financial returns frequently with little or no consideration for real

long-term economic values such as water and soil conservation and recreational, cultural, and scientific values,

THE FIRST WORLD CONFERENCE ON NATIONAL PARKS **recommends** to governments of developing and advanced countries and to international organization and they (a) include in their national or aid development programs specific conservation measures such as the creation and development of national parks and equivalent reserves, (b) include conservation specialists in all technical teams planning, appraising, or executing national or aid development projects and (c) seek advice of international bodies specialized in conservation such as IUCN.

Recommendation No. 14

WHEREAS the human population of the world is increasing at a rapid rate and renewable natural resources are being depleted, often by irrational exploitation,

THE FIRST WORLD CONFERENCE ON NATIONAL PARKS **recommends** that all governments, particularly recipients and donors in bilateral technical aid programs, and all international organizations and agencies rendering or executing technical aid, give fuller regard that has hitherto been given to conservation principles and practices in their programs, especially the protection of forests and other habitats, with their native animals.

Recommendation No. 15

WHEREAS it is recognized that the oceans and their teeming life are subject to the same dangers of human interference and destruction as the land, that the sea and land are ecologically interdependent and indivisible, that population pressures will cause man to turn increasingly to the sea, and especially to the underwater scene, for recreation and spiritual refreshment, and that the preservation of unspoiled marine habitat is urgently needed for ethical and esthetic reasons, for the protection of rare species, for the replenishment of stocks of valuable food species, and for the provision of undisturbed areas for scientific research.

THE FIRST WORLD CONFERENCE ON NATIONAL PARKS **invites** the Governments of all those countries having marine frontiers, and other appropriate agencies, to examine as a matter of urgency the possibility of creating marine parks or reserves to defend underwater areas of special significance from all forms of human interference, and further recommends the extension of existing national parks and equivalent reserves with shorelines, into the water to the 10 fathom depth or the territorial limit or some other appropriate off-shore boundary.

Recommendation No. 16

WHEREAS concern has been expressed for the future of the life and environment of the Antarctic,

THE FIRST WORLD CONFERENCE ON NATIONAL PARKS, sponsored by IUCN, UNESCO, and FAO, **notes** with appreciation the current international cooperation, of the Antarctic Treaty Powers in matters of conservation but **recommends** the adoption of more positive measures to prevent the exploitation of the marine life of this habitat on which the entire Antarctic ecosystem depends.

Recommendation No. 17

WHEREAS the unique wildlife of the Galapagos Islands is of the highest scientific and historical interest to the whole world,

AND WHEREAS the Charles Darwin Foundation, with the assistance of UNESCO and other agencies, has established an important Research Station on the island of Santa Cruz for the use of scientists of all nations,

THE FIRST WORLD CONFERENCE ON NATIONAL PARKS **warmly congratulates** the Government of the Republic of Ecuador for the legal and administrative measures already taken to create nature reserves in the islands, and **affirms** its belief that the cooperation of the Ecuadorian authorities, with the conservationists of all nations, will succeed in preserving the Galapagos Islands and their wildlife in perpetuity for the inspiration of all mankind.

Recommendation No. 18

WHEREAS it is of world-wide significance that the national parks of the Congo (Leopoldville) should be preserved intact not only for their great scientific, cultural, and recreational value, but also as outstanding examples of areas with high biological productivity,

THE FIRST WORLD CONFERENCE ON NATIONAL PARKS herewith expresses its great satisfaction that the national parks of the Congo have been maintained in spite of the difficult circumstances that have existed during the past two years.

Recommendation No. 19

WHEREAS several African delegates to this Conference have expressed the need for training in wildlife management and its relation to land use,

THE FIRST WORLD CONFERENCE ON NATIONAL PARKS **applauds** the work accomplished in the field of wildlife management; **endorses** the several proposals for wildlife management schools in Africa and elsewhere; and **calls upon** the nations of the world to provide assistance, both technical and financial, for the furtherance of such training programs throughout the world as soon as possible.

Recommendation No. 20

WHEREAS independence came to Rwanda and Burundi at the time the First World Conference on National Parks was convened,

THE FIRST WORLD CONFERENCE ON NATIONAL PARKS **extends** the new nations every good wish, including success with the conservation of their inherited natural resources, and further **draws attention** to two of Rwanda's natural riches, namely the Kagera National Park and the volcanoes of the Albert National Park, and **expresses the hope** that these strict nature reserves retain their status and that the governments of Congo and Rwanda cooperate in the administration of their respective portions of the Albert National Park.

Recommendation No. 21

THE FIRST WORLD CONFERENCE ON NATIONAL PARKS **warmly applauds** the steps which have been and are being taken by the Government of Fiji and the Fiji Society to create a national park on the island of Taveuni and a nature reserve on the island of Kadavu and to extend the existing nature reserve on Mount Victoria.

Recommendation No. 22

THE FIRST WORLD CONFERENCE ON NATIONAL PARKS **recommends** that for every kind of animal or plant threatened with extinction an appropriate area of natural habitat be provided in a national park, wildlife refuge, wilderness area, or equivalent reserve to maintain an adequate breeding population, and **takes the view** that any species so threatened which is not accorded such official sanctuary proclaims the failure of the Government concerned to recognize its responsibility to future generations of mankind.

Recommendation No. 23

THE FIRST WORLD CONFERENCE ON NATIONAL PARKS **recommends** the early examination by IUCN of a project to create within the natural range of certain gravely threatened species—rhinoceroses, orang-utan, Arabian oryx, caribou, and others—one or more special reserves into which individual animals can be moved so as to promote increased reproduction of the species, and further **invites** the Governments concerned and other appropriate agencies to give sympathetic consideration to the project.

Recommendation No. 24

WHEREAS the best available estimates indicate that the total world populations of the five species of rhinoceroses approximate the following numbers:

Black Rhino—11,300 to 13,500
White Rhino—2,500 to 3,500
Great Indian Rhino—600
Sumatran Rhino—100 to 170
Javan Rhino—24 to 50

AND WHEREAS many of these animals exist in small isolated pockets,

AND WHEREAS all five species are threatened by the erroneous belief in the magical properties of rhino horn and the consequent killing to meet these demands,

THE FIRST WORLD CONFERENCE ON NATIONAL PARKS **warmly welcomes and endorses** the proposed world campaign for rhinoceroses sponsored by the World Wildlife Fund and the Fauna Preservation Society in cooperation with the Survival Service Commission of IUCN, and **recommends** that the Governments of the nations concerned consider the establishment of additional parks or reserves to incorporate areas in which rhinoceroses still survive.

Recommendation No. 25

WHEREAS three of the most remarkable mammals of the South American Andes are threatened with extinction, and are so catalogued, due to the rapid and extensive destruction of their forest habitat,

THE FIRST WORLD CONFERENCE ON NATIONAL PARKS **recommends** that those Andean countries which have them within their boundaries establish, wherever possible, parks or reserves to preserve these mammals, namely:

Mountain tapir (*Tapirus pinchaque*)
Spectacled bear (*Tremarctos ornatus*)
Pudu deer (*Pudu pudu* and *P. mephistophiles*)

Recommenaation No. 26

THE FIRST WORLD CONFERENCE ON NATIONAL PARKS **recommends** to the Pan American countries which have not done so, the immediate ratification and implementation of the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere (Washington, D.C., 1940), and the formation of a Latin American Committee of IUCN which shall work in close liaison with existing international bodies.

Recommendation No. 27

WHEREAS the centennial of the establishment of Yellowstone Park in the United States occurs in 1972,

AND WHEREAS the establishment of Yellowstone Park was the first such park in the world and created widespread response throughout the world,

THE FIRST WORLD CONFERENCE ON NATIONAL PARKS **recommends** that this centennial be celebrated by publicizing the occasion, especially with appropriate publications in the various countries urging the formation and development of national parks, and by a conference to be held in Yellowstone Park and attended by representatives of all countries.

Recommendation No. 28

THE FIRST WORLD CONFERENCE ON NATIONAL PARKS **expresses** its appreciation of arrangements for holding the conference with the aid of the facilities extended by the Seattle World's Fair, as well as the generous hospitality of many individuals and organizations in the Seattle area.

At the conclusion of the voting, Jean G. Baer, honorary chairman, spoke briefly, thanking those responsible for the conference's success. He was followed by Harold J. Coolidge; George L. Collins; Clayton E. Anderson, director of parks, State of Washington, representing the Governor; Edward J. Johnson, supervisor of parks, City of Seattle, representing the mayor; and Edward W. Stimpson, representing the Seattle World's Fair. They all expressed pleasure over the conference.

A. Malick Sow, Ambassor to the United States from the Republic of Chad, was introduced; and a final talk was made by Perez Olindo a student from Kenya who explained what the conference had meant to the many other students that had attended.

One week had now passed since the delegates first assembled. With the final session of the conference, many of them were returning to their homes, others were going out to observe at first hand conditions in several of the national parks of the United States.

In either case, as the last session was formally ended, they all knew the satisfaction of having participated in a unique experience—the First World Conference on National Parks.

IN THE FIELD

As the First World Conference on National Parks came to an end on Saturday morning, July 7, 1962, the delegates started their departure to the many areas of the world from which they had come. Each took with him information that he had gained at the conference but, most of all, each bore with him the knowledge that others like himself were working in many parts of the earth in the same cause.

Before leaving the United States, however, many of the delegates were able to see at first hand operations within U.S. National Parks and Forests. On July 1, trips had been arranged to Mount Rainier National Park and Snoqualmie National Forest. There the delegates saw Mount Rainier from Ricksecker Point and visited Narada Falls and the deep gorge at Box Canyon. At the conclusion of the conference, however, longer tours had been arranged; and many delegates saw in them an opportunity to learn more about the parks in the United States.

After the plenary session they boarded buses for Olympic National Park. Following the 19 mile Heart-of-the-Hills road, the buses climbed to Hurricane Ridge. From its wildflower meadows, still flecked with patches of snow, the visitors enjoyed the widespread view of the Olympic Mountains and their many glaciers.

The next day, they went to the Rain Forest in Hoh Valley on the western slope. The tour was delayed long enough to take the ¾-mile walk on the self-guiding Rain Forest nature trail, which winds amidst the luxuriant growth under moss-draped giants.

A part of Olympic National Park is a thin strip 50 miles long that borders the Pacific Ocean. It is by and large kept free of formal highways, although the highway around the Olympic Peninsula traverses 7 miles of its southern end. The guests were told that the remainder of the strip will be preserved wild and roadless for hiking and primitive camping.

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Some of the delegates later left the party in Tacoma, while the remainder proceeded to Seattle to board a transcontinental train for journeying across the western ranges.

Sixty-seven delegates from 40 different nations participated in these final tours. The weather for the occasion was perfect. Syringa, serviceberry, and other shrubs in glorious bloom lined the right of way. The applegreen of larches in new foliage stood out prominently in the dark green of engelmann spruce, grand fir, and western redcedar. Grass, dotted with the golden flowers of balsamroot, made a rich green carpet for unforested hills. Deer and proghorn grazed on the slopes along the Missouri River. Harlequin ducks, goldeneyes, Canada geese and other waterfowl floated on the roily surface of the stream. The geological story of the Rocky Mountains, as revealed in road cuts and landscape forms, was explained in passing. It was 10:30 that night when a tired throng climbed from the coaches. They received an enthusiastic welcome from Superintendent Lemuel Garrison and Assistant Superintendent Luis Gastellum of Yellowstone National Park.

On July 10, the delegates were assigned to members of the park staff and the concessioners, who were to serve as special guides and hosts for the day. Since the respective hosts drove their personal cars, there was freedom for independent choice, as the guests moved in a cavalcade up Lava Creek and the Yellowstone River. Group stops were made at the petrified tree, Roosevelt Lodge, and Tower Falls before climbing up Mount Washburn, 10,243 feet. At each stop the group reassembled, the members exchanging comments on what they saw. Now the line began to spread more and more, as it proceeded over Dunraven Pass for key stops at Inspiration Point, Upper Falls, and Canyon Village. The visitors were stirred by the scenic beauty and intrigued by the performance of the ospreys within the canyon.

