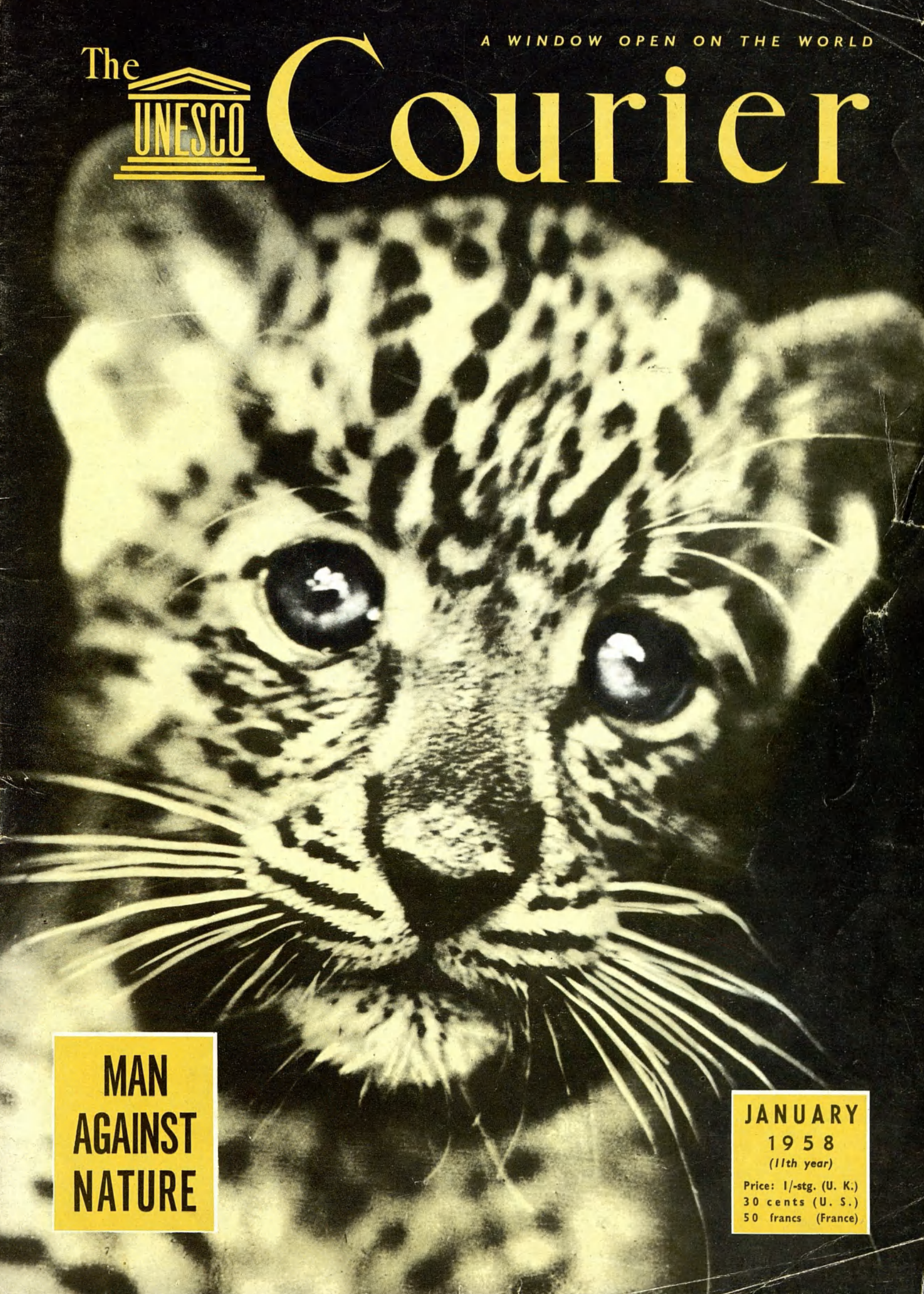
A WINDOW OPEN ON THE WORLD

The UNESCO Courier



MAN AGAINST NATURE

JANUARY
1958
(11th year)
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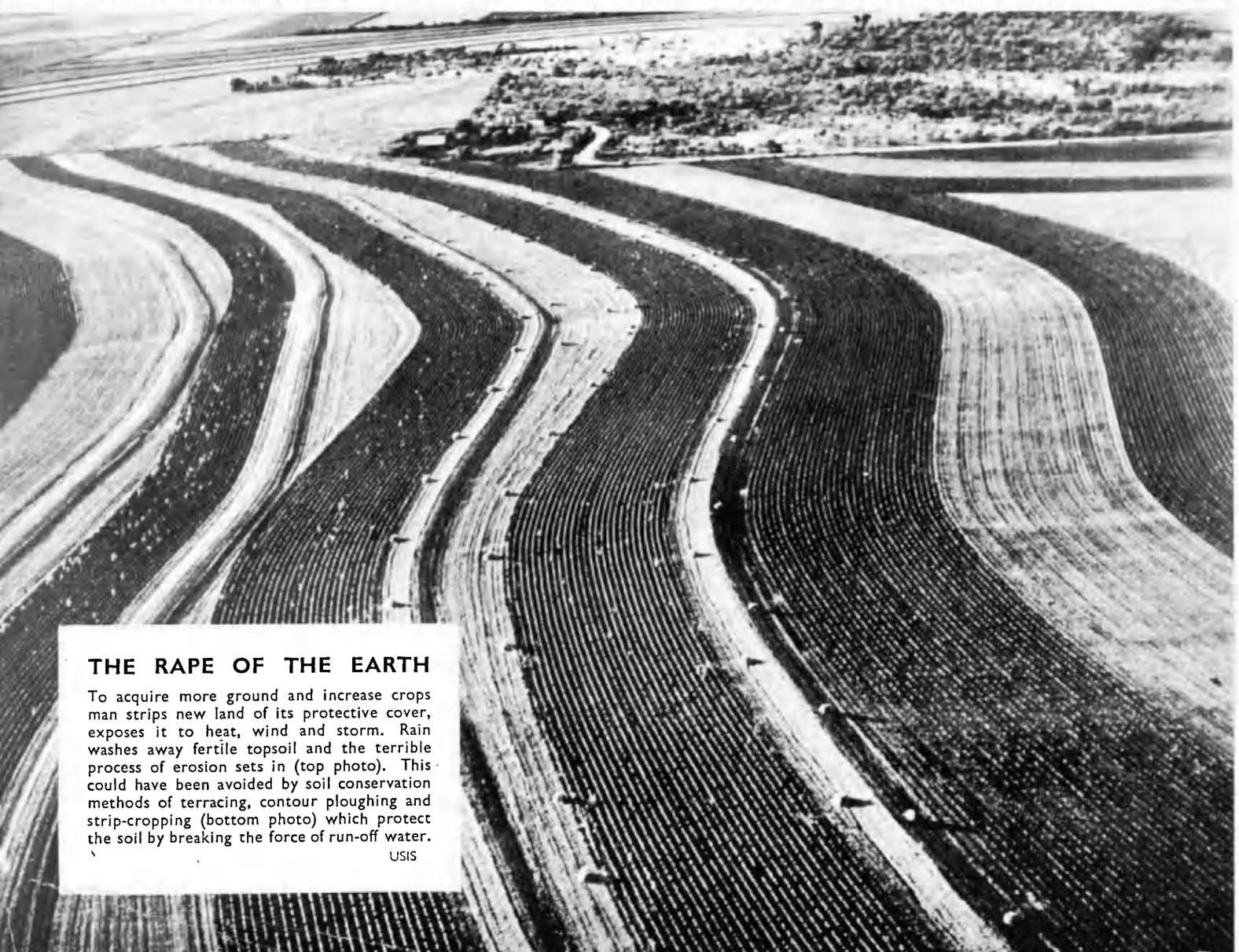

THE RAPE OF THE EARTH

To acquire more ground and increase crops man strips new land of its protective cover, exposes it to heat, wind and storm. Rain washes away fertile topsoil and the terrible process of erosion sets in (top photo). This could have been avoided by soil conservation methods of terracing, contour ploughing and strip-cropping (bottom photo) which protect the soil by breaking the force of run-off water.

USIS

The UNESCO Courier
A WINDOW OPEN ON THE WORLD

JANUARY 1958 No. 1

11TH YEAR

CONTENTS

Cover Photo: Baby Leopard. Once hunted down indiscriminately, leopards are now protected in some African territories, for keeping down wild pigs, baboons and other crop destroyers. I.U.C.N. Photo

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Editorial Offices

Unesco, 19 Avenue Kleber, Paris 16, France

Editor-in-Chief

Sandy Koffler

Associate Editors

English Edition : Ronald Fenton
French Edition : Alexandre Leventis
Spanish Edition : Jorge Carrera Andrade
Russian Edition : Veniamin Matchavariani

Layout & Design

Robert Jacquemin

★

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ARE WE HEADED FOR CATASTROPHE?

CHARLES RICHET, French physiologist and Nobel Prize winner, once published a tiny book called *L'Homme stupide* (The Stupidity of Man) the caustic title of which might well give us cause for reflexion. Those of us to whom it was addressed could still find therein reasons for humility and a chance for improvement. For the fact is that mankind is brilliant and yet so stupid.