Throughout the day wildlife acted as if it had been trained for the occasion. Many of the visitors had opportunity to see bison; some reported seeing moose in Gibbon Meadows; a herd of elk was clearly visible. At the same time a coyote slinked along the edge of the Lodgepole Forest nearby, wholly indifferent to the presence of the large party; and a flock of Canada geese cackled along the steaming grassy banks of Gibbon River.

The evening program took place at the confluence of the Gibbon and Firehole Rivers, site of the celebrated 1870 campfire of the Washburn-Langford-Doane Expedition. Here was born the modern idea

of national parks. With the location of the camp as backdrop, the program was oriented around this momentous event.

The next morning members of the party in small groups or as individuals explored the exciting area. Some walked around the campground, some visited the museum, some went on longer trips to Black Sand Basin, others climbed to the observation point above Upper Geyser Basin.

After luncheon the party headed, in the early afternoon, for Biscuit Basin where a group photograph was taken. Other stops were made at Fountain Paint Pots, Norris Junction, and Mud Volcano as they journeyed to the north shore of Yellowstone Lake. Here a halt was made for the night.

A light rain fell during the night. This was temporary, so that balmy weather once again prevailed in the morning. The delegates boarded cruiser-launches after breakfast for a trip around Yellowstone Lake and a chance to try "fishing-for-fun." In this practice, urged by the National Park Service, fish are carefully removed after being caught on barbless hooks, so that they can be returned to the lake unharmed.

At noon parties assembled at West Thumb to look at the development of new visitor facilities that was underway. An interesting feature which triggered the new development is the fact that the area presently used for the purpose has been invaded by spreading thermal activity.

Next the party moved southward to the headwaters of the Snake River and Grand Teton National Park. Impressive views of the Tetons and Jackson Lake opened up on this route. Roadsides and open forest glens were glorious with scarlet gilias, deep blue monkshood, forget-me-nots, clinquefoils, geraniums, paintbrushes, and a myriad other flowers.

Friday, July 13 dawned poorly from the standpoint of weather. A heavy downpour had occurred during supper hour the night before, but it had soon cleared afterwards. Calm persisted through the night, so those who arose at daybreak were awarded with a dramatic sight. It was still sunny around the lodge but the Tetons were draped in eery light. Their flanks appeared immaculate with new snow, while their summits were obscured by sullen black clouds. This colorful sight soon vanished as the clouds descended for the remainder of a wet day. A violent storm broke at breakfast time to endure almost unbroken through the day. Undaunted guests boarded buses at 9:30 for

the tour that began at Coulter Bay Village. This project is a completed Mission 66 visitor-use complex.

After lunch, the party set out again in rain to visit the wildlife range. Unlike their fortunes in the Yellowstone, now however, no larger animals appeared. In turn, a wet inspection was made of Moose Post Office, park headquarters, and the Jenny Lake visitor center. Again the visitors expressed pleasure at seeing the intensive effort of the service to interpret the park intelligently to park visitors. As the buses climbed to the scenic outlook from Signal Mountain (7,730 feet), a welcome break finally occurred in the rain. This climb was the final feature of the automobile trip.

The closing event of the visit to Grand Teton was a dinner. This turned into a huge farewell party for all. Notes were compared, invitations were extended for exchange visits, farewells were made between friends who now had tight bonds forged by mutual interests and dedication to a common ideal.

Beyond the scenic beauty and physical wonders of the national parks, the trips had afforded an opportunity to observe how biology, ecology, human history, and archeology fit together in the National Park System. In particular, the delegates saw for themselves how undisturbed wildlife constitutes a great attraction for park visitors. They saw how easy and fascinating it is to observe the animals, how unafraid they are when not persecuted by man. The delegates saw grizzlies and black bear, moose and elk, bighorn and mountain goats as well as smaller forms such as beaver, marten, marmots, and birds of all kinds. Inspired, strong opinion was voiced that another conference, not necessarily the next one, should be held at the Yellowstone in its centennial year, 1972.

This trip into the field formed a fitting conclusion to the First World Conference on National Parks.

Appendix A

PROGRAM

FIRST
WORLD CONFERENCE
ON
NATIONAL PARKS

SEATTLE, WASHINGTON

June 30–July 7 . 1962

International Union for Conservation of Nature and Natural Resources

Sponsoring

FIRST WORLD CONFERENCE ON NATIONAL PARKS

June 30–July 7, 1962, Olympic Hotel, Seattle, Washington, U.S.A.

International Cosponsors: United Nations Educational, Scientific and Cultural Organization; United Nations Food and Agriculture Organization

National Cosponsors: United States National Park Service
Natural Resources Council of America

International Commission on Natural Parks, I.U.C.N.

HAROLD J. COOLIDGE, U.S.A., *Chairman*
ENRIQUE BELTRÁN, Mexico
DUSIT BANIJBATANA, Thailand
JOHN R. B. COLEMAN, Canada
MERVYN COWIE, Kenya
KAI CURRY-LINDAHL, Sweden
W. J. EGGELING, United Kingdom
ROCCO KNOBEL, Republic of South Africa
MIRGHANI M. MEDANI, Sudan
THÉODORE MONOD, France
WLADYSLAW SZAFER, Poland
TSUYOSHI TAMURA, Japan
NGUYEN VAN HIEP, Vietnam
VICTOR VAN STRAELEN, Belgium
CONRAD L. WIRTH, U.S.A.
FRED M. PACKARD, U.S.A., *Secretary*

National Council

HORACE M. ALBRIGHT, *Chairman*
CARL BUCHHEISTER
HENRY CLEPPER
HAROLD J. COOLIDGE
CLARENCE COTTAM
HON. WILLIAM O. DOUGLAS
IRA N. GABRIELSON
JOSEPH GANDY
EDWARD H. GRAHAM
C. R. GUTERMUTH
THOMAS L. KIMBALL
ALFRED B. LAGASSE
RICHARD M. LEONARD
A. STARKER LEOPOLD
HON. WARREN G. MAGNUSON
OLAUS J. MURIE
SIGURD F. OLSON
FAIRFIELD OSBORN
J. W. PENFOLD
HON. JOHN P. SAYLOR
WALTER A. STARR
CONRAD L. WIRTH

Steering Committee

HAROLD J. COOLIDGE, *Chairman*
C. R. GUTERMUTH, *Vice-Chairman*
DANIEL B. BEARD
MONROE BUSH
IRVING CLARK, JR.
PHILLIP K. CROWE
ROBERT C. MILLER
LLOYD W. SWIFT
GEORGE L. COLLINS, *ex officio*

Local Arrangements Committee

Irving Clark, Jr., *Chairman*
Mr. and Mrs. Richard Brook
Mr. and Mrs. William Brockman
Miss Ellen Brooker
Mrs. Allen Engle
Dr. Patrick Goldsworthy
Mrs. Neil Haig
Dr. and Mrs. William Halliday
Claud C. Heckman
Prof. and Mrs. C. Frank Brockman
Miss Ruth Miller
Mr. and Mrs. Preston P. Macy
Mr and Mrs. Brian Mulligan
Mrs. Pendleton Miller
John Osseward
John Rutter
R. D. Watson
Miss Helen Waterman
Mr. and Mrs. Welles Wiley

OFFICERS OF THE CONFERENCE

Honorary Chairman

JEAN G. BAER, *President*
International Union for Conservation of Nature and Natural Resources (IUCN)

Honorary Vice-Chairmen

HORACE M. ALBRIGHT, U.S.A.
WLADYSLAW SZAFER, Poland*
TSUYOSHI TAMURA, Japan
VICTOR VAN STRAELEN, Belgium*

General Chairman

HAROLD J. COOLIDGE, *Chairman*
International Commission on National Parks of the IUCN

Vice-Chairman

C. R. GUTERMUTH
Natural Resources Council of America

Secretary-General

GEORGE L. COLLINS
Conservation Associates
1500 Mills Tower
San Francisco, California, U.S.A.

Deputy-Secretaries General

DORIS F. LEONARD
Conservation Associates

FRED M. PACKARD, *Secretary*
International Commission on National Parks of the IUCN
2144 P Street, N.W., Washington, D.C., U.S.A.

NEIL CAROTHERS
Special Representative for South America

*Unable to attend

INTRODUCTION

Background

The First World Conference on National Parks is being held at the Olympic Hotel, Seattle, Washington, U.S.A., June 30 to July 7, 1962. The opening ceremony and First Plenary Session are being held at the Playhouse, located on the grounds of the Seattle World's Fair. The conference is sponsored by the International Union for Conservation of Nature and Natural Resources; co-sponsored by the United Nations Educational, Scientific and Cultural Organization (UNESCO), and the Food and Agriculture Organization (FAO), in association with the National Park Service and the Natural Resources Council of America as national cosponsors.

In Poland, where the IUCN Seventh General Assembly was held in 1960, the resolution calling for the First World Conference on National Parks to be held in Seattle was unanimously adopted. This followed the original proposal for such a conference which was made by Tsuyoshi Tamura of Japan at the IUCN Sixth General Assembly in Athens in 1958.

The purpose toward which Dr. Tamura and other IUCN leaders around the world are striving is to achieve a more effective international understanding and encouragement of the national park movement on a world-wide basis. National parks and reserves have been established in most United Nations member countries, and they are internationally recognized as a form of wise land use that contributes to the inspiration and general welfare of all mankind. They are indispensable to the cultural, scientific, recreational and economic needs of all nations. Their permanent preservation will safeguard for future generations the characteristic natural beauty, the native flora and fauna, and the human history and spirit of each nation. The theme of the conference is: "NATIONAL PARKS ARE OF INTERNATIONAL SIGNIFICANCE."

This first conference to focus world attention on the subject enables representatives of governments that are responsible for administering and protecting national parks and reserves, and other qualified experts, to meet together for the further international coordination of their efforts, and to encourage the establishment of new parks and reserves.

Sponsorship

The IUCN is the primary sponsor of the conference. It is an international body composed of states, international organizations, and organizations within nations, all concerned with preservation of the natural environment of man and the conservation of the world's natural resources. The Union was founded in 1948, and has its permanent headquarters at Morges, Switzerland. Its world viewpoint is maintained through the following wide international membership of its Executive Board:

President

JEAN G. BAER, Switzerland

Vice Presidents

F. Bourlière, *France*
Peter Scott, *United Kingdom*
Harold J. Coolidge, *U.S.A.*

Members

Charles Vander Elst, *Belgium*
F. Camargo, *Brazil*
I. McT. Cowan, *Canada*
Eugen Gerstenmaier, *Germany*
Walery Goetel, *Poland*
Rocco Knobel,
Republic of South Africa
M. K. Shawki, *Sudan*
Kai Curry-Lindahl, *Sweden*
Boonsong Lekagul, *Thailand*
E. K. Worthington, *U.K.*
Edward H. Graham, *U.S.A.*
G. P. Dementiev, *U.S.S.R.*
SECRETARY-GENERAL
G. G. Watterson, *Morges, Switzerland*

FIRST WORLD CONFERENCE ON NATIONAL PARKS

June 30–July 7, 1962

Olympic Hotel, Seattle

OFFICIALS

Honorary Chairman . . . . . JEAN G. BAER

General Chairman . . . . . HAROLD J. COOLIDGE

Vice-Chairman . . . . . C. R. GUTERMUTH

Secretary-General . . . . . GEORGE L. COLLINS

Deputy Secretary-General . . . . . DORIS F. LEONARD

Deputy Secretary-General . . . . . FRED M. PACKARD

MONDAY, JULY 2, 1962

A.M.

9:00 to 9:15 Introductory Ceremony . The Playhouse, Seattle World's Fair
Presiding . . . . . Harold J. Coolidge
Message of Welcome . . Jean G. Baer

OFFICIAL GREETINGS

9:15 to 9:35 Craig Colgate, representing ATHELSTAN SPILHAUS, United States Commissioner, Seattle World's Fair

Clayton Anderson, representing ALBERT D. ROSELLINI, Governor of Washington

GORDON CLINTON, Mayor of Seattle

JOSEPH E. GANDY, President, Seattle World's Fair

9:35 to 10:05 Acknowledgements from Abroad

OPENING PLENARY SESSION

Presiding, C. R. GUTERMUTH

A.M.

10:05 to 10:15 Adoption of conference rules

10:15 to 10:40 Appointment of conference committees

10:40 to 11:15 Address . . . . . CONRAD L. WIRTH
Director of the National Park Service

11:15 to 11:20 Announcements

11:20 to 11:45 *Dedicatory ceremony. Group photograph.*

11:45 Recess. Proceed from Playhouse area by chartered bus to Olympic Hotel for luncheon.

12:00 to 1:45 Luncheon for conference delegates and observers, Georgian Room, Olympic Hotel.

GENERAL SESSIONS

Spanish Ballroom, Olympic Hotel

Section One: Purposes, Principles, and Policies of National Parks.

Section Chairman: JEAN G. BAER, Switzerland

Vice Chairmen: E. O. A. ASIBEY, Ghana
AHMED CHBICHEB, Morocco
WOLFGANG KOEHLER, Germany
FRANK MASLAND, U.S.A.
HAJI ABDUL BIN MOHD. SALLEH RAHMAN, Malaya
MARCOS SASTRE, Argentina
HOWARD J. STANLEY, Australia

Discussion Leader: PETER SCOTT, England

Rapporteur: RICHARD H. POUGH, U.S.A.

Panelists: M. A. BADSHAH, India
ENRIQUE BELTRÁN, Mexico
SIGURD F. OLSON, U.S.A.
JOHN S. OWEN, Tanganyika

P.M.

2:00 to 2:10 Introductions

2:10 to 2:50 Panelists' summaries of their papers

2:50 to 3:30 Intramural discussion by leader and panelists

3:30 to 4:20 Open forum, led by discussion leader and panelists

P.M.

4:20 to 4:35 Summary

4:35 to 4:45 Announcements

4:45 Recess. *Evening free.*

TUESDAY, JULY 3, 1962

Section Two: Scientific, Economic, and Cultural Values of National Parks and Equivalent Reserves

Section Chairman: CLARENCE COTTAM, U.S.A.

Vice Chairmen: KAI CURRY-LINDAHL, Sweden
E. P. GEE, India
F. C. LEHMANN, Colombia
JOSE ORTA, Venezuela
GEORGE C. RUHLE, U.S.A.
PIERRE SABOUREAU, Malagasy Republic
ADAM MKWAWA SAPI, Tanganyika

A. *National Parks and Reserves are Indispensable to Research Under Undisturbed Natural Conditions*

Discussion Leader: A. STARKER LEOPOLD, U.S.A.
Rapporteur: VICTOR H. CAHALANE, U.S.A.
Panelists: F. BOURLIÈRE, France
MARIA BUCHINGER, Argentina
CARLETON RAY, U.S.A.
E. M. NICHOLSON, United Kingdom

A.M.

8:30 to 8:40 Introductions
8:40 to 9:00 Panelists' summaries of their papers
9:00 to 9:30 Intramural discussion by leader and panelists
9:30 to 10:00 Open forum. Led by discussion leader and panelists
10:00 to 10:15 Intermission

B. *Economic Aspects and Values of National Parks and Equivalent Reserves*

Discussion Leader: JOSEPH L. FISHER, U.S.A.
Rapporteur: M. GRAHAM NETTING, U.S.A.
Substituting for CARL O. GUSTAFSON, U.S.A.
Panelists: CHARLES A. DETURK, U.S.A.
HERBERT L. MASON, U.S.A.
D. O. MATHEWS, Kenya

A.M.

10:15 to 10:25 Introductions
10:25 to 10:55 Panelists' summaries of their papers
10:55 to 11:15 Intramural discussion by leader and panelists
11:15 to 11:55 Open forum. Led by discussion leader and panelists
11:55 Announcements. Intermission

C. *Cultural Aspects of National Parks and Equivalent Reserves*

Discussion Leader: Mervyn Cowie, Kenya
Rapporteur: Don Greame Kelley, U.S.A.
Panelists: Boonsong Lekagul, Thailand
James Macaulay, Scotland
David P. S. Wasawo, Uganda

P.M.

2:00 to 2:10 Introductions
2:10 to 2:40 Panelists' summaries of their papers
2:40 to 3:00 Intramural discussion by leader and panelists
3:00 to 4:00 Open forum. Led by discussion leader and panelists
4:00 to 4:30 Summary. Announcements
4:30 Recess

Wednesday, July 4, 1962

Section Three: Optimum Use of National Parks and Equivalent Reserves.

Section Chairman: E. M. Nicholson, United Kingdom
Vice Chairmen: Walter Xavier de Andrade, Brazil
Vicente S. de la Cruz, Philippines
J. A. De Silva, Ceylon
Jibrin Jia, Nigeria
D. O. Ocheng, Uganda
Dennis C. Stamers, Dominican Republic
W. G. Van Der Kloet, Netherlands
Yaacov Yannai, Israel

Discussion Leader: David R. Brower, U.S.A.
Rapporteur: Richard M. Leonard, U.S.A.
Panelists: M. F. Day, Australia
Rocco Knobel, Republic of South Africa
Anthony Wayne Smith, U.S.A.

A.M.

9:00 to 9:10 Introductions
9:10 to 9:40 Panelists' summaries of their papers
9:40 to 10:10 Intramural discussion by leader and panelists

A.M.

10:10 to 11:00 Open Forum. Led by discussion leader and panelists
11:00 to 11:15 Intermission
11:15 to 11:45 Address by STEWART L. UDALL, Secretary of the Interior, U.S.A.
11:45 Announcements
12:00 Recess until 8:30 a.m., July 5.

P.M.

2:00 Informal entertainment for delegates from foreign countries.

THURSDAY, JULY 5, 1962

Section Four: Administration of National Parks and Equivalent Reserves.

Section Chairman: NEWTON B. DRURY, U.S.A.
Vice Chairmen: Marcel Bahizi, Republic of Congo (Leopoldville)
Dusit Banijbatana, Thailand
Raymond William Cleland, New Zealand
Edward P. Cliff, U.S.A.
W. H. Faurie, Republic of South Africa
Edwin Schmeisser, Chile
Kaset Suon, Cambodia
H. E. Tucker, Sierra Leone

A. *Practical Experience Gained from Standards, Policies, and Planning Practices in National Parks and Reserves in Various Parts of the World.*

Discussion Leader: JACK VINCENT, Republic of South Africa
Rapporteur: D. B. TURNER, Canada
Panelists: ARTURO EICHLER, Venezuela
LEMUEL A. GARRISON, U.S.A.
GERT KRAGH, Germany

A.M.

8:30 to 8:40 Introductions
8:40 to 9:00 Panelists' summaries of their papers
9:00 to 9:30 Intramural discussion by leader and penelists
9:30 to 10:00 Open forum. Led by discussion leader and panelists
10:00 to 10:15 Intermission

B. *Public Education as Furthered by National Parks Through Interpretive Services*

Discussion Leader: J. R. B. COLEMAN, Canada
Rapporteur: BENNETT T. GALE, U.S.A.
Panelists: DANIEL B. BEARD, U.S.A.
JOHN A. PILE, Southern Rhodesia
TETSUMARO SENGE, Japan

10:15 to 10:25 Introductions
10:25 to 10:55 Panelists' summaries of their papers

A.M.

10:55 to 11:15 Intramural discussion by leader and panelists
11:15 to 12:00 Open forum. Led by discussion leader and panelists
12:00 Intermission

C. *Preservation of Wilderness and Habitat Types in National Parks and Equivalent Reserves*

Discussion Leader: Howard Zahniser, U.S.A.
Rapporteur: Walter S. Boardman, U.S.A.
Panelists: Paul Brooks, U.S.A.
Théodore Monod, Senegal
Jacques Verschuren, Tanganyika

P.M.

2:00 to 2:10 Introductions
2:10 to 2:40 Panelists' summaries of their papers
2:40 to 3:00 Intramural discussion by leader and panelists
3:00 to 4:00 Open forum. Led by discussion leader and panelists
4:00 to 4:30 Summary
4:30 Rceess. Evening free

Friday, July 6, 1962

Section Five: International Cordination of National Park and Reserve Programs

Section Chairman: Ian McT. Cowan, Canada
Vice Chairmen: Horace M. Albright, U.S.A.
Luis A. Bolin, Spain
F. Eko-Ebongue, Cameroun
Jean-Paul Harroy, Belgium
R. K. Kalliola, Finland
Jung-Up Kim, Korea
Matao Kimura, Japan
Alfred B. LaGasse, U.S.A.

A. *International Role of Parks in the Preservation of Endangered Species and Type-Habitat; and International Role of Boundary Parks.*

Discussion Leader: Edward H. Graham, U.S.A.
Rapporteur: Jean P. Dorst, France
Panelists: Robert Carrick, Australia
Walery Goetel, Poland
Lee M. Talbot, U.S.A.

A.M.

8:30 to 8:40 Introductions
8:40 to 9:00 Panelists' summaries of their papers
9:00 to 9:30 Intramural discussion by leader and panelists
9:30 to 10:00 Open forum. Led by discussion leader and panelists
10:00 to 10:15 Intermission

B. *Role of International Agencies in World Park Programs*

Discusion Leader: M. KAMIL SHAWKI, Sudan

Rapporteur: LLOYD W. SWIFT, U.S.A. substituting for FRED M. PACKARD, U.S.A.

Panelists: RENE G. FONTAINE, FAO
A. GILLE, UNESCO
GERALD G. WATTERSON, IUCN

A.M.

10:15	to 10:25	Introductions
10:25	to 10:55	Panelists' sumaries of their papers
10:55	to 11:15	Intramural discussion by leaders and panelists
11:15	to 12:00	Open forum. Led by discussion leader and panelists
	12:00	Recess

SESSION ON IMPLEMENTATION

Chairman: HAROLD J. COOLIDGE, U.S.A.

Vice Chairmen: M. ACOSTA-SOLIS, Ecuador
MARCEL BONNOTTE, Republic of Congo, Brazzaville
MUTALE CHIKWANDA, Northern Rhodesia
JORGE IBARRA, Guatemala
RENAN JUSTINIANO, Bolivia
MANUEL M. SAN ROMAN, Costa Rica
ANTHONY SAYEH, Liberia
EMILE TOUSSAINT, Haiti

Rapporteur: LLOYD W. SWIFT, U.S.A.

P.M.

2:00 to 2:15 Review of the conference deliberation during the five sectional meetings . . . . . RICHARD M. LEONARD, U.S.A.

2:15 to 2:30 Role of nongovernmental agencies in park activities . . . . . RICHARD H. POUGH, U.S.A.

2:30 to 3:00 Future prospects for international cooperation in the field of national parks and reserves . HAROLD J. COOLIDGE, U.S.A.

3:00 to 3:45 Reports by conference committees

3:45 to 4:30 Round table discussion by the Vice Chairman on Implementation of conference recommendations
HAROLD J. COOLIDGE, U.S.A.

Conferees' night at Seattle World's Fair. Film program in Science Theater of United States Science Pavillion.

CLOSING PLENARY SESSION

SATURDAY, JULY 7, 1962

Presiding: C. R. GUTERMUTH, U.S.A.

A.M.

9:00 to 9:15 Remarks by the Honorary President of the Conference

9:15 to 10:00 Report by the committee on resolutions, discussion, and adoption . . . . . EDWARD H. GRAHAM, U.S.A.

10:00 to 10:10 Announcements

10:10 Adjournment

The IUCN International Commission on National Parks has had the responsibility for leadership in organizing the conference, in cooperation with the U.S. Natonal Council, the Steering Committee, the National Park Service, and the Natural Resources Council. Address: 2144 P Street NW., Washington, D.C. U.S.A.

The National Park Service of the Unitcd States Department of the Interior is directed by Conrad L. Wirth. Address: National Park Service, Washington, D.C., U.S.A.