Brilliant, in being able to produce a number of exceptional individuals endowed with the spark of creation and whose genius has made possible the astounding progress of today, particularly in the field of science. Stupid, in being incapable of forethought, except where immediate and selfish interests are involved, and almost inept in avoiding major catastrophes. Today, enchained by the swarm of increasing populations, our planet is being plundered on an unimaginable scale while mankind races toward a destiny which it refuses to envisage.

It is not intended here to formulate a one-sided or philosophical critique of our era or of technical progress, but rather to look squarely at the things being done around us, at the facts and figures, on the one hand recalling the chain of causes, and on the other, their resounding repercussions.

The erosion of the soil has been going on for a long long time: and yet, relatively speaking, it is a much more serious threat today than ever before. The ravages of the goat go back thousands of years: yet the tank and the bulldozer cause greater destruction and do so with greater swiftness. The clearing of land by fire has always been practised in cultivation: yet the introduction of European methods of intensive farming has, in some cases, been even more harmful. Pollution has been a scourge for aeons: yet the atomic era is bringing it to us in another form. The stripping of our planet's top-soil, the deterioration of our capital of renewable resources, the shattering of the delicate balance of nature... all these are brutal events of weighty importance which, since they are all occurring at the same time, are the cause of the deepest concern.

The notion of the protection of nature has now given way to that of the conservation of renewable resources. The earlier notion contained an emotional, sentimental significance and its goals were disinterested, purely aesthetic, scientific and moral in nature. These are no longer priority considerations, for today our overpopulated world is hungry. What is of the utmost importance is no longer merely the knowledge and study of living species their surroundings and habitat, or the respect which they should inspire, or the interest they might arouse, or even the protection which these species deserve, but rather the food supply of our rising generations.

The statistics stare us in the face: we must produce and produce more. Yet the gap between this accelerated production and world consumption widens every year. What a terrible price we must pay for this economic failure... the price of the destruction of what was once one of life's most beautiful mirages.

Are we then headed for catastrophe?

We have one last chance—if the power of education can overcome the power of ignorance. A rational population policy, a stop-and-arrest stand against the cancer of erosion, the adaptation of cultivation to climate and soil, the preservation of renewable resources—all these depend upon education. It is our sincere hope that this issue will help UNESCO to defend the great cause of the conservation of nature which it has espoused.

Roger HEIM
Member of the French Institute,
President, International Union
for the Conservation of Nature
and Natural Resources

MAN AGAINST NATURE

by Maurice Burton

A Belgian meteorologist reports an increased electrical conductivity of the atmosphere around his laboratory at Liège, and suggests that this may lead, among other things, to a lessening of atmospheric nitrogen fixed by lightning flashes, thus depriving the earth of one of its natural fertilizers. This has occurred simultaneously with the testing of atomic weapons. If his worst fears are realized, then we have added, and quite unexpectedly, yet one more blow at the fertility of the soil.

Truly, the conservationists are fighting a losing battle. Already we have polluted the rivers, cut down the forests, cast unwelcome oil on the waters of the oceans, reduced to danger point the number of whales in the oceans, and brought to a ludicrous remnant one of the living marvels of the world, the African Big Game. To name these is merely to abstract a few from the long catalogue of blows which we have irresponsibly aimed at the thin skin of soil covering the land-masses, upon which the survival of the human race is dependent.

One of the suggested palliatives to offset this catastrophic series of events is to convert the teeming millions of people to eating plankton. Even Nebuchadnezzar was not brought so low as this.

To many of us, enjoying the high standards of living in Western Europe, North America and elsewhere, this may appear to be a picture unwarrantably overdrawn. Time alone will prove whether or not it is correct. If it is not, then the victory will be owed in great measure to the small band of conservationists, in every country, who are fighting this losing battle, refusing to admit defeat. And if final victory is won it will add yet one more instance to the annals of history of desperate rearguard actions, with small local successes, leading eventually to total victory.

It may not be unprofitable at this point to ask: What does conservation mean? With it are linked two other words that are becoming increasingly heard, "protection" and "preservation". It is, perhaps, in some ways unfortunate that these two words should be better known to the general public than "conservation", for they tend to imply restriction of liberties, prohibition or inhibition of the rights of the individual to interfere with the land, and its products, which history has shown belong first and foremost to anyone powerful enough to take them.

Conservation, in its wider view, means making the best use, by wise management, of all natural resources. Expressed thus, the plea for conservation would be readily accepted by all but the hopelessly selfish and purblind. The difficulty arises, as usual, in the application of the principle, for where a natural source of wealth, be it a forest, a species of animal, a source of water or the use to which an area of land shall be put, is in question, there are, and always will be, conflicting interests. These are of many kinds, and their impact varies from one part of the world to another. The more important are economic, political and religious, with sport as a close fourth. They all have the advantage of tradition, and they all offer the prospect of immediate gain, as against the long-term profits, which is very nearly all that a policy of conservation can offer. The world is not yet on the verge of starvation, so it is difficult to argue anything but the seemingly doctrinaire view that the ground is being cut from under the feet of generations unborn. And this, against the powerful arguments of present gain, is as the proverbial voice crying in the wilderness.

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Even if it were untrue that the stakes are as high as world-wide malnutrition, they would still be high enough. The present trend in technology is towards a higher standard of material comfort at less cost in working hours. Such an end cannot be other than wholly desirable; but if the leisure so gained is to be spent in a world bereft of its amenities we shall have gained the world but lost the soul thereof. Under the heading of amenities we have at the moment a fair yardstick by which to gauge what it is we stand to lose. One of the social phenomena of today is that, as the wild fauna and flora of the world are shrinking before our eyes, we see an unprecedented popularity for films, television and sound broadcasts, books, lectures and newspaper articles on animals and travel. If the present trend goes on unchecked the time cannot be far off when there will be no conspicuous wild animals to see, and no travel worth the while.

It may be that this very contradiction is itself symptomatic, that deep down in the intuitive mind of the mass of the people is an uneasiness that something is going from the world. It may not be an exaggeration, perhaps, to suggest that the very popularity of these two subjects arises from the feeling that here is something that must be enjoyed before it is too late. If this interpretation is incorrect, then we have only one other to postulate: that people with leisure find wild life, plant or animal, or in the form of scenery, a most desirable asset. Whichever way we look at it, therefore, there is potent argument in favour of seeking to conserve these amenities.

There is, also, in this contradiction a measure of hope, for it connotes a reservoir of support for the efforts of the conservationists, if the means can be found for rallying it. Already, throughout the world, governments are being made more alive to the need for conservation, although all too often their pre-occupation with present expediencies precludes their wholehearted support. Often, too, the clamour from conflicting interests deafens them to what, under other circumstances, would be the clear voice of reason. For the most part, then, such victories as have been gained have been as the result of pressure by the International Union for the Conservation of Nature or by national or local organizations. These flourish or wilt according to the degree of popular education achieved in any nation, region or local area.

In this education, three things more especially must be stressed: 1) that the losses among the wild fauna and flora have been accelerated within the last century, and that this acceleration is increasing; 2) that fundamentally the problem of conservation is biological, using this word in its widest sense; and 3) that with the exploration and application of biological principles loss can be turned into profit and, what is more important, it is possible to have your cake as well as eat it.

PRIMITIVE PEOPLES depended on animal life for their livelihood but as their weapons did not have the killing capacity of modern firearms, the biological balance between man and his prey remained unbroken. When

I.U.C.N.

hunting becomes a slaughter, however, it threatens to upset the delicate balance of Nature. Zebras and antelopes have been shot down in wholesale numbers in Africa (above) to the point where certain species have become extinct. Two examples are Burchell's zebra (the last one died in London in 1909) and the Quagga, another member of the zebra family, striped only on the head and neck. Quaggas were hunted by the Boers in South Africa, first for sport and later to provide meat for export, and the last one died in Amsterdam in 1883. The problem is still with us. In 1953, 380,000 antelope skins were exported from the Ivory Coast alone.

Within the space available here, it is not possible to do more than illustrate, in the barest terms, these three points, as, indeed, it is not possible to speak except in the minimum, and probably inadequate, terms of so vast and deep a problem as conservation. To do the second of these in a way that would convey a real sense of the problem involved would take us into consideration of soil erosion and the creation of dust bowls, the loss of forests and its effect on the rainfall and water tables, overgrazing, over-fishing, as well as the more localized effects of introducing alien plants and animals, the killing off of predators, ill-advised methods of pest control and the like. On the three main points upon which the world as a whole needs instruction and information, single examples must suffice.

The first of these can be best expressed in the simple arithmetical expression put forth by Harper and Allen on the vanishing animals of the world. They show that during the last two thousand years, 106 large mammals have become extinct. Of these, 33 were lost during the first 1,800 years. During the next 100 years 33 more were lost, and during the last 50 years 40 have been destroyed. Even this does not take account of the very large number now either on the verge of extinction or surviving in drastically reduced numbers. And it takes account only of the mammals.

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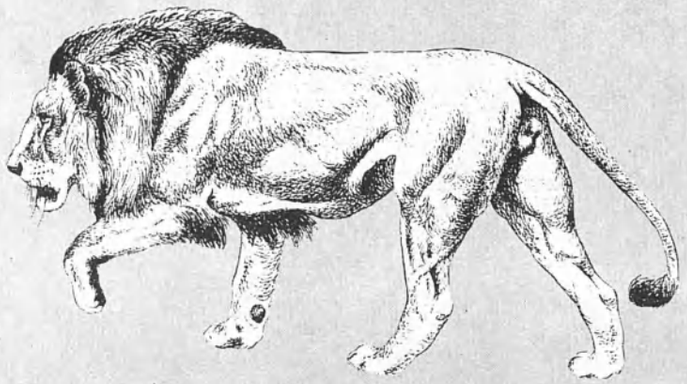
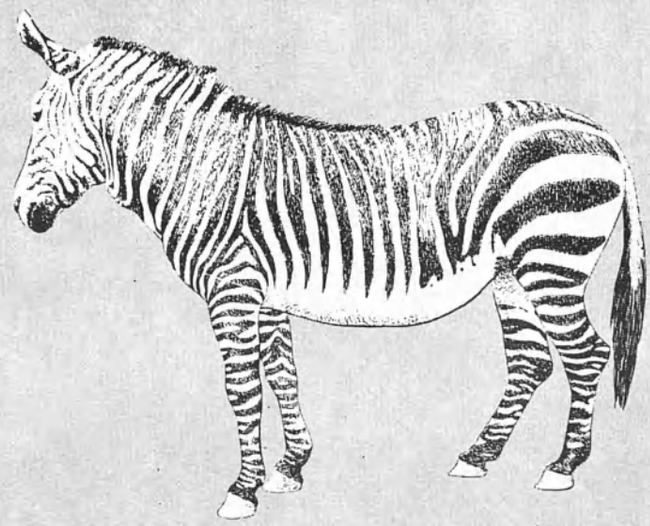
THE second illustrates what is perhaps the greatest difficulty in conservation, that in dealing with living organisms, whether plant or animal, and of whatever size, any interference produces a chain reaction the effects of which are difficult to appreciate except as the result of long and tedious study. The killing off of crocodiles seems on the face of it a desirable thing, and their skins make a marketable leather. Yet as Cott has now shown, the repercussions are likely to be adverse and widespread.

The hippopotamus, also, seems to serve little purpose, except that of interest in a large and curiously-built animal, until we realize that its excrement, by a chain of ecological reactions was responsible for the rich populations of fish in the African rivers. All these, and many besides, could be quoted to show how indiscriminate killing, either for commercial gain, or for the mere lust of slaughter, is depriving us of amenities or, more important in the practical values of the future, of essential food supplies. The normal effects of human settlement, make enough inroads without our adding to them unnecessarily.

For the third point, one cannot do better than quote what must now be a familiar example, the story of the Pribilov seals. These, formerly teeming in their millions in the North Pacific, were reduced by sealing to a dangerously low point. The zoologists discovered, in studying the breeding habits, that each old bull gathered around him on the beaches a harem of cows, while the young non-breeding males gathered in separate groups at other points on the beach. There they made a nuisance of themselves, by fighting and by challenging the old bulls, causing casualties among themselves and among the new-born pups. It was recognized then, that by thinning out these bachelor bulls all the skins necessary for the trade could be obtained, with an actual benefit to the species through obviating the casualties caused by the bachelors. Today, the Pribilov seals are back to their former millions and at the same time a rich crop of furs is being harvested. It should not be impossible to find similar solutions to other problems of conservation.



THE LION OF ASIA once roamed over the southern part of the continent from Asia Minor to India. Darius, Xerxes and other rulers of the Persian Empire caused the image of the largest of great cats to be carved in the decorations of the mighty cities they built. Today there are perhaps 250 surviving under protection in the Gyr Forest to the north-west of Bombay. Elsewhere they have been wiped out.



THE MOUNTAIN ZEBRA today maintains a precarious foothold in the mountainous region of Cape Colony, South Africa, where a hundred or so live in reservations. A century ago they were numbered in millions until they began to be relentlessly hunted down for their skins. Their low birthrate—a female gives birth once every two years—has made it impossible for them to recover from the effects of the wholesale killings which were done.

Drawings taken from *Derniers Refuges* (Last Refuges), an annotated Atlas of the world's nature reserves prepared by the International Union for the Conservation of Nature. (I.U.C.N.).

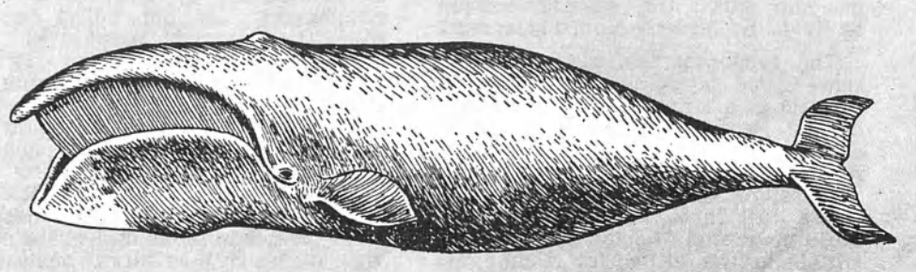
FOSSILS OF TOMORROW

by Marguerite Caram and J.J. Petter

International Union for the Conservation of Nature and Natural Resources

HUNTED to excess, victims of Man's expansion and struggle for more living space, prey to epidemics, prejudices and other destructives forces, wild creatures are diminishing in numbers. Entire species are disappearing from the face of the earth. In the 19th century alone 70 species became extinct and in the past 50 years a further 40 have died out. Today the existences of a further 600 are threatened. One after another they seem destined to join the long list of animals each of whose names is now no more than a scientific appelation used by the palaeontologist and whose only relics are skeletons, reconstituted—with varying success—in museums. It is true that in recent years there has been some heartening progress in wildlife protection in some countries, where governments have set up conservation departments. But, on the whole, if it were not for the few scientists, nature lovers and economists who are trying to save them, realizing their importance in nature's biological pattern, many animals would quickly be doomed to extinction, and would be fated to become the fossils of tomorrow.

Cont'd on page 8



THE RIGHT WHALE, which measures between 70 and 100 feet, has been almost completly exterminated, although since 1944 (whaling was reduced during the Second World War) some increase in its numbers has been noted in the Beaufort Sea (northern Canada). Today the killing of whales is restricted by international conventions which fix the maximum catch in "whale units" for any season.

THE ONE-HORNED RHINOCEROS from India, a survivor of prehistoric times, was once found in all parts of the ancient Indian Empire. One of the reasons for its progressive extermination is the superstition surrounding its horn which, when ground to powder, is said to have therapeutic properties. Several hundred of these beasts still live in the animal sanctuary at Kasiranga, Assam. Like its Javan relative—the one-horned rhinoceros of the Sunda—it is counted among the world's rarest animals.

© L. Talbot

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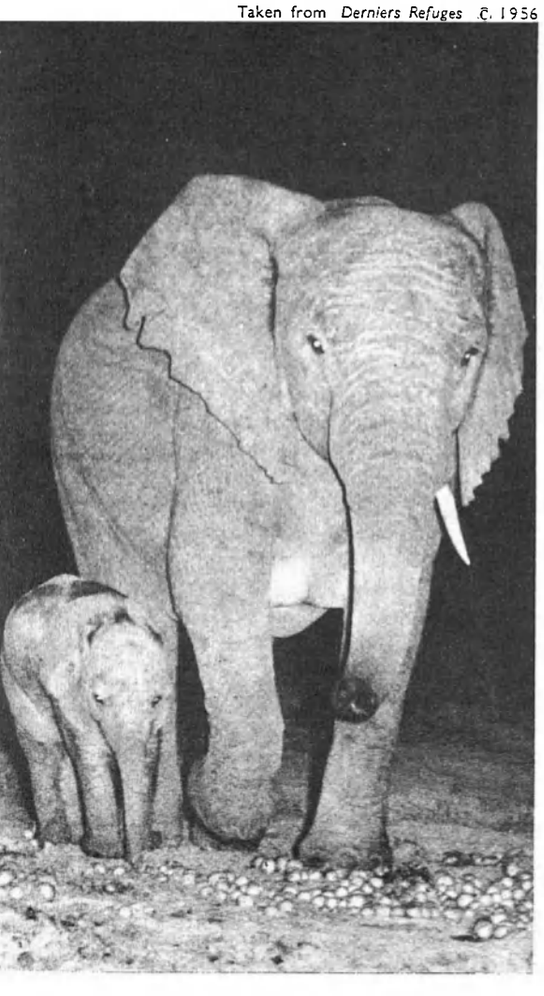
THE ADDO ELEPHANT whose mighty herds once roamed the plains of Africa is now restricted to a special reserve, the Addo Elephant National Park, to the north of Port Elizabeth. Elephants are the biggest animals that walk on four legs, but the Addo elephant is one of the smaller of the species. Although there are only about a score of these elephants in the South African reserve, they did so much damage "raiding" local farms for food that the authorities were finally obliged to ring the elephant park with an electrified fence.

Taken from *Derniers Refuges* © 1956



U.S. Fish and Wildlife Service photo by E.P. Haddon

THE WILD BISON of North America, inescapably linked with that adventurous character of our childhood, Buffalo Bill, barely escaped extinction. Immense herds, millions strong, once grazed on the great North American Prairie. Despite trading in the hides of these animals, the herds remained practically intact until about 1870. The building of the trans-continental railway was like the signing of their death warrant. The story is told in records of the Northern Pacific Railway: In 1882 this company transported 200,000 buffalo hides; in 1883, 40,000; in 1884, 300; in 1885—none! The main industrial value of these victims of the steam engine lay in the use of their carcasses for making fertilizer. Skeletons were collected along the prairie by hundreds of tons. Today the American bison lives protected in United States National Parks where there are about 30,000 head. (Photo above was taken on the National Bison Range, Moiese, Montana). Across the Atlantic, the European bison, still lives on Soviet and Polish reservations and a recently noted increase in numbers gives hope that efforts made for its preservation may also be successful.