The Natural Resources Council of America, 709 Wire Building, Washington, D.C., national co-sponsor of the conference, is composed of the following groups in the United States:

American Alpine Club
American Fisheries Society
American Forestry Association
American Geographical Society
American Museum of Natural History
American Nature Association
American Nature Study Association
American Ornithologists' Union
American Planning and Civic Association
American Society of Limnology and Oceanography
Appalachian Mountain Club
Defenders of Wildlife
Ecological Society of America
Federation of Western Outdoor Clubs
Grasslands Research Foundation
Izaak Walton League of America
National Association of Biology Teachers
National Association of Soil Conservation Districts
National Audubon Society
National Fisheries Institute, Inc.
National Parks Association
National Rifle Association of America
National Wildlife Federation
North American Wildlife Foundation
Pacific Northwest Bird and Mammal Society
Sierra Club
Society of American Foresters
Soil Conservation Society of America
Sport Fishing Institute
The Conservation Foundation
The Garden Club of America
The Mountaineers
The Nature Conservancy
The Wilderness Society
Wild Flower Preservation Society
Wildlife Management Institute
Wildlife Society

Appendix B

HISTORY OF THE IUCN

(The International Union for the Conservation of Nature and Natural Resources)

Since the turn of the century, many governments, as well as private organizations, have been concerned with the international aspects of the protection of nature. Paul Sarasin, the noted Swiss naturalist and founder of the Swiss National Park, was one of these; and before World War I, he proposed the creation of an international advisory committee. This was established by a number of states in 1913. Its work, however, was interrupted by the outbreak of war.

At the end of World War I, P. G. van Tienhoven from the Netherlands took up the same cause. He was responsible for the creation of national committees for nature protection in 1925 and 1926, first in his own country and later in France and Belgium. He then founded the International Office for the Protection of Nature at Brussels on July 10, 1928. This office, which had headquarters alternately in Brussels and Amsterdam, was active until 1940.

After World War II, the Swiss League for the Protection of Nature organized two conferences, which were held at Brunnen in 1946 and 1947. The conferences decided a fresh start was necessary. The result was a Provisional International Union for the Protection of Nature, administered by the Swiss League. The league, working closely with the French government and UNESCO, organized a conference held at Fontainebleau in 1948. There, the International Union for the Protection of Nature was officially established. Its name was later changed to the International Union for the Conservation of Nature and Natural Resources.

Its main field of activity lies in conserving the flora, fauna, soil, water, and other natural wealth that constitute the earth's basic assets, and it deals with threats to the world's wild lands and living resources.

Advised by its members, its regular correspondents, and its specialized commissions, it has helped create additional nature reserves and to establish new organizations devoted to the protection of nature. It has also helped obtain from various governments agreements to remove threats directed at specific organizations, sites or species.

On a worldwide basis, it gathers information and carries out important investigations. It has published *A Position of Nature Protection Throughout the World in 1950* and *Derniers Refuges*, an atlas of nature reserves throughout the world in 1956. At the request of the Economic and Social Council of the United

Nations, the Union's Commission on National Parks is working on a world list of national parks and equivalent reserves. The Union also collects and compares legislation affecting the conservation of nature and natural resources.

Because conservation should be based on the principles of ecology, the Union has used an ecological approach to conservation problems. This is the task of its Survival Service Commission, which concerns itself with species of plants and animals threatened with extinction, and of its Commission on Ecology, its International Commission on National Parks, and its Information Center.

The Union's Commission on Education is concerned with educating youth as well as the general public in the concepts of conservation. For this part of its work, the Union has received support from UNESCO, enabling it to place booklets, school lessons, films, and radio programs in many parts of the world, as well as to organize youth camps.

The Union's special projects have included an ecological study of endangered species by Lee M. Talbot, the African Special Project supported by the Food and Agriculture Organization, the creation of the Charles Darwin Foundation for Galapagos Islands supported by UNESCO, and the study of European wetlands in which the International Council for Bird Preservation and the International Wildfowl Research Bureau are interested. The World Wildlife Fund, an independent organization that collects and distributes funds, works in close cooperation with the Union on certain projects relating to threatened species.

The Union has devoted considerable effort to handling information. It has done this in many different ways, notably by printing a periodical bulletin and issuing the reports and proceedings of its technical meetings as well as various other publications.

Another important activity of the Union has been to bring together all those working on a national level in the field of nature protection. This has been the role of the Union's Statutory General Assemblies and Technical Meetings. These have been held at Lake Success (1949), Brussels (1950), the Hague (1951), Caracas (1952), Salzburg (1953), Copenhagen (1954), Edinburgh (1956), Athens (1958), Warsaw (1960), and Nairobi (1963).

In addition, the Union contributes to other international meetings, the more recent of which have been the Arusha Conference on Conservation of Nature and Natural Resources in Modern African States, held in Tanganyika in 1961 and the First World Conference on National Parks.

The Union's headquarters were established in Brussels in 1948 and moved to Morges, Switzerland, in 1961. The presidents have been Charles J. Bernard (Switzerland) 1948–1954, R. Heim (France) 1954–1958, and Jean G. Baer (Switzerland) 1958 to the present. With Professor Baer's election, the Union intensified its scientific work and gave increased emphasis to the Commission on Ecology and to the Survival Service Commission.

Although primarily a nongovernmental organization, the Union numbers among its members 20 governments and more than 300 national organizations from 60 countries. It depends for financial support on individuals, private organizations, governments, and governmental agencies.

Appendix C

PARKS AROUND THE WORLD

Note: *The following summary of the history of national parks is far from being a comprehensive listing of the achievements of the many countries that have participated in this movement. It is merely an outline of a few developments and is intended for the general reader, who may gain from it background information that will add to his understanding of the proceedings of the First World Conference on National Parks.*

For many centuries, man has followed the practice of setting aside areas of land and protecting them in their natural states. In India, the famous deer park of Sarnath near Barnaras was the site where Lord Guatama Buddha preached his gospel of Ahisma; and in eastern China, centuries ago, small parks were retained for the display and propagation of hoofed animals. During the Middle Ages, the sovereigns and princes of Western and Central Europe forebade any form of hunting or lumbering in certain forest domains; and similar measures were taken by Aztec and African monarchs. For example, the Mwami of Rwanda kept the Ityshanya, near Kigali, for his own use. In Europe, in 1576, the Prince of Orange and the States of Holland agreed with the magistrate of The Hague to maintain the *Haagse Bos* (the Wood of The Hague) perpetually untouched.

According to some authorities, the first nature preserve to meet the modern definition is a portion of the Forest of Fontainebleau to the south of Paris. In 1858, a group of painters, moved by aesthetic considerations, succeeded in having it protected by legal provisions.

But it was not until 1870 that the modern idea of national parks was born at the historic campfire in the Yellowstone, U.S.A. There, a group of explorers decided the area should be dedicated as a "public park or pleasuring-ground for the benefit and enjoyment of the people." Two years later, a bill authorizing such use was passed, and the words "national park" came into official use. During the following decades, either spontaneously or as a result of the American example, numerous other countries took steps to preserve portions of their national territory that were noteworthy for their scenic beauty, their flora, and their fauna.

In 1885, Canada set aside a protected area surrounding the mineral hot springs at Banff and 2 years later established Banff National Park. In 1898, the Mexican government took steps to protect an important forest area and in 1917 applied

the words "national park" to the Desierto de los Leones. In South America, several more years were to lapse before the designation was used officially: in Chile in 1931, Argentina in 1934, and Ecuador in 1935.

Africa evokes the name of President Krüger who, in 1892, had the Sabi Game Reserve protected. Later on, this became the world famous Krüger National Park in South Africa. In 1925, King Albert of Belgium created the Gorilla Sanctuary, now called Albert National Park, in Kivu. It was followed, between 1934 and 1939, by three other large national parks in Rwanda, Uele, and Katanga. In Madagascar in 1927, important work was started, which led to the establishment of 10 nature reserves under the strict control of the Paris Museum.

In 1933, the London Conference for the Protection of African Fauna and Flora gave additional encouragement to the creation of nature reserves and national parks on the African continent. The Gorongoza Strict Nature Reserve, dating from 1935, is an outstanding example. In 1953, the Bukavu Conference was held during an auspicious period in which the great national parks of eastern and central British Africa were given the firm status they still enjoy; Serengeti in 1951, Queen Elizabeth in 1952, Tsavo in 1948, Wankie in 1950, Kafue in 1950. and many others.

In Europe, after the measures taken to protect Fontainebleau, little happened until the beginning of the 20th century, when, in Great Britain, purchases were made by the National Trust, founded in 1895, and in the Netherlands by the Vereniging tot Behoud van Natuurmonumenten. The latter is linked with the name of P. G. van Tienhoven. In 1909, Sweden created the first large reserves of Laponia; and in 1914, Paul Sarasin established the Swiss National Park. This was followed by the preservation of the Bialowieza Forest in Poland, which became a national park in 1947. In the U.S.S.R., reserves had already been initiated shortly before the Revolution by the Moscow Academy of Sciences. Others, such as the Astrakhan Reserve on the Volga delta, were established immediately after the Revolution. Two other countries should also be mentioned: Italy for its Gran Paradiso, established in 1922 and Czechoslovakia, where protected areas have existed since 1838 and where some reserves constitute a model boundary national park with Poland.

In Japan, at the beginning of the century, Erwin von Baeltz advocated the creation of national parks. In 1911, not long before he died, he initiated a petition requesting the creation of the Nikko Imperial Park. His petition found little response. But by 1931, the movement was gaining headway. Between 1934 and 1936, a dozen national parks—some of them now world famous—were established. They are linked with the name of Tsuyoshi Tamura, one of the first persons to suggest the First World Conference on National Parks.

In Indonesia, an important series of nature reserves were established in 1919. In Australia, the National Park near Adelaide in South Australia dates from 1891. New Zealand's first park, Tongariro National Park, was established in 1894.

Almost all the measures taken to establish national parks and nature reserves had two objectives: preserving the beauty of the natural landscape and pre-

venting the extinction of plant or animal species. A third objective could—and in fact should—also be assigned to these protected territories: the conservation and the scientific, systematic study of undisturbed natural conditions.

Owing to an extraordinary coincidence, this idea was discussed one evening in 1919 at the same Yellowstone Park, where 49 years before the concept of national parks had been born. Among those engaged in the conversation were King Albert of Belgium, two American zoologists—John C. Merriam and Fairfield Osborn, Sr., and Victor van Straelen, who later became chairman of the Institut des Parcs Nationaux du Congo-Belge and was to be one of the honorary vice chairmen of the First World Conference on National Parks 43 years later.

Their discussions gave birth to the idea of creating vast nature reserves in Africa, where it was still possible to do so. They wanted these areas protected from human influences and used for large-scale, systematic scientific studies, conducted by teams of naturalists working for long periods according to carefully drawn up plans.

Ten years later, the scientific institution Parc National Albert was founded. It was entrusted with the management and study of the Albert National Park, established in 1925, and was to become 5 years later the Institut des Parcs Nationaux du Congo-Belge, the work and scientific publications of which are well known.

Another important event occurred in 1949, when the Nature Conservancy was established in the United Kingdom. This is one of the outstanding organizations in the world in handling nature reserves. It has advocated methodical and scientific study of all the biotopes entrusted to its management under the National Parks and Access to the Countryside Act.

From its early beginnings, the concept of national parks has become now a worldwide movement—a constructive development in a world that sometimes seems otherwise bent on destroying itself.

Appendix D

CHAIRMEN OF THE CONFERENCE

The success of a conference depends in large measure on its leadership. The following persons served as chairmen of the First World Conference on National Parks.

Honorary Chairman:

JEAN G. BAER, SWITZERLAND. After attending school in England, where he was born, Baer continued his education at Neuchâtel, Switzerland, obtaining his Ph. D. in 1925. He received the degree of Bachelor of Medicine at Geneva in 1928 and then held a Rockefeller Fellowship in Natural Science. Since 1941, he has been professor and director of the Zoological Institute, University of Neuchâtel. He is also president of the International Union for the Conservation of Nature and Natural Resources. For research purposes, he has traveled to Cuba, West and Central Africa, Greenland, and Iceland. He has published some 200 original papers in parasitology, including monographs and 2 books, as well as several chapters in Grasse's *Treatise on Zoology*. He is a member of many professional organizations.

Honorary Vice Chairmen:

HORACE M. ALBRIGHT, UNITED STATES OF AMERICA. Born in 1890 in the Sagebrush Desert of Owens Valley near Mount Whitney, Mr. Albright worked his way through the University of California, receiving his LL. B. degree in 1912. Franklin B. Lane, then Secretary of the Interior, brought him to Washington, D.C., in 1913. There he worked closely with Stephen T. Mather in shaping the future course of the National Park Service. From 1919 to 1929, he served as field director and superintendent of Yellowstone National Park and in 1929 was appointed Director of the National Park Service. He resigned from the service in 1933, and became vice president and general manager of the U.S. Potash Company and later president. His business interests, however, have never interfered with his continuing concern for conservation. He has served as an active officer of many conservation agencies.

WLADYSLAW SZAFER, POLAND. In 1908, Professor Szafer started working in the field of conservation at Lwow, acting as an assistant to Marian Raciborski, a botanist and a pioneer in nature protection in Poland. During World War I, while serving as a bacteriologist, he tried to protect important natural areas in

several Polish districts. In 1919, he was appointed chairman of the Executive Board and also president of the State Commission for Nature Conservation, later to become the State Council for the Protection of Nature. He held this post until 1949, when these functions were transferred from the Ministry of Education to the Ministry of Forestry. He is presently director of the Institute for Nature Conservation and chairman of the Scientific Committee for the Conservation of Nature and Natural Resources, established by the Polish Academy of Sciences. Professor Szafer's interest in conservation, however, is not limited to Poland, and he has participated actively in the work of international organizations. In addition to his conservation work, he has carried out extensive research in such fields as plant taxonomy, geography, sociology, and palaeobotany. He was unfortunately unable to attend the conference.

TSUYOSHI TAMURA, JAPAN. Born in 1890, Dr. Tamura is known as the father of the Japanese national parks. He holds the degree, doctor of forestry in landscape architecture, and has lectured on landscape architecture at Tokyo University. He has also served with the Ministry of the Interior, the Ministry of Architecture and Forestry and the Ministry of Welfare. He was a strong proponent of the Japanese national park law and the subsequent establishment of parks under this law. Today, largely as a result of his efforts, the national parks, quasi-national parks, and the prefectual nature parks in Japan receive 150 million visitors a year. At the present time, he is vice president of the National Parks Association of Japan, chairman of the Board of Directors of the Nature Conservation Society Japan as well as a member of the Tourist Industry Council of the Prime Minister's Office and the National Parks Council in the Ministry of Welfare.

VICTOR VAN STRAELEN, BELGIUM. Honorary director of the Royal Institute of Natural Sciences and a member of the Royal Academy, Dr. van Straelen holds degrees in the natural sciences and the geological and palaeontological sciences. With King Albert, Baron Edmond de Cartier de Marchiennes and the Americans, John C. Merriam and Fairfield Osborn, Sr., he was active in establishing Albert National Park in Kivu in the Congo. While Prince Leopold of Belgium was chairman, Dr. van Straelen served as vice chairman. In 1934, when Prince Leopold succeeded his father as King of Belgium, Dr. van Straelen became chairman. He is responsible for much of the scientific work that has been carried on in the Congo and in Rwanda. In addition to serving as president of the Institute of National Parks of the Congo, he is also president of the Committee for Soil and Vegetation Survey of Belgium. Unfortunately, he was unable to attend the First World Conference on National Parks.

General Chairman:

HAROLD J. COOLIDGE, UNITED STATES OF AMERICA. After attending the University of Arizona, Mr. Coolidge received his degree from Harvard College in 1927. He spent a year as assistant zoologist on the Harvard African Expedition to Liberia and the Belgian Congo and then studied zoology at Cambridge University in England. He led the Indo-China Division of the Kelley-Roosevelt Expedition for the Field Museum of Chicago. With three assistants, he made the first zoological survey of Northwest Tonkin and Northern Laos. Since

1929 he has had an appointment with the Mammal Department of the Museum of Comparative Zoology at Harvard University, where he served as assistant curator until 1942. During World War II, he served with the Office of Strategic Services and saw overseas duty as a major in the army of the United States. At the close of the war, he was called to Washington to become executive director of the Pacific Science Board, established by the National Research Council. Charged with the responsibility of reopening the vast reaches of the Pacific to scientific research, the board has not only stimulated the interest of American scientists but has aroused the interest of scientists in Asiatic countries and encouraged international cooperation. In addition to his many other responsibilities, Mr. Coolidge is chairman of the International Commission on National Parks of the IUCN.

Appendix E

PLANNING FOR A NATION'S SYSTEM OF PARKS

by

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Resources for the Future, Inc.

WASHINGTON, D.C., U.S.A.

The need to preserve the natural beauty and the wildlife resources of a nation are widely recognized; so is the need for outdoor recreation and for the enjoyment of nature generally by the public. One need not labor these points today among enlightened people, for they are generally understood. The problem arises in giving them specific implementation, into a system of parks for a nation.

The purpose of this paper is to indicate what a system of parks can be, not as it is in any particular country; in this sense we have in mind a goal toward which a country may move no matter what the present stage of park development. No country yet has a fully developed national park system as the term is used here. We shall deal successively with the concept of a system of parks, including types of areas and principal uses; the interrelations among units in a park system; the demographic, geographic, social, economic, and cultural factors that are significant for the development of national parks; and some essentials for park system planning and management. Finally, we offer some thoughts about an international system of parks and international cooperation in improving national park systems.

The Concept of a System of Parks

Every nation, even though it may now have only one or two parks, may work toward developing a system of parks composed of a variety of areas differing among themselves in natural physical qualities, in location with respect to users, in size, in accessibility, and in specific function.[1] Some areas may include mountains, others forests, others swamps, and so on, through the whole range of physical land types or forms existing in a particular country. Some

[1] The problem of park nomenclature is difficult and important; it is the subject of another committee. Terms are used here is a broadly descriptive way, not necessarily in a precise way.

may be rare and unusual of their kind or lend themselves to scientific research in ecology, zoology, or some other field. Others are more ordinary but valued for their convenient location for public use. These latter must be accessible as units; and within them, accessibility to various parts is necessary. But other parks may contain unusual features, including wildlife, that cannot withstand the pressures of heavy public use; they must be reserved for special uses, and access must be restricted, both to them and within them. Some areas must be very large, others can be small, either because a limited area is adequate for the purpose sought or because the particular qualities of resource sought are confined to small areas. Some may serve as wilderness, relatively untouched by man; others may serve for intensive outdoor recreation activity, with numerous gradations in between. Within limits and subject to criteria discussed later, variation in each of these qualities should be sought in a system of parks for a nation.

The various parts of a park system for a nation are interrelated; the various parts cannot be considered separately and without regard to other parts. If the citizens of a country are to have a balanced program of outdoor activity, including appreciation for nature, they must have the necessary opportunities to partake of these activities. If they are to support the idea of parks in general, and of nature reserves in particular, they must have an appreciation of the purposes and values of parks of all kinds. Each element of a park system is closely related to other elements of the same system.

Many kinds of areas may eventually be included in a nation's parks; each country will want to begin with what it already has and build from these, taking advantage first of those areas which offer the desired qualities and may be easily acquired and protected. A few of the major kinds of areas are as follows:

1. Wilderness areas or natural preserves, where the emphasis is upon keeping the area as nearly untouched by man as possible. Such areas must necessarily be relatively large, so that the influence of surrounding areas will be confined to borders and not reach into their heart. Generally, they should include features of unusual quality or of rare occurrence, not found elsewhere in the country or perhaps in the world. Such areas may have special significance for science and for research or as preserves for flora and fauna; or their prime use may be for a special kind of outdoor recreation—the exploration and enjoyment of the primitive area, where other men are encountered only rarely.

2. Unusual scenic, scientific, or historical areas, of national significance, but available for general public use. Every country has some areas that qualify in this category; some have many. The extent of public use will depend upon economic and social characteristics of the population, to be considered later.

3. Extensive outdoor recreation areas, where the emphasis is upon realtively natural conditions of the areas. Recreation on such areas can often be combined with forestry or other commercial activities, particularly in the buffer zones around the more intensively used parts. Hunting requires relatively extensive areas of land, for instance; but usually it need not be the exclusive land use.

4. More intensively used outdoor recreation areas, often of much more limited extent, usually much more intensively developed, than the foregoing type. Natural beauty and natural qualities are still valued and may be preserved in various ways; yet it is space in which to play and to enjoy the outdoors which is vital for this type. Location of these areas with respect to potential users becomes more important.

5. Local recreation and activity areas, intensively used and intensively developed. These often include playing fields and other areas for sports and similar activities; but they may also include the carefully planned and intensively managed gardens and parks, with considerable emphasis upon nature as well as provision for man's activities.

These are but five of the major types of park areas for a nation. Innumerable variants and intermediate types are possible along a continuum of types from the most primitive to the most developed, from the largest to the smallest, from the most isolated to the most local. One may conceive of a cross classification of parks: one way by size and location, more or less as above; and the other way by principal use such as wilderness and nature preserves, scientific work, historic and cultural, public recreation and education.

Interrelations in Use Among Units of a Nation's System of Parks

Each kind of area within a nation's system of parks has its own particular use characteristics which are basic for planning and management.

Park and outdoor areas lying relatively close to where people live can be used at least cost and most easily, and hence provide most service to the citizenry at large. A local playground may be used by children from the neighborhood; a local park may provide a place of beauty, of rest, and for emotional recharge for all. To those familiar with wilderness areas, such parks may seem poor and unimportant. But we argue otherwise: they provide the only opportunities that masses of people may ever have to see something of nature. Provision of such areas is not only an essential service which every country should strive to undertake for its citizens; it is through experiences in and knowledge gained from such areas that the common people will become interested in and willing to support larger programs for more extensive areas, including wildernesses and nature preserves.

Park areas lying at intermediate distances from their typical users can usually offer a wider variety of locations, resources, and activities than can the local parks. Intermediate is relative; for a nation with individually owned automobiles and good highways, such as the United States, it may mean 50 miles or more; for a nation dependent upon public transport, with poorer transportation facilities, with users who cannot afford much expenditure for this purpose, it may mean only a few miles. These intermediate areas can often be, and should be when possible, larger than strictly local areas and more varied within their boundaries. Through the experiences gained on such areas, people come to know nature more intimately, to appreciate it more, and thus to support even larger and more extensive programs of parks within their country.

The most attractive natural areas are often in the more isolated parts of a nation—if it were not so, they would often have been converted to other uses long ago. If such areas are valued chiefly for their relatively undisturbed character, then access to them must be limited in some degree. Even in the immensely popular national parks of the United States, most of the use is concentrated along major roads and at major scenic attractions; a relatively short distance away, man intrudes but little. Users of natural areas often must have special knowledge or skills or interest. Mountain climbing, big game hunting, and wilderness exploration are not for the novice. In many countries, preservation of such areas has been made possible by the efforts of dedicated men and women, many of them scientists but some simply lovers of nature as it is. It has often been difficult to get the necessary governmental and popular support to establish such areas, or to care properly for them once established. If they are to be supported by the public, they must be understood; and a major step in this direction is the opportunity to use and enjoy them under adequate controls.

Historical, religious, and cultural sites may have great cultural and national values. No generation lives by itself alone; each of us likes to recall the characteristics and the culture of our ancestors. Specific sites may provide major links with the past and help to sustain a national pride. The use of such areas must be consistent with preservation of the resource itself. For some national shrines, large numbers of people may see the chief features, if carefully guided; for others, only limited numbers can be served, if the very features making the place exceptional are to be preserved.

If the capacity of any one major type of park area is deficient to meet the demands upon it, then a part of its potential use is diverted to another type of area. For instance, if local park acreage is inadequate, this will surely divert some of the potential usage to historical or cultural sites, if any exist in the area. If natural areas for fairly intensive use are inadequate in a nation with high personal incomes, then some of the people who would otherwise use such areas will seek to crowd into wilderness and natural preserves. There is an inter-relationship in use among the different kinds of areas, its precise character dependent upon social and economic conditions in each country; but this interrelationship can be perverted by shortages in any type of area. The result is not only loss to the public, but also is likely to lead to improper use of other kinds of areas. This is the basic reason for emphasis upon a system of parks for a nation; no one kind of area stands alone.