Fossils of tomorrow

(Continued)

IN the Arabian desert there lives an animal which is believed to have given rise to a famous legend. It is the handsome white desert antelope. The smallest representative of the Oryx group, it is becoming increasingly rare. It has dark haunches and nearly black legs. Its high, straight, closely set, parallel horns blend into one when seen in profile; they thus may have given rise to the unicorn myth. Like the Bedouin, the animal has become accustomed to an austere existence and it shares the nomad's waterless lands which are barely covered by scant vegetation.

In former times the animal was found in the whole of the Arabian peninsula and the regions north of the Syrian and Mesopotamian deserts. But it has always been hunted, pursued to the accessible limits of its familiar haunts. The Arabs of yesterday hunted it on camels; those of today pursue it in jeeps and automobiles. The area frequented by the Oryx has shrunk alarmingly since 1884 when these animals were still to be found in northern Arabia. Nowadays the only known specimens are in the Rub el Khali desert. According to some accounts, only about 100 of these magnificent antelopes still exist; other estimates place their number at no more than 40. In any case their chances of surviving are slim indeed.

★

THE Caribbean monk seal is about 8 feet long and its colour shades from grey to dark brown. It inhabits the Gulf of Mexico from the coast of Honduras to that of Jamaica or Cuba. Already observed by Christopher Columbus in 1494, it continued to thrive until about the beginning of the 18th century.

At that time it began to be exploited systematically for its oil. Fishermen were able to take as many as 100 in a single night and at this rate the "gold mine" gradually became worked out. The species became rare, and although a few sporadic killings on a large scale on various Caribbean coasts were reported between 1875 and 1911, the animal was seen but fleetingly after 1922. Its very existence is problematical today, although reports that individual animals or isolated groups have been sighted by ships are received from time to time.

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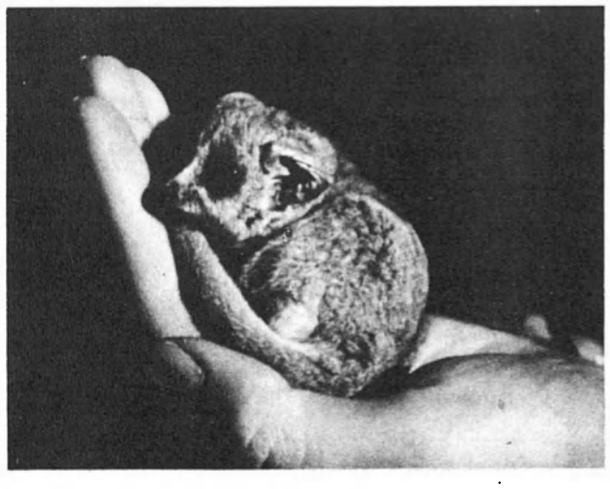
THERE is a group of animals in the highest order of mammals whose members have a strangely attractive and rather mysterious appearance. Their large, round eyes, frequently nocturnal habits and almost exclusively tree-dwelling existence all add to their mystery. These are the lemurs, named from the Latin word *lemures*, as the Romans called the ghosts of the dead.

This species is more or less the link between insectivores and monkeys. Ancient writers believed that lemurs had inhabited a lost continent, Lemuria, which had joined India to Madagascar and East Africa; their general distribution about the Indian Ocean could be explained in this way. But the hypothesis has now been disproved by palaeontological discoveries. Fossil lemurs have been found in western Europe and even in North America. The group probably scattered from a Eurasian centre and reached Africa and Indonesia, Europe and America.

© J.J. Petter.

'GHOSTS OF THE DEAD'. The group of mysterious-looking animals called lemurs takes its name from the Latin word *lemures*, as the Romans called the ghosts of the dead. More or less the link between insectivores and monkeys, these curious animals live in the forests of Madagascar. Above and below, two species of lemurs, one of them small enough to be held in the palm of the hand.



Today, six genera and some ten species are found in Indo-China, Malaya, Ceylon, southern India and the African forests. But the majority of the whole group—ten genera and about 40 species, with many sub-species—are strictly confined to Madagascar. In size, they vary from that of a mouse to that of a ten-year-old child. They feed on insects, small animals and fruit; their different types of colouring are often striking; they have long noses and thin fingers.

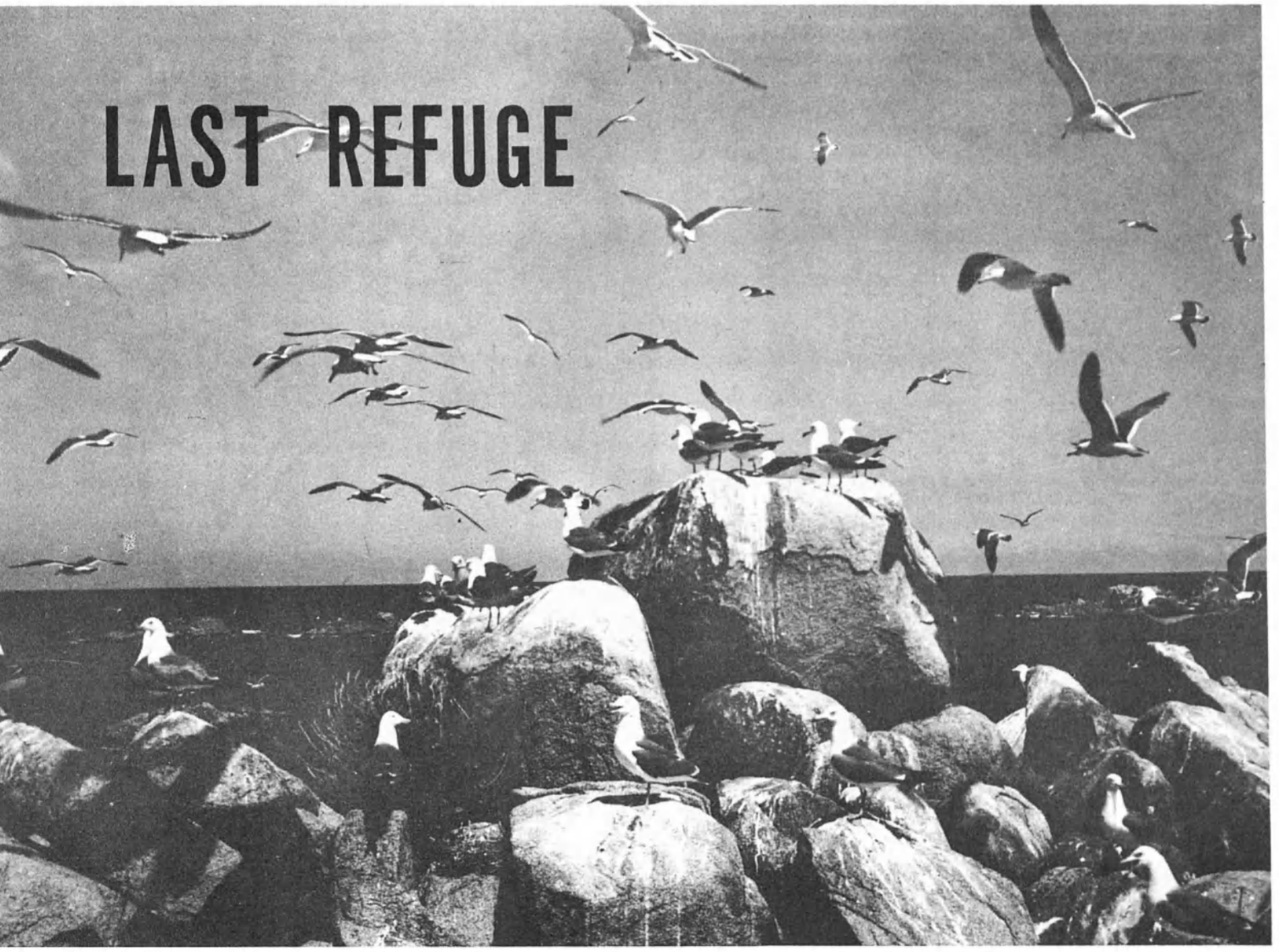
Their habitat is the forest—and that is the principal reason for the danger threatening them. During the past five centuries, the forests have disappeared from nine-tenths of the great island of Madagascar, and the rate of destruction is increasing. The Malagasy burn immense stretches of brush so that their livestock may graze on the young grass that grows up out of the ashes. People living at the edge of the forest cut and burn the trees to plant rice. Lemurs, despite protective laws, also become food for a poverty-stricken population whose diet lacks proteins.

★

ONE of the most remarkable members of the Lemur family is the aye-aye. It is as big as a large cat, with dark brown fur, an almost black tail and exceptionally long fingers. As regards classification, it is perhaps the rarest, most extraordinary member of the group. Zoologists have alloted to it a family of its own, the *Daubentoniidae*. It lives in the eastern coastal forest of the island, and the only threat to its survival is the disappearance of the forest itself for the people of Madagascar do not hunt the aye-aye and even dread meeting one. The animal's rarity and the superstitions attached to it by the indigenous people have handicapped scientific expeditions which have tried to obtain specimens.

The only chance for the aye-aye's survival is the establishment of a reservation on the last remaining stretches of this eastern forest and the enlarging of the twelve existing reserved areas. These were set up to preserve some trace of the island's primitive, natural appearance and are being maintained only with great effort.

LAST REFUGE



National Parks Association of Japan

IDEAL BREEDING PLACE for the birds, provided on the rugged seashore in the Sanriku National Park, north-east Honshu (main island of Japan), attracts great flocks of seagulls.

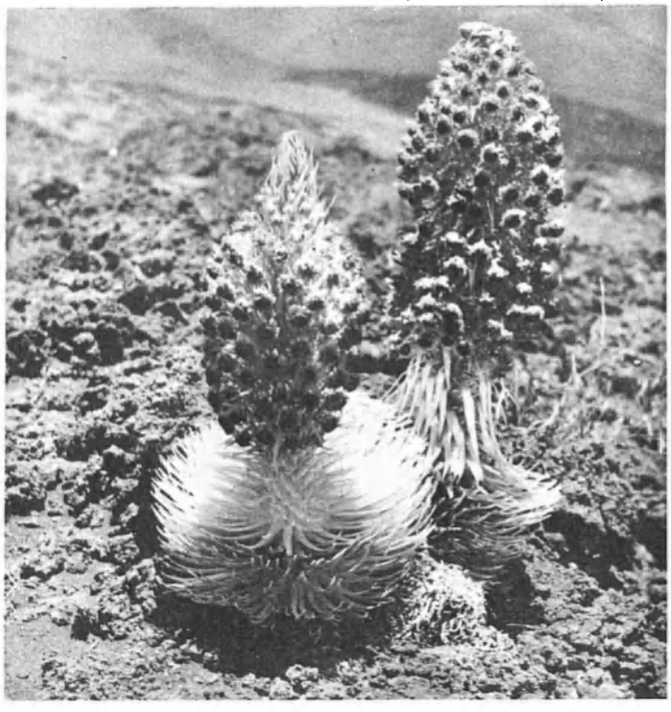
I.U.C.N.

THE ORIGINAL 'TEDDY BEAR' is the koala, a gentle little animal that lives in tall eucalyptus trees. This marsupial was once hunted for its fur and decimated, but is now protected in Australia, in particular within the sanctuary which has been established at Philip Island, about 75 miles from Melbourne.

In almost all countries, there are areas which the International Union for the Conservation of Nature and Natural Resources calls "The Last Refuges". They are tracts of land which have been set aside for many different purposes: to prevent the countryside being spoiled by technological developments and so losing its true character; to provide places where people can relax in healthy surroundings; to preserve sample areas for scientific research; to ensure the survival of rare species of fauna or flora which would soon die off outside their own environment; or finally, to keep certain natural beauty spots intact. On the following pages are several examples of typical reserves in various parts of the world and some of the rarities of Nature which they protect.

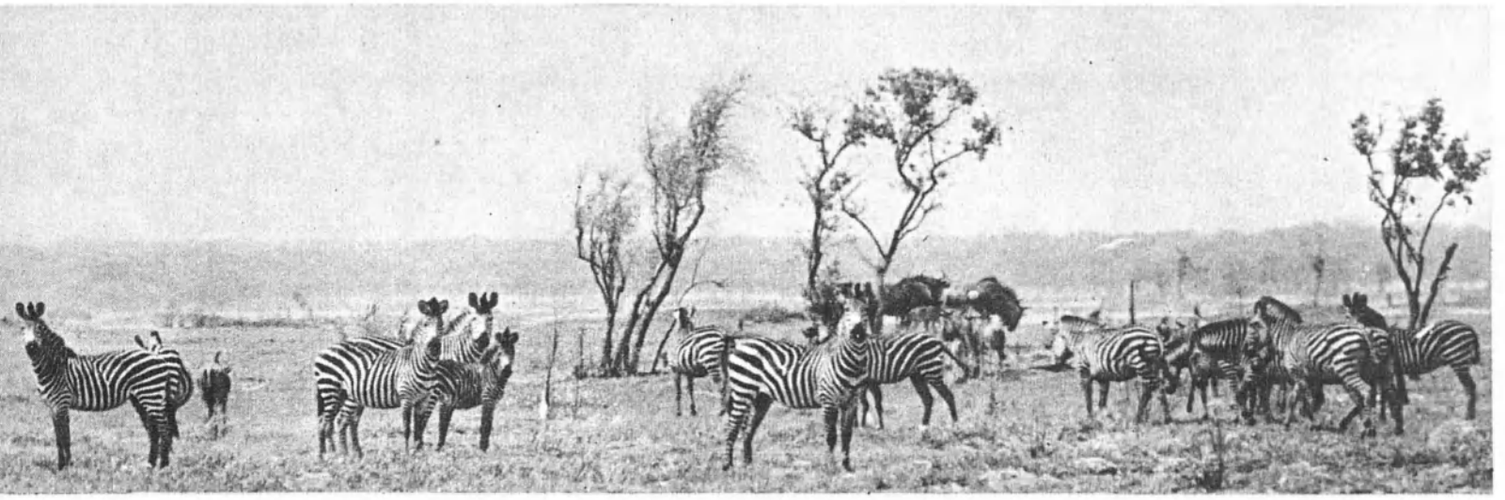
STRANGE 'FRUITS' & RARE PLANTS. Unusual-looking objects hanging from a tree (right) in the Rancho Grande Reserve, Venezuela, are nests of the turpial, a kind of sparrow and a common bird in this National Park. The Reserve, to the west of Caracas, the capital, has a three-fold role as a scientific research area, natural protection zone and centre for educational visits. Rare silversword flowers (below) bloom among cinders of the Haleakala Crater in Hawaiian National Park on the island of Maui, one of four main islands of Hawaiian group.

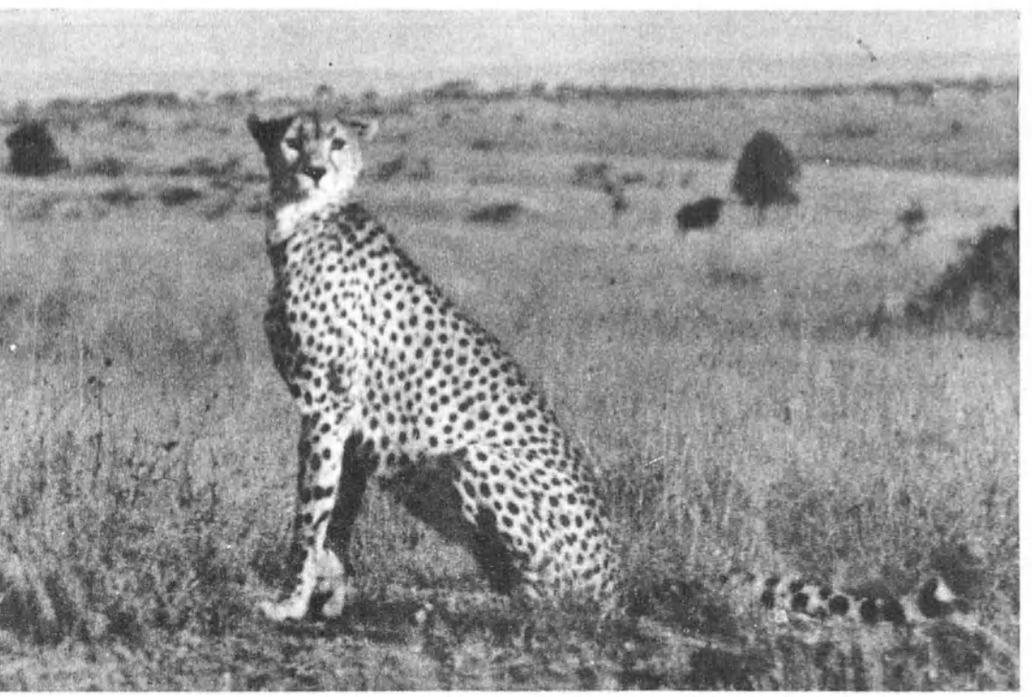
I.U.C.N. and U.S. Department of the Interior photos