Development of a System of National Parks Depends Upon Many Factors

The necessary or desirable extent of each kind of area within a system of national parks, and the management of the various units once established, depends upon many factors—social, economic, and natural.

Much depends upon the characteristics of the population of a country. The number of people in relation to an area, or the population density, is one major factor. In densely settled nations such as Britain or Japan, land is in demand for many uses, and only rarely will it be possible to set aside large tracts exclu-

sively for recreation or as nature preserves. In countries like Canada or Brazil, on the other hand, immense areas are but lightly populated and may be set aside as nature preserves or national parks, if desired. Average incomes of the national population are also a major factor. In a high income country, people will have the money to travel to relatively distant park areas. In low income countries, the greatest demand may be for nearby areas—relatively small areas, within or closely adjacent to the towns and cities—where people can go at little or no cost, and enjoy some of the beauties of nature. In such countries, it may be desirable to establish larger and more distant national parks and nature preserves, primarily to insure that such areas are not spoiled in the years before they may come into active demand. In low income countries, there is likely to be relatively low demand for the intermediate areas requiring modest travel to reach; these cost, while not absolutely high, may nevertheless be higher than the average citizen can afford. On the other hand, it may be just these intermediate areas which most need to be emphasized in high income countries. The supply of unusual natural areas may be limited, relative to the demand for them, in the high income countries; and people may be unwilling to satisfy their demands for outdoor experience wholly from nearby areas. The intermediate areas often offer the best compromise, and in addition often can be extended greatly because the kind of resources needed often exist in adequate supply.

The leisure characteristics of a nation's population also affect the kind of a national park system needed. In many low income countries, a substantial portion of the population is underemployed; these persons, although not working all the time, have little leisure in any meaningful sense. They have not the means with which to enjoy recreation or outdoor experiences, and often their health and energy limit their abilities to do so. In high income countries, people are often much more active and busier, yet hours of work per week are relatively short and leisure time is often spent in relaxing and recuperating from the strains of fast-paced work. The amount and timing of leisure will powerfully affect the demand for various kinds of parks in the national system.

Another factor of importance is the transportation system of a nation—the ability of ordinary people to go from their homes to park and outdoor areas, quickly, safely, comfortably, and at moderate costs in relation to their incomes. In the high income countries of western Europe and North America, this frequently means by private automobile; but in some countries, as Japan, it more often means by public transportation. Convenient and not too costly transportation greatly facilitates public use of national parks and nature reserves, particularly the more distant ones. Where transportation is inadequate or costly, especially in low income countries, it inhibits demand for use of such areas. One means of restricting use of nature reserves which cannot withstand intensive use is to leave transportation in a relatively undeveloped status.

In general, these socio-economic characteristics of a nation's population greatly influence the demand for national parks of all kinds, and hence the area of each kind are required to meet the demand. They also affect the kind of management of the areas themselves, once established. The kinds of facilities and serv-

ices demanded and required are different when use is high than when it is not.

The cultural characteristics of a nation are also a major factor in affecting the national park system; they exert an influence additional to that of the more directly measurable socio-economic characteristics. Sometimes because of its history, sometimes for other reasons, the people of a nation particularly value some special activity or resource. Canada, with its relative youth as a nation and with its strong tradition of the frontier, has a vastly different attitude toward some kinds of outdoor recreational activities than does Japan, for instance, with its older culture, its smaller total extent, its intense devotion to beauty on a small but perfect scale. It is not easy to describe a nation's culture, either when one is an outsider or when one is part of it; yet every internationally experienced person knows that some attitudes or activities are natural in one country but not in another.

The cultural attitude of a people greatly affects its willingness to support natural park and nature reserve programs. Among some people there is an indifference to, and ignorance of, and sometimes an outright hostility toward nature—the natural environment is one to be destroyed or subjected to man's will. Under these circumstances, a national park system is difficult to establish and to operate. If ordinary people believe they have an inherent right to kill any game animals they wish for food, hides, tusks, trophies, or whatever, then a game reserve will be under constant attack or trespass. In some instances, especially where there is a shortage of food, it may be necessary to find compromises between park preservation in a purist sense and hunting or cattle grazing. In these cases it will be desirable to keep the areas in public ownership and under regulations which will not allow park values to be sacrificed. Enforcement will sometimes pose a serious problem.

National leaders may urge or promote national parks and nature reserves—in fact, in almost every country the establishment of present national parks was the doing of a relatively small dedicated minority of the total population. But a national park system founded on popular apathy, ignorance, or hostility is subject to constant attack. For this reason, as well as to meet the needs and demands of the average citizen, much stress must be placed upon a system of national parks, with units to serve the needs of all major sectors of the total population. Knowledge and enjoyment of nature under one set of circumstances builds popular support for public programs in other areas and circumstances.

The natural and cultural resources of a nation are also a major factor in planning a system of national parks. As noted above, there are great differences between densely populated and lightly populated nations in this regard. Some countries have beautiful lake areas, others have deserts, some have unusual swamps, some are mountainous and others flat, and so on. Sometimes the areas best suited for national parks are already in use for other purposes; then the park use and other uses must be reconciled or combined with the existing uses. Great Britain and other countries have demonstrated that this can often be done. Or the areas best suited for national parks may not presently be used for forestry or other purposes, and can be set aside exclusively for park use;

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by and large, this has been the situation in the western hemisphere, at least up to now.

A country wishing to establish a park system or to expand the one it already has should ask certain questions about its potential national park areas. To what extent are these areas really unique, by national or by world standards? This is especially important for the nature reserves and for the more remote types of national parks. There is little point in establishing, protecting, and managing such an area if it has few or no unusual qualities. Of course, preservation of small samples of a landscape or an ecological system which once was common may be highly important. Likewise, a country should carefully appraise the utility of other units in a national park system to be sure that they will meet the purposes intended. If a country seeks to establish a natural outdoor area for extensive use activities, is the area the best suited and best located one available? While expediency and availability may be important as determining the ease with which units of a park system can be established, yet the most careful thought and planning should be directed to securing areas that are really best suited to the purposes sought.

Some Essentials for Park System Planning and Management

If a nation is to have an adeqate system of national parks, what are some of the essential factors in planning and management? The following list is necessarily in rather general terms, because circumstances differ considerably from country to country, but, hopefully, provides some general guides to any country.

1. First of all, sound planning of a system of national parks requires clear definition of the goals of the park system, and of each major unit within it. This is true above all for countries just beginning to develop parks; indeed such countries have the opportunity of learning from the mistakes of others and, therefore, of doing a better job. What purposes is the park system as a whole to serve? Which sectors of the total population is it planned for? How will, or should, each unit be used, and what should be the relationships in use between one unit and others? Among the various goals and aspirations, what is the order of priority, assuming—as is usually the case—that all desired objectives cannot be met at once? These are obviously general questions, and some may consider them unnecessary. But unless they are answered in advance, and unless there is general agreement among national leaders, the whole system of national parks may become little more than a series of emergency and expedient actions. The factors of national cultural characteristics, of socio-economic characteristics of the national population, of the national resource picture, and others should be taken into account in formulation of these goals. The processes, political and otherwise, should be those customary within a country. The essential point is that goals should be carefully and explicity formulated in advance. In many countries the general purposes and structure of the national park system may advantageously be set forth in legislation and given clear financial and administrative support.

2. An equally important and closely related consideration is the enlistment of general public participation and support in planning and improvement of the national park system. As noted above, dedicated leaders may, and generally do, promote the establishment of national parks of all kinds. But informed public support is needed to the extent possible from the beginning; without it, the existence and the precious qualities of the areas may be jeopardized. Informed public support does not arise unassisted; it must be developed and cultivated. Park leaders, natural scientists, and nature lovers have both an opportunity and an obligation to inform average citizens. Through educational programs of all kinds, knowledge about and love for the park and outdoor areas can be encouraged and built. One of the most effective means is by direct participation in outdoor activities; this is one reason why the system of national parks, with areas available to most citizens, is so important. Part of the planning for a national park system should be the planning of the educational and public participation programs.

3. Provision of an adequate area of park land and nature reserve is necessary at each level or stage in the national park system. The dangers of inadequate area in one part of the system, as far as use of other parts is concerned, has already been stressed. Unfortunately, it is not possible to establish simple standards of adequacy; what is enough in one country may be entirely inadequate in another, because natural, economic, social, and cultural conditions are so different. However, every country can, and should, carefully consider for what sectors of the total population a particular unit in the park system is designed, how many people are likely to use it under different conditions, how large an area is required to permit this level of use, the amount and kinds of facilities that will be needed, how much provision must be made for future increased demand, and the like. Certain uses, for example for scientific experimentation or nature preservation, may be of high priority even though few people are directly involved. It will often be difficult to arrive at standards which are wholly satisfactory, yet careful consideration of the whole matter is more apt to result in adequate, but not wastefully large, areas than would result from limited consideration of the problem.

4. Once a park system, and the various units within it, have been established, planning and management must be directed toward the best use of the available areas. As noted above, this requires measures and improvements adapted to the area and to the uses planned. Desires of people for different kinds of activities are important, but often cannot be fully decisive. In a system of publicly planned national parks, people often want to do what they have had the opportunity to do in the past; and this in turn depends in large part upon the past programs carried out by the public authorities. The circularity is evident. Park planners and administrators have the responsibility to conceive and carry out park development which they think will be accepted by and rewarding to the people concerned and at the same time be consistent with well-conceived standards of use. In general, the unusual area should be reserved for the unusual uses to which it is peculiarly suited; the more common outdoor activities should be confined to the more common types of areas.

5. The planning and management of a park or nature reserve must also be based upon the physical characteristics of the area itself. Some areas are well adapted to some uses, but not to others. A lake may provide swimming and fishing opportunity and a desert area may have mountain climbing; while nature observation is possible on every area not too heavily dominated by man, yet the kind of nature activities one can observe varies greatly from area to area. Some kinds of areas can withstand very heavy human use; in others, use must be limited or the very qualities which made the area worth establishing will be destroyed. The most difficult management problems usually arise from the relation of visitors or users to the natural environment of the area—how to permit man to use and enjoy, without destruction or impairment. This is where the greatest ingenuity and resourcefulness is required from park managers.

6. Planning, establishment, and management of a system of national parks require both money and trained personnel, eventually a good deal of each; but a beginning can be made with very little. Again, because of the great differences between countries, it is not possible to give specific and universal standards or requirements, although each country should work toward formulation of its own standards and may be helped by considering the standards adopted elsewhere. Whether land must be purchased by government, or whether it is already owned publicly, or whether part of it may still remain in private ownership, will greatly affect original costs of establishing a park. The wilderness and nature reserve areas require relatively little investment for "improvement"; in fact, a major problem is often to limit improvements to those suitable for the areas concerned. The more intensively developed areas require much more capital investment; often, the investment in improvements will run several times larger than the investment in land. All types of areas require outlays for current management. For the less developed areas, this management is often primarily protection against man and natural enemies, including fire. The more developed and intensively used an area is, the more money must be spent annually for management and direction of activities. One common mistake is to neglect money and manpower for educational and other service functions; if inadequately carried out, the public misses much of its potential opportunity for enjoyment and there is grave danger that the areas themselves will be misused or abused through lack of understanding. While the costs of management may be considerable, especially for a low income country, yet it is also true that such costs are usually for local labor and materials; little foreign exchange is involved.

International Aspects of National Park Systems

We conclude this sketch of planning for a nation's system of parks with several proposals which look toward park development on a world scale. First, the time has come when an international system of parks may be conceived to which separate national systems, or plans for systems, may be related. An intermediate stage between national systems and a world system would be regional systems covering a number of contiguous countries; for example, Central Africa, the Caribbean area, eastern Mediterranean countries, Scandinavia, or the South

Pacific Islands. Bilateral park arrangements, as between Canada and the United States, represent a beginning in this direction. A number of types of parks, locations, and uses could be integrated on a scale larger than any one country. Variety and interest would be greatly increased.