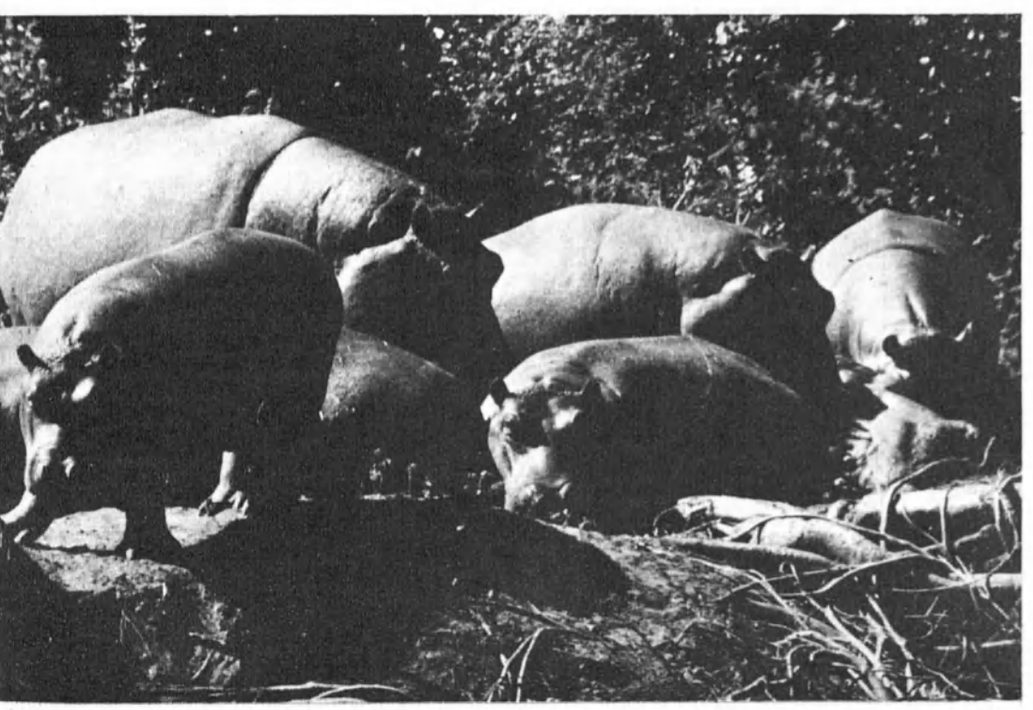


Photos © B. Schocher, Pontresina

ROYAL EAGLE (right) is not only protected in the Swiss National Park, where this photo was taken, but throughout Switzerland. Young one shown here is preparing to fly from the nest. The Swiss National Park covers an area of about 40,000 acres in the Engadine Valley. Because all birds of prey are protected here it was feared that they might increase excessively and decimate the population of smaller animals, but such has not been the case. Alpine marmots (above), rodents related to ground squirrels, are also "boarders" in the Park.







NO FEAR OF MEN

There is no doubt that the largest variety and number of animals are to be found on the continent of Africa. Today, however, these animals are increasingly concentrated in reserves which governments, alarmed by the steady disappearance of certain species, have set up.

In French African territories, vast regions have been turned into reserves. A famous one is that in the Nimba Mountains on the borders of Liberia and French West Africa. Madagascar has twelve strictly protected reserves.

National Parks of the Belgian Congo are among the finest in Africa and remarkable scientific studies are being made in them. The wonderful Albert National Park (more than 3,000 square miles) was reserved in 1925 to protect the gorilla and other rare animals that inhabit it.

South Africa's nature reserves are especially popular with tourists. Here, freed from the threat of being shot or trapped, animals have in many cases practically lost their fear of man. Among the best known reserves in British African territories are the Queen Elizabeth in Uganda, the Nairobi National Park in Kenya, the Serengeti in Tanganyika and the extensive ones in the two Rhodesias.

★

STRIPED FOR CAMOUFLAGE in forest shadows but easily seen in the open, the zebra usually grazes with wildebeests and gazelle that warn it of danger. Zebras shown here, with wildebeests in the background roam the Kafue National Park, Northern Rhodesia.

© Northern Rhodesia Information Department-N. Watt

FASTEST ANIMAL known for running short distances, the cheetah is a large cat—three to four feet high—of the plains of Africa and Asia. It has been tamed and used for hunting in India. This specimen was photographed in the Serengeti National Park, Tanganyika.

© I.U.C.N. Collection

'RIVER-HORSE' is what the name Hippopotamus means, but this African animal is really related to the pigs, and shares honours with the rhinoceros as the largest land mammal next to the elephant. These animals abound in South Africa's Kruger National Park, an immense reserve of 8,800 square miles.

© Kruger Park-W. Schack

Official Soviet photo

STAMPEDING ACROSS THE SNOW as the photographer's aircraft swoops over them, wild reindeer on the Lapland Reserve round Lake Imandra, U.S.S.R., cast long shadows in the light of the low-hung Arctic sun. Here live the remains of herds of wild reindeer, once widely distributed in northern Europe.

E.N.A. photo-archives, U.S.S.R

VALUABLE FUR-BEARERS such as the beaver were widely distributed in the forests of Russia two centuries ago, but as there was little or no control of hunting, some species were eventually exterminated. The beavers themselves were almost wiped out. Today, however, the stocks are being rapidly restored through the work of national parks. The reserve in the Voronezh Region (where these photos of beavers were taken) in particular has played an important part in the recovery of the animals, and has supplied them to other parks situated in 29 different regions of the U.S.S.R. The research carried out in the Voronezh reserve has made possible the successful breeding and raising of beavers in captivity. Thus alongside the beavers living in their natural habitat there are others born and raised in the "beaver farm".

RESERVES IN U.S.S.R. COVER 6,000,000 ACRES

TODAY there are sixty nature reserves in the Soviet Union with a combined area of over six million acres, representing every kind of countryside in the U.S.S.R. In the North, for example, there is the Kandalaksha Reserve (including islands in the White and Barents Seas) where there is an abundance of eider, famed for its down, as well as other valuable birds. To the east, the Pechora-Ilich Reserve (along the upper reaches of the Pechora River) contains a complete cross-section of the rich vegetation found in this area. This park is the scene of a remarkable migration each year when hundreds of elk pass through, in winter, going south, and in spring returning to the north. Naturalists here have successfully domesticated the elk.

The sable, prized for its fur, had at one time become very rare in Russia because of uncontrolled trapping. Some twenty years ago the annual number of pelts brought in had fallen to about 10,000. Thanks to protective measures, about a hundred thousand sables are now being trapped each year. The Barguzin Reserve on the northern shores of Lake Baikal has done much to revive sable stocks.

Other reserves in the forest zone have also been instrumental in preserving and increasing the country's wild life. One example is the Voronezh Reserve which is noted for its beaver.

The Khoper Reserve, situated in the lowlands around the Khoper River (central area of Russian in Europe) abounds in the Russian desman, a mole shrew. The Khoper and Oka Reserves are now helping to stock other areas with this animal.

There are also several desert reserves. One, the Badhiz Reserve in southern Turkmenistan, has 150 to 200 of the now rare kulans (wild asses).

Extensive forest areas are included in the Tigrovaya Balka Reserve at the confluence of the Vaksh and Pyandzh Rivers, to the north of the Afghanistan frontier. Many Bokhara deer are found there and sometimes tigers—now rare in Central Asia—come from Afghanistan.

At the Crimean Reserve which has an area of some 75,000 acres, there are over 1,500 red deer. The large concentration of deer, however, is beginning to have adverse effects on the rejuvenation of the forest in this area, for the animals eat the young saplings.

The Caucasian Reserve, where there are many chamois, has done much to restore the Caucasian aurochs which became extinct locally in the first quarter of this century. At the Black Sea Reserve near the mouth of the Dnieper, there are many species of local and migratory birds.

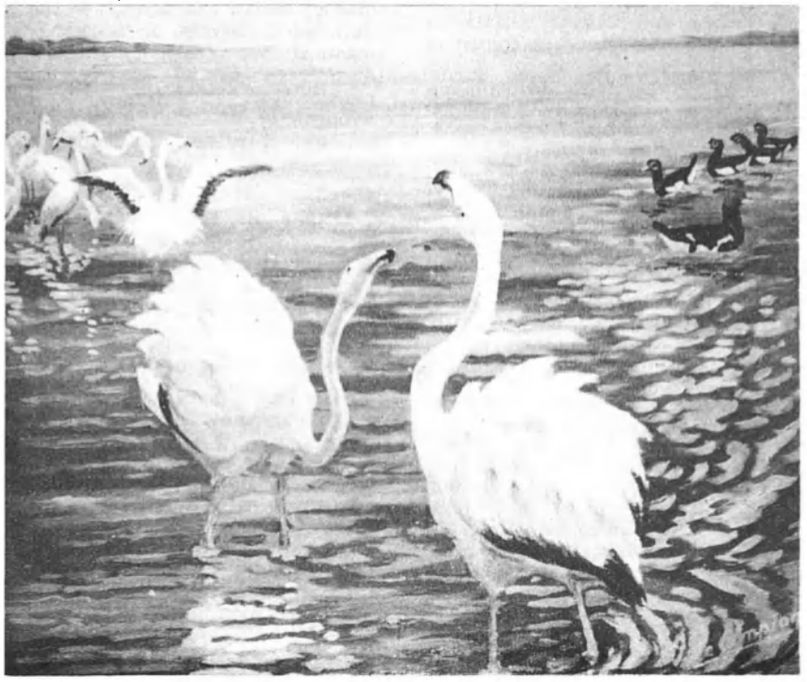
These are simply a few examples of the different types of reserves found in the Soviet Union. Proposals have been endorsed by the Presidium of the U.S.S.R. Academy of Sciences to increase the reserves to about one hundred.

The above facts are taken from a text prepared for THE UNESCO COURIER *by L. K. Shaposhnikov, General Secretary of the Commission for Nature Protection, U.S.S.R. Academy of Sciences.*

Photo © Dragesco

THE CAMARGUE, a triangular area covering some 60 square miles in the south of France, is bounded by the delta of the River Rhone and the sea. It is hemmed around by dikes built a century or so ago in the hope of making possible the tilling of the marshy soil, at that time criss-crossed by the many arms of the river. Now flooded, now rising again above water-level, it is a flat, salt-caked expanse, parched and dried, which attracts multitudes of water fowl and other migratory birds. Two hundred different species cross it every year, often making stops between the breeding periods (104 species build their nests there). Hundreds of thousands of birds fly over it on their way south. In the Camargue there are the nests of two to three thousand pink flamingos (below). The white egret (above) the heron and the delightful avocet, are also found there, and migratory aquatic birds of North Europe are frequent visitors.