Several factors seem to point in the direction of regional park systems and ultimately an international system. Rising incomes nearly everywhere will bring international travel within reach of more and more people as will cheaper means of air and other forms of transportation. Hours of work are slowly decreasing all over the world as more people turn from agriculture to industry and discover that frequently production is greater with fewer hours of work. The custom of the paid vacation appears to be spreading. Scientific work seems destined to involve more and more international cooperation with teams of scientists from several countries combining to carry out field work. The recent International Geophysical Year and the international approach to scientific investigations in Antarctica are examples. UN organizations, the Union for the Conservation of Nature and Natural Resources, and other groups are effectively establishing a variety of programs, which do much to set the tone and level of expectations of people everywhere regarding international use of resources.

An international park system can have the further benefit of drawing people and countries together in a common interest which, in general form, finds few opponents. Conceiving and planning such an undertaking can itself be a rewarding venture in international cooperation, however modest the beginnings may have to be. As the planning and development proceeds, the habit of cooperation would become further ingrained. In addition, of course, would be the prospect of economies of the larger scale of park use, exchange of administrative experience, increase of citizen travel, and more scientific cooperation.

To further development of national park systems, especially in, but not confined to, those countries now beginning to think in these terms, as well as to lay the groundwork for an international park system, a technical consulting service on park planning and development could be of great value. In addition to offering help on the more traditional and detailed problems of park operation and maintenance, on construction of roads, trails, and facilities, on use of parks for preservation and for scientific work, and on educational and interpretive programs, such a service could advise on the broader aspects of economic analysis, financial planning, standards for selection of areas, relations between natural ecology and human use, administrative problems, and other such matters as have been considered in this paper. The technical consulting service on park planning might be an appropriate activity for IUCN to sponsor, building on the excellent work it has already begun in the park field.

SUPPLEMENT TO REPORT OF COMMITTEE ON PROBLEMS OF NOMENCLATURE

by

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Of major importance are the results of discussions relative to Nomenclature at the International Conference for the Protection of Fauna and Flora of Africa at London (1933) and the Pan American Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere (1942). As a springboard for discussion, definitions adopted at these two international meetings, together with brief tabular summaries of certain areas established by a number of specific nations, follow.

London Convention

NATIONAL PARK

(a) Area placed under public control, the boundaries of which shall not be altered or any portion be capable of alienation except by competent legislative authority, (b) set aside for the propagation, protection, and preservation of wild animal life and wild vegetation, and for preservation of objects of aesthetic, geological, prehistoric, historical, archeological or other scientific interest for the benefit, advantage and enjoyment of the general public, (c) in which the hunting, killing, or capturing of fauna and the destruction or collection of flora is prohibited except by or under the direction or control of the park authorities.

In accordance with the above provisions, facilities shall, as far as possible, be given to the general public for observing the flora and fauna in national parks.

STRICT NATURAL RESERVE

Area placed under public control, throughout which any form of hunting or fishing, any undertakings connected with forestry, agriculture, or mining, any excavations or prospecting, drilling, leveling of the ground, or construction, any work involving the alteration of the configuration of the soil or the character of the vegetation, any act likely to harm or disturb the fauna or flora, and the introduction of any species of fauna and flora, whether indigenous or imported, wild or domesticated, shall be strictly forbidden; which it shall be forbidden to enter, traverse, or camp in without a special written permit from the competent authorities; and in which scientific investigations may only be undertaken by permision of those authorities.

FAUNA AND FLORA RESERVE

(These denotations are not specially used in the convention.)

Special area for the preservation of species of fauna and flora which it is desired to preserve, but which are not otherwise adequately protected.

RESERVE WITH PROHIBITION OF HUNTING AND COLLECTING (TO BE KNOWN AS "RESERVE")

Area within which the hunting, killing or capturing of any part of the natural fauna (exclusive of fish) shall be prohibited save (a) by the permission, given for scientific or administrative purposes in exceptional cases by the authorities of the territory or by the central authorities under whom the reserves are placed, or (b) for the protection of life and property.

So far as may be practicable, a similar degree of protection shall be extended to the natural flora in these areas.

Pan American Convention

NATIONAL PARK

(a) Areas established for the protection and preservation of superlative scenery, flora, and fauna of national significance which the general public may enjoy and from which it may benefit when placed under public control. Facilities will be provided for public recreation and education. The resources shall not be subject to exploitation for commercial profit.

(b) The boundaries shall not be altered, or any portion be capable of alienation, except by the competent legislative authority.

(c) Hunting, killing and capturing of members of the fauna, and destruction or collection of representatives of the flora is prohibited except by or under the direction or control of the park authorities, or for duly authorized scientific investigations.

NATIONAL RESERVE

Region established for conservation and utilization of natural resources under government control, on which protection of animal and plant life will be afforded insofar as this may be consistent with the primary purpose of such reserves.

NATURE MONUMENT

Regions, objects, or living species of flora or fauna of aesthetic, historic, or scientific interest to which strict protection is given. The purpose is the protection of a specific object, or a species of flora or fauna, by setting aside an area, an object, or a single species as an inviolate nature monument, except for duly authorized scientific investigations or government inspection.

STRICT WILDERNESS RESERVE

A region under public control characterized by primitive conditions of flora, fauna, transportation, and habitation wherein there is no provision for the passage of motorized transportation and all commercial developments are excluded.

Such a reserve shall be maintained inviolate, as far as practicable, except for

duly authorized scientific investigations or government inspection, or such uses as are consistent with the purposes for which the area was established.

MIGRATORY BIRDS

Birds of those species, all or some of whose individual members may at any season cross any of the boundaries between the American countries. Some of the species of the following families are examples of birds characterized as migratory: Charadriidae, Scolopacidae, Caprimulgidae, Hirundinidae.

Tabular Summaries

Constantly occurring changes together with difficulties in obtaining most recent complete data affects accuracy of these tabulations. However, insofar as time and related factors permitted, an effort was made to present an acceptable, general comparison.

LEGEND

Approximate sizes of various types of reserved lands are noted where possible in thousands or millions of acres (ex. 100 Th=100,000 acres; 10 Mil=10,000,000 acres).

Column headings, as defined below, indicate various types of areas.

P–1: Park, national
P–2: Park, state, provincial, or prefectural
P–3: Park, nature or natural
P–4: Park, forest
P–5: Park, quasi
M–1: Monument, natural or nature
M–2: Monument, national
W: Wilderness, wild or primitive area (specifically designated)
CA: Conservation area
R–1: Reserve, strict or total
R–2: Reserve, nature or natural
R–3: Reserve, refuge or sanctuary (wildlife, game, bird)
R–4: Reserve, national
R–5: Reserve, controlled hunting
R–6: Reserve, scenic or historical
R–7: Reserve, crown
R–8: Reserve, forest
R–9: Reserve, protected region
R–10: Reserve, intermediate zone (controlled hunting)
R–11: Reserve, public domain
R–12: Reserve, provincial game or wildlife
R–13: Reserve, provincial nature

AFRICA

Various protected lands in African countries generally adhere to the concepts of the London Convention. In some cases, however, different designations are

synonymous; sometimes this clouds the nature of their basic purposes and risks proper public understanding of their administrative philosophy.

Adequacy of administration and—where intended for public use—nature of visitor facilities also varies. Political changes in Africa have had their effect. Some areas exist only on paper, others are being administered as satisfactorily as local conditions permit, but in certain instances outstanding management programs have been developed in accordance with well conceived plans. In most cases administrative bodies responsible for national parks and related areas here consist of national park boards, game departments, or forestry departments.

Major emphasis is naturally on protection and preservation of indigenous fauna; except where related to faunal habitat, other interests (botanical, scenic, archeological, historical) are not often accorded specific recognition. However, noteworthy exceptions to the foregoing statement are found in certain national parks and related reserves in Kenya, Rhodesia, South Africa, Ivory Coast, Algeria, and Morocco.

Archeological and historical sites in Africa are generally administered by organizations distinct from those concerned with faunal, floral, geological, and scenic interests (e.g., protection of historic and archeological sites in South Africa is the responsibility of the Historic Monuments Commission; in Sudan the Commission on Archeology investigates and protects historic and prehistoric sites).

COUNTRY	P-1	P-2	R-1	R-2	R-3	R-4	R-5	R-12	R-13	CA
Algeria	13 100Th									
Angola	3				4					
Bechuanaland					3					
Cameroun [a]					2½Mil 12					
Central African Republic	3 3Mil		1 370Th		5Mil 8 11Mil					
Chad				1 600Th						
Congo, Republic (Leopoldville)	3 7Mil									
Congo, Republic (Brazzaville)	1 1Mil									
Dahomey [b]	1 1Mil				1 700Th					
Ethiopia	1 7Th									
Gabon	1 470Th		1 370Th							
Ghana					7 600Th					
Guinea			1 32Th							
Ivory Coast [c]	1 1Th				4 3Mil					
Kenya [d]	8 5½Mil					3	4			
Malagasy	2		12 1½Mil							
Mali	1 600Th									
Morocco	2 90Th			1 ½Th						
Mozambique	1 3Mil				10					
Niger [e]	1 875Th									

COUNTRY	P-1	P-2	R-1	R-2	R-3	R-4	R-5	R-12	R-13	CA
Rhodesia and Nyasaland [f]	15 9Mil				9 5Mil					
Ruanda-Urundi	1 750Th									
Somalia	1 25Th				2					
South Africa [g]	6 7Mil	4 40Th						22 550Th	425 4220Th	
Sudan	2 60Th		3		15					
Southwest Africa					1 16½Mil					
Tanganyika [h]	3 3Mil				9 15Mil					1
Tunisia		1 22½Th		2 6Th						
Uganda	2 1½Mil				11 2Mil					
Upper Volta [i]	1 850Th		3 980Th							

[a] Transfer of certain game refuges to national park status contemplated.

[b] National park noted is one of three parts of former Parc National du W. du Niger; other sections in Upper Volta and Niger.

[c] National park is botanical area; not open to public.

[d] All but three of former National Reserves have been placed under control of African District Councils as Tribal Game Reserves, or the Kenya Game Department as controlled hunting areas.

[e] National park noted is one of three parts of former Parc National du W. du Niger.

[f] One of 15 national parks in Northern Rhodesia (Kafue; 8,650 sq. mi.) is administered by Northern Rhodesia Game and Fisheries Department.

[g] Several additional national parks have recently been added to the number indicated in tabulation; other additions are contemplated by National Parks Board. One national park (Royal Natal in Province of Natal) separately administered by the Natal Parks, Game, and Fish Preservation Board.

Provincial parks noted are in the Province of Natal.

Most of game reserves noted in tabulation are in Natal and are administered by Natal Parks, Game, and Fish Preservation Board as game sanctuaries; their unique faunal population is highly significant.

Several areas in Transvaal, designated as nature reserves, serve primarily as game and wildlife sanctuaries.

Not indicated in the tabulation are numerous areas typified by unique indigenous forests which are defined and administered by the Department of Foresty as nature reserves; data on their number and extent is presently unavailable.

[h] Several additional national parks are being considered. Oldwai Gorge and Ngorongoro Crater have been excluded from Serengeti National Park to form a conservation area.

[i] National park noted is one of three parts of former Parc National du W. du Niger.

Asia

National parks and related reserved lands in Asia include a variety of interests—scenery, geological features, flora and fauna, and historical associations. Special national park bureaus, game departments, or forestry departments are the usual administrative agencies. In some cases, protection and use of these areas is carefully controlled; in others, only limited supervision is possible.

Management policies for various types of protected areas here are necessarily greatly varied, depending upon population density, economic conditions and related factors in the various countries involved. In Japan, for instance, existing patterns of land ownership are not changed upon establishment of a national park; private and various types of public land are included in these areas—a zoning system, involving general and special areas with varying restrictions,

correlates preservation of natural interest and beauty with local economic needs. Japanese national parks are also heavily patronized, and provision must be made for varied public outdor activities, often to the maximum limit consistent with necessary protection of interests of these areas. Certain liberties (e.g., restricted forest utilization) must also be permitted in India's national parks; "inner sanctuaries" designated within India's national parks foster maximum possible protection by providing for minimum disturbance of wildlife, other natural values, and visitor interests.

COUNTRY	P-1	P-2	P-3	P-5	R-1	R-3	R-10
Burma [a]						12	
						600Th	
Ceylon [b]	3				4	22	2
	257Th				150Th		257Th
India [c]	7					50	
	900Th					4Mil	
Indonesia			20		96		
			6Mil		940Th		
Japan	19	200		20			
	4Mil			1½Mil			
Malaya	2						
	1Mil					640Th	
Philippine Republic	39						
	580Th						
Thailand	6						
	1½Mil						

[a] Several game sanctuaries being considered for national park status.

[b] Sanctuaries in Ceylon include private as well as public lands.

[c] Responsibility for wildlife is state rather than federal function. Thus only states can legislate for establishment of national parks or wildlife protection; in the interest of uniformity, Indian Board for Wildlife has drafted a model bill for use in state legislation.

Australia and New Zealand

Australia and New Zealand have radically different systems in the protection of natural land interests.

Each of the six Australian states, plus the Northern Territory, has established its own national park system, for this is a state rather than federal function in Australia. Thus, although called national parks, they are not technically in that category. Administrative philosophy of these areas also varies widely, ranging from emphasis on public outdoor recreation to careful protection of natural interests. Australian states which place greatest emphasis on preservation of natural conditions are Queensland and Tasmania, although certain other states are exhibiting a growing interest in such activity.

Some Australian reserves are specifically designated as state parks; one of the larger, more important and popular Australian parks (Kosciusko State Park, NSW) is in this class.

The situation is quite different in New Zealand. There a closely correlated national park system, administered by the National Parks Authority,

exists. Numerous other reserves have also been established in New Zealand; these are subject to the authority of the Land and Survey Department.

COUNTRY	P-1	P-2	P-3	P-4	R-2	R-3	R-6	R-11	W
Australia:									
New South Wales	14 284Th	1 1½Mil	3 5Th			2 32Th			3 85Th
Northern Territory	2 300Th				2 65Th				
Queensland	252 840Th								
South Australia	1 2½Th				18 485Th				
Tasmania	8 540Th				36 47Th				
Victoria	12 314Th	3 8Th							
Western Australia	9 319Th				440				
New Zealand	9 4Mil			1 1Th		4 12Th	1370 894Th	922 82Th	

Europe

Except in a few relatively sparsely populated countries, European history of land use, population density, and related factors rule against establishment of large areas as national parks. Where such areas do exist, practical compromises must generally be made in their administration with relation to local conditions. However, in spite of difficulties, nature conservation in Europe has a long history and commands considerable public interest and support.

COUNTRY	P-1	P-3	P-4	R-2	R-3	R-6	R-7	R-8	R-9	M-1
Austria [a]				249						
Albania	4 27½Th									
Czechoslovakia [b]	1 124Th							151 100Th	6 75Th	
Finland [c]	9 260Th	14 200Th								200
France [d]	6									
Germany, Federal Republic [e]		11 1Mil								
Great Britain [f]	10 3½Mil		10 500Th	85 140Th						
Greece	1 10Th			4						
Italy	4 465Th									
Hungary	1 1½Th	6 1½T		16 7½Th						
Poland [g]	1T 250Th			600 85Th						1000
Spain	2					7				
Sweden [h]	15 1Mil				85		648 75½Th			318 7½Th
Switzerland	1 42Th									
Turkey [i]	5 31Th							25		
USSR				75 20Mil						
Yugoslavia [j]	18 430Th									

[a] Establishment of National Park Commission proposed. Nature reserves, ranging in size from a few acres to many square miles and serving various purposes (protection of

scenery, flora, fauna, geological interests), have been established by local laws and ordinances.

[b] National park, protected by adjacent "buffer strip" (172,000 acres), includes five strict reserves (agg. 25,000 acres) for research. Additional reserves (some indicated in the above table) include over 500 areas of varying type and size.

[c] Finnish nature parks designed for research; entrance by permit.

[d] National Park System initiated in 1960. National parks augmented by several natural reserves, much older in concept than national parks and variously administered; primary purposes are research or maintenance of conditions necessary to specific function—no public facilities.

[e] Establishment of 19 additional nature parks contemplated. Primary purposes of these areas is protection of natural and scenic interests and provision of public outdoor recreational opportunities; public use carefully regulated.

[f] National parks are only in England and Wales. Existing land ownership within national park boundaries is not disturbed. National parks are designated by National Parks Commission and administered by local planning authorities. National Parks Commission has also designated 12 "areas of outstanding beauty" (775,000 acres) and 7 "long distance routes" for non-vehicular travel. Nature reserves are in England, Wales, and Scotland; administered by Nature Conservancy, an official British conservation agency. Forest parks are in England, Wales, Scotland, and Northern Ireland; are specifically designated recreational areas in public forests, managed by British Forestry Commission.

[g] Nature reserves in Poland similar to but smaller than national parks.

[h] Nature parks, established by County Councils, located in more heavily populated regions to serve public outdoor recreational needs and to encourage interest in outdoor interests; number and aggregate area unavailable.

[i] Establishment of nine additional parks proposed.

[j] National parks established by individual People's Republics.

North America

Concepts of Pan American Convention are generally applicable to national parks and related reserves in most North American countries. This activity is well developed in both Canada and the United States and the Mexican national park system has been greatly expanded within the past several decades.

COUNTRY	P-1	P-2	P-4	R-3	R-5	R-6	R-10	M-2	W
Canada [a]	18 19Mil	265 20Mil	------	230	------	22 1Th	------	------	------
Guatemala	11	------	------	------	------	------	------	------	------
Honduras	2	------	------	------	------	------	------	------	------
Mexico [b]	47 2½Mil	------	------	------	------	------	------	------	------
United States [c]	*30* 13Mil	2664 5½Mil	------	280 28½Mil	------	70 140Th	------	83 9Mil	83 14½Mil

[a] National parks widely diversified, including coastal, prairie, and mountain areas; protect *significant scenery, geological interests, plant and animal life.* They are "dedicated to the people of Canada for their benefit, education and enjoyment . . . maintained and made use of so as to leave them *unimpaired for the enjoyment of future generations.*" They are administered by the National Parks Branch, Department of Northern Affairs and National Resources. National Historic Parks are the responsibility of the National Historic Sites Division in the National Parks Branch.

Provincial parks have been established by British Columbia (124; approximately 8,560,000 acres); Newfoundland (3; approximately 35,000 acres); Ontario (122; approximately 4,000,000 acres); Quebec (6; approximately 6,500,000 acres); Saskatchewan (10; approximately 1,000,000 acres). They vary from small roadside sites to extensive undeveloped lands; a number are larger than 1,000,000 acres.

Game and wildlife reserves, refugees, and sanctuaries include many millions of acres; are distributed over Alberta, British Columbia, Manitoba, New Brunswick, Ontario, Quebec, Saskatchewan, as well as Northwest and Yukon Territories.

[b] National parks vary from less than 100 to more than 500,000 acres; are administered

by the Department of National Parks, Division of Forestry and Game in the Office of Secretary of Agriculture.

[c] National parks widely diversified; are essentially "outdoor museums" with unique scenery, geological features, plant and animal life, archeological and historical interests. Are administered by National Park Service of the Department of the Interior to "conserve the scenery and the natural and historical objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations."

In addition to national parks, the United States National Park System also includes areas in other categories—national monuments, varied historical parks and sites (as noted in tabulation), together with national seashores, national parkways, and national capital parks; in addition, by inter-bureau agreement, the United States National Park Service has the responsibility for recreation on several large reclamation projects of national interest known as National Recreation Areas.

Not listed in tabulation are many artificial lakes developed by the United States Bureau of Reclamation, Corps of Engineers, and the Tennessee Valley Authority which have important recreational value.

Wildlife refuges administered by the Bureau of Sports Fisheries and Wildlife of the United States Fish and Wildlife Service, Department of the Interior. Not listed specifically in tabulation are numerous state wildlife areas (refuges, reserves, sanctuaries, public shooting grounds), administered by various state game and fish departments.

Lands specifically classified as wilderness or wild areas are included in national forests; they are accessible only by trail and are devoid of "improvements." National forests (185,000,000 acres), administered on multiple-use basis—including recreation—by the United States Forest Service of the Department of Agriculture, include many other types of specifically designated recreational areas serving varied needs. These are not specified in the tabulation; they range from numerous developed areas (campgrounds, hotel sites, etc.) to various types of protected lands (roadless, virgin, scenic, etc.).

Also not specifically defined in tabulation are recreational areas in many state forest systems (these are of particular importance in eastern states). In addition, certain privately owned industrial forest lands serving public recreational needs are not listed in the tabulation.

Remaining unallocated lands of public domain, administered by the Bureau of Land Management, Department of the Interior, are also of importance in outdoor recreation; they are not specifically defined in tabulation.

State park systems exist in all of the 50 states. Most state parks are used for general outdoor recreation, but many contain highly significant interests, and a number are large natural areas in which protection of flora, fauna, and related interests is of primary concern.

South America

In general, concepts expressed at the Pan American Convention and the London Convention are applicable to most South American national parks and related reserves. Interests of these areas are widely diversified.

COUNTRY	P-1	P-2	R-3	R-4	R-8	M-1
Argentina [a]	10 6½Mil					1 24Th
Brazil [b]	4 600Th	3 90Th	1 74Th		1	
Chile	19 600Th				26	
Colombia [c]	2					
Peru [d]	1					
Venezuela	5 1Mil					3

[a] National parks and natural monuments administered by National Parks Administration, Ministry of Agriculture. Number and area of national forests not specifically defined.

[b] National parks are administered by the National Park Section of the Forest Service, Ministry of Agriculture.

[c] Establishment of additional national parks as well as national reserves and monuments contemplated.

[d] Several Island bird refuges, not defined as to number and area, are valuable for guano deposits.

Appendix F

ATTENDANCE LIST—By Country

Argentina

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Appendix H

LIST OF COUNTRY REPORTS

In response to the invitation of the conference, the following governments submitted reports on their national parks and reserves:

Argentina—Report on National Parks of Argentina
Australia—Report on National Parks and Reserves of the State of New South Wales
Report on National Parks and Scenic Areas in the States of Queensland
National Parks in Victoria
National Parks and Reserves of Western Australia
Belgium—National Parks and Natural Reserves in Belgium
Bolivia—Forestry and Hunting Services of Bolivia
Canada—The National Parks of Canada
Ceylon—Wildlife Preservation and National Parks and Reserves
Chad—Report on the Animal Reserves in the Republic of Chad
Chile—A Network of National Parks in Chile
Congo—Information on National Parks in the Congo
Denmark—List of National Parks and Equivalent Reserves in Denmark
Ecuador—Scenic Beauties of Ecuador and Suggestions for their Conservation
Finland—National Parks and Equivalent Reserves in Finland
Germany—Nature and Landscape Protection, National Parks, Wildlife Reserves and Protected Landscape Areas in the Federal Republic
Great Britain—National Parks and Nature Reserves in Great Britain
India—A Report on the National Parks and Wildlife Sanctuaries (Equivalent Reserves) of India
Japan—General Report on National Parks System in Japan
Special Paper: Looking Back to the Origin of Japanese National Parks by Tsuyoshi Tamura
Kenya—National Parks and Reserves in Kenya
Malagasay Republic—National Parks and Wildlife Reservations
Mauritania—Notes on Natural Resources of Mauritania
Mexico—National Parks and Forest Reserves of Mexico
Morocco—Report National

New Zealand—National Parks and Allied Reserves in New Zealand
Nigeria—Game Reserves in Northern Nigeria
Poland—Problems of National Parks and Nature Reserves in Poland
Scotland—Memorandum Relative to National Parks for Scotland
South Africa—National Parks and Nature Reserves in the Republic of South Africa
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Switzerland—The Swiss National Park
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