Photo © Le Campion



LAST REFUGE *(Continued)*

I.U.C.N.

SEA PARROTS, as puffins are sometimes called, are among the many types of sea birds which find sanctuary in north-west France, on the Seven Islands Reserve which lies at the entrance to the Channel. A careful watch is kept on this sanctuary and as a result birds have been encouraged to flock there in large numbers during the mating season. Unusual species which make their homes there besides the puffins are the Bassan gannets.

The idea of preserving the wonderlands of nature for the benefit of all is an American inspiration. The United States set the example by establishing the first national park in the world, the Yellowstone Park. Today the U.S. National Parks System protects an area of over 24 million acres, including 28 national parks and 79 natural monuments. The parks are equipped with excellent touristic facilities and are visited each year by more than 50 million people in search of tranquillity and relaxation, which means, in some cases, the parks are suffering from an excess of popularity. Even in a country which is fully aware of the value of its great natural sites, constant effort is required to protect them. Control of other areas, such as the national forests and animal sanctuaries (National Wildlife Refuges) is exercised in a well-balanced way so as to ensure rational use of the resources. In the latter, wildfowl are given every facility to multiply.

★

Canada was quick to follow the lead of the United States and it was one of the first countries to set up a national parks' system. The oldest Canadian National Park, Jasper, covers about 4,200 square miles. The provincial parks are as rich, and often as large, as those administered nationally.

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Among Latin America's outstanding reserves are the Rancho Grande National Park of Venezuela, the Nahuel Huapi Park in Argentina and the Barrow Colorado Park in Panama. Mexico is now making strenuous efforts to prevent its natural beauties from being despoiled. Reserves, varying in size and degree of protection, exist in nearly all the Latin American republics, including the countries of the Caribbean region.

★

Among the best-known reserves and national parks of Asia and the Pacific area are two concerned almost exclusively with protecting a single rare species threatened with extinction: Oedjong Koelon, in Indonesia, for the protection of a few dozen surviving specimens of the one-horned rhinoceros of the Sunda Isles; and the Kasiranga reserve in Assam, India, for the protection of the Indian counterpart of this rhinoceros, of which less than 500 specimens still remain.

★

Japan protects its spectacular national sites; Hawaii, its exotic vegetation and fantastic geological formations; Australia, its remarkable natural features and its marsupials—kangaroos, koala bears, Tasmanian wolves and devils, and the curious duck-billed platypus, an aquatic egg-laying mammal; New Zealand, its rare birds and magnificent natural scenery, and what remains of its ancient forests after the havoc wrought by mammals imported into this country, where none originally existed.

★

Despite its small area, Belgium has several nature reserves chosen to preserve different kinds of countryside—from sand dunes to the mountain scenery of the Ardennes—as well as a number of bird sanctuaries.

★

The Dutch have always been in the vanguard where the protection of nature is concerned. Art and nature are combined in the "Hoge Voluwe", where the fine Van Gogh museum stands in about 15,000 acres of cultivated parkland, with stags, deer and sheep roaming freely. In other places, dunes and wooded slopes are conserved and bird sanctuaries are maintained.

★

The United Kingdom has both national parks open to visitors and strict nature reserves intended primarily for scientific research. These are used as open-air laboratories by teams of biologists studying problems relating to soil and water conservation, agriculture or pasturage.

★

In the Federal Republic of Germany, reserves total between 345,000 and 395,000 acres. The Saar alone possesses over 700 natural sites and nature monuments. The German Democratic Republic has 210 nature reserves, 350 protected sites designed mainly for tourist interest, and 10,000 classified monuments.

★

The problem of preserving the natural beauties of their lands has for long been a preoccupation of Poland and Czechoslovakia. Their many nature reserves include the Tatra Mountains national park, lying on the borderland between the two countries.

★

The Swiss tradition of nature protection goes back to the Middle Ages; as early as the 13th century steps had already been taken to preserve certain forests, and the first game preserve dates from 1542. The Swiss of today regard their National Park as a heritage which they hope to keep intact. It was in Switzerland that the idea of nature protection on an international scale was first conceived.

★

Italy has the splendid Gran Paradiso park boasting a magnificent herd of ibexes. Wild goats are protected in Spain's reserves; in Greece men are striving to protect the former reputed haunts of the gods. Yugoslavia has set up an impressive number of protected areas and the Scandinavian countries are now wisely planning to safeguard some beauty spots which, though not in immediate danger, may eventually suffer from the effects of population growth and expansion.

'AS DEAD AS THE DODO'

ALL too often, it is only when a species is in an almost hopeless state, when there is barely a handful of survivors, that measures are taken to save it from extinction, through the creation of reserves and the strict control of hunting. Sometimes it is already too late, and Nature has suffered another irreparable loss.

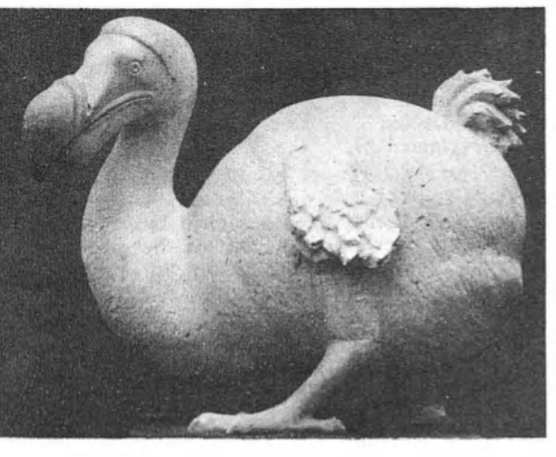
There are plenty of examples of animals, known to our not so distant ancestors, which disappeared before any measures were taken to protect them. One of these was the dronte, or dodo, of Mauritius, a large, heavy bird as big as a swan, whose main handicap was its inability to fly and escape from pursuers.

The dodo was a strange-looking bird with a kind of hood of bare skin partly covering its broad head; in place of wings it had only a few blackish feathers, and its tail was simply a tuft of grey feathers. It laid a single white egg on a clump of grass in the forest. It was not considered edible by the first men to explore the island, but those who followed were less fastidious, and from 1601 to 1644 dodos were slaughtered wholesale by passing mariners in search of food, and were eaten fresh or salted.

When the island was colonized, imported domestic animals completed the destruction of young birds. By 1712 the people of the island had almost forgotten that the dodo had ever existed. Today the only relics of the bird are the head and foot of a stuffed specimen at Oxford, a few drawings preserved in museums and some skeletons. But the bird has not been entirely forgotten, for it is still common to say that something is "as dead as the dodo".

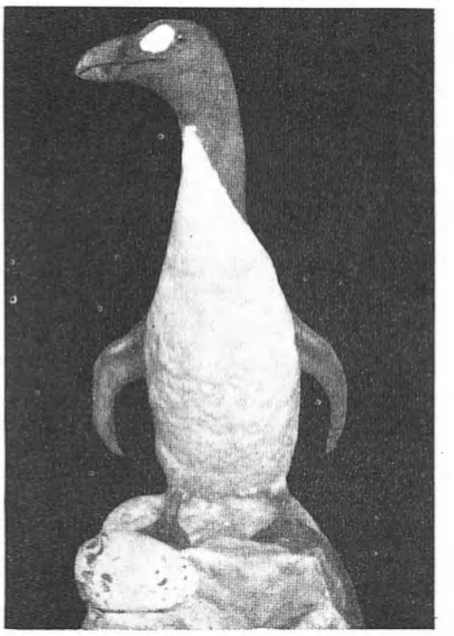
★

A companion in misfortune to the dodo was the great auk, also a large bird—much bigger than the surviving species of auk. Its wings were only short stumps; it was dark-backed, white-bellied, brown-throated and it had a black beak and feet and white circles around the eyes. Its undoing was partly due to the fact that it only laid one egg a year: a greenish-grey egg covered by an irregular pattern of black and brown blotches. Even so, it could have survived if it had been exploited with some restraint, but it had already become rare by the beginning of the 19th century.



The Dodo

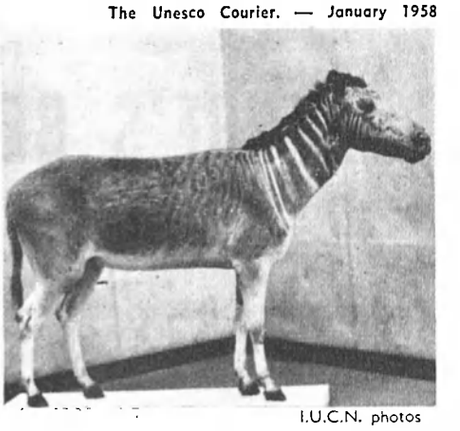
Nesting on cliffs in Iceland, the Faroes and the Hebrides, the great auk was hunted for its oil and fat. The demand for its eggs made its decimation inevitable. The last survivors were killed off in 1844. A few skins have been preserved along with several skeletons and a limited number of eggs, for which collectors will pay as much as £600 apiece.



The Great Auk

Until the early years of this century, the lovely passenger pigeon, native of the American continent, was famous for its migrations. The flocks were so dense that they darkened the sky; birds alighted in such numbers that tree branches collapsed under their weight. Between 16 and 21 inches long, the bird had grey colouring with a red lustre and varying shades of blue on its back. The last passenger pigeon died in the Cincinnati Zoological Gardens in 1914. Some people blamed its disappearance on excessive hunting; others claimed a virulent disease was the cause.

An animal which undoubtedly was a victim of the hunters was the quagga, a kind of brown and dark red zebra, with a striped head and neck and white legs and tail. It lived in the south-eastern part of Cape province in South Africa, where the naturalist Burchell came across great herds in 1812. The Boers hunted it for sport and also for food. Between 1858 and 1878 the animals—prized for their meat, and, after 1865, for their skins—became increasingly rare. By the end of the 19th century not one was left alive. A few stuffed specimens still exist in museums.



I.U.C.N. photos

The Quagga

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DOWN the centuries belief in the existence of mermaids has been so strong that instances of their capture have been recorded as fact. As we know, mermaids or sirens only lived in legend or the imagination of poets. There were and are, however, various kinds of aquatic mammals which might have been mistaken for the semi-human beings of folklore. One of these was Steller's rhytina, belonging to the order of the *Sirenia* and called, unromantically, "Steller's Sea Cow".

As much as 24 feet in length, with a small head on a rather heavy, dark brown, sometimes white-spotted or white-striped body, it made its home in the islands along the east coast of Kamchatka, Bering Island and Copper Island. Slow, defenceless, trusting—and edible—it represented an ideal prey! Two naturalists, Bering and Steller, (1741) discovered it and then in their wake came sailors, who landed in the islands slaughtering and exterminating the animals with incredible rapidity. Some men spent eight or nine months on these shores collecting provisions for the rest of their voyage.

Within nine years not a single rhytina remained in Copper Island. After 1763 ships came more rarely to Bering Island, no doubt because the stock of meat was running out; the few animals left were not worth the voyage. The species became extinct at the end of the eighteenth or the beginning of the 19th century.

NATURE'S BEST FRIEND: THE SCHOOLCHILD

by Pierre Vernier

WHATEVER befalls in accordance with Nature should be accounted good", wrote Cicero in the first century B.C., while sixteen hundred years later Francis Bacon remarked that "Nature, to be commanded must be obeyed."

But throughout recorded history, and probably long before, man has been tampering with Nature, upsetting the delicate balance which governs all natural life by destroying useful plant and animal species without any forethought for compensating the upset by readjustments.

In most cases, destruction was unwanton: King Solomon, and many others after him, could not have known, for instance, that untimely deforestation causes erosion, and that, in cutting down the cedars of the Lebanon, the soil would be swept away and the hilltops would eventually become bare rock.

And it is one of the ironies of Australian history that the first settlers in Botany Bay rejoiced that five rabbits had survived the long journey to Australia in 1788. Another is that in 1859 a man was fined £10 for shooting a rabbit on the property of one John Robertson of Glen Alvie, Victoria. Within a few years, the same Robertson had spent £5,000 in an unsuccessful attempt to exterminate rabbits on his property. In a few short decades, the rabbits had invaded and "conquered" the whole Australian continent.

These and other examples were cited recently by Mr. Tracy Philipps, Secretary-General of the International Union for the Conservation of Nature and Natural Resources, as instances of man's unthinking or untimely interventions in nature's affairs.

Plant a tree & grow up with it

VISITING Paris to attend a meeting of the International Advisory Committee on the School Curriculum, sponsored by UNESCO, Mr. Philipps stressed that the problem of nature conservation had become increasingly serious and urgent since the development of modern industrial society :

"In the world's two temperate zones", he said, "in highly industrial and densely populated countries like Britain and Japan, whole new towns are necessarily being created, and houses and streets, industrial fumes and pollutions are invading nature and food-producing land and waters. In new surroundings and in new balances of life and nutritions, new viruses and new epidemics are coming into existence."

To combat unwanton destruction, Mr. Philipps stressed, people must be made aware of the gravity of the problem. "They must be shown how the earth and the direct or transformed products of soil and water and trees are our capital, our capital asset, at the base of the balance of our nature, of our daily life, of our nutrition and our health.

"This can best be done by starting in the schools. It can be demonstrated by first-hand observations and such convincing lessons as, for instance, the treeplanting projects now carried out by many schools, where each child plants and, so to speak, "grows up with his tree", learning its nature, its role and its soil-and-water value for his own life and his community's.

"Our aim—and it has been one of the main aims of the Union since its foundation in 1948 on the initiative of UNESCO and the French Government—our aim is that the child should be made aware of the nature of his relations with his physical and natural environment which exercises such a powerful influence on all living beings, including man. Every child should learn to recognize those elements in nature which he can accept and those which he should be afraid of. It is these simple things, things which he sees every day on his way to and from school, which should be included in the curriculum and made to tie up with lessons on hygiene and nutrition."

A start has been made in this direction. Mr. Philipps explained that some, though still inadequate, elements of this teaching have already been incorporated through the efforts of the Union and private initiative in the school syllabuses of nearly thirty countries—from Mexico to the USSR, from Morocco to Malaya, from Germany to the United States and Venezuela. In most cases, material prepared by the Union in the form of picture panels and mimeographed "broadsheets" containing the outline of simple lessons, is distributed to the schools through the Union's member societies in widely varying countries, in agreement with the educational authorities.

But, as Mr. Philipps stressed, methods and content of the teaching programmes must depend on the conditions prevailing in each country. "These conditions," he said, "vary enormously. For instance, they are very different in a tropical country, where nature often remains the prime enemy, from, say, New York where most children are more familiar with automobiles and washing machines than with wildlife and plants.

"Children need to know that such is the unerring balance that the extermination of insect-eating birds or of pollinating bees or even of forms of life which superficially seem harmful, can strike back and weaken man or expose him in the tropics to epidemic attack by his ever-threatening enemies, the denudations and impoverishment of soils by himself and floods and fires, and by increase of insects and viruses."

It is therefore left to the teachers in each country to give their own illustrations of basic principles in examples taken from local life and problems already familiar to children. In French West Africa, for example, a lesson-summary prepared by the local educational authorities on the basis of the Union's broadsheet explains that in many parts of the territory wind is a major enemy, "an enemy which dries up the topsoil, and carries it away to other regions. Plants wilt, they are smothered or uprooted, and the desert takes over where once man tilled fertile fields."

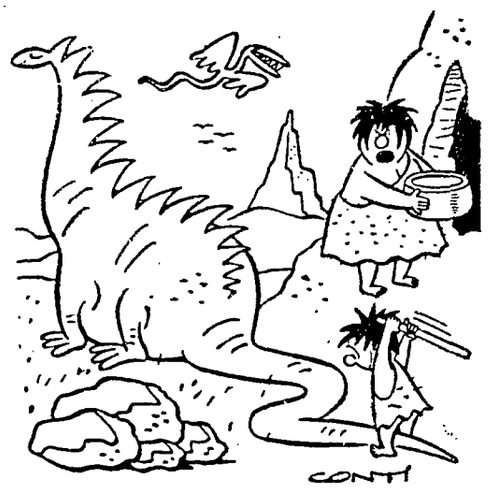
Many simple questions are put to the children, such as these taken from an Italian lesson: "Have you stopped to think what substances go into the making of the things you use every day? The bed you sleep in, the toys you play with, the house you live in, the clothes you wear, the food you eat?" And the answers bring home the lesson that nature provides all the raw materials, that natural resources are a capital which must be carefully tended and preserved now world population is rapidly growing.

'Cherish the hand that feeds us'

ON the request of the UN Food and Agriculture Organization, the Union has just produced a booklet on the techniques of nature conservancy for use in schools in the South and East Mediterranean area, including countries in the hinterland of these regions. There will be separate editions for each country, with local examples. The booklet, which has been asked for by FAO's international commission of the Arabic-speaking areas, will include an introduction and a preface contributed by UNESCO's Departments of Education and Social Sciences, which have had valuable experience in this field, particularly through the work of the Fundamental Education Training Centre at Sirs-el-Layyan, operated jointly by UNESCO and the Egyptian Government.

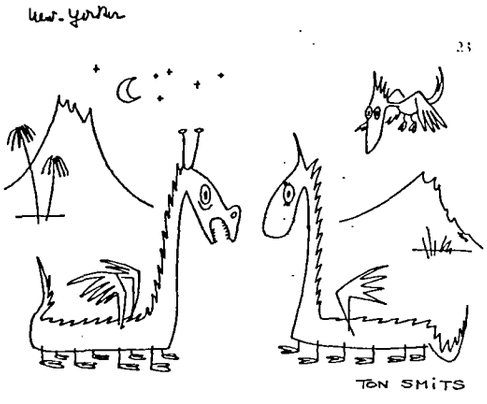
Visual media are also used by the Union in its educational programme. For instance, "See-at-a-Glance" panels for schools are now touring France, and have already been requested by the authorities and organizations in Czechoslovakia, Britain, the United States and Poland, while one of the Union's main pictorial exhibitions was used in a recent Youth Festival in Moscow.

And the Union's filmstrips—"Cherish the Hand that Feeds Us" and "Precarious Balance"—produced with the aid of UNESCO, are being used increasingly by teachers in many lands as valuable aids to classroom instruction.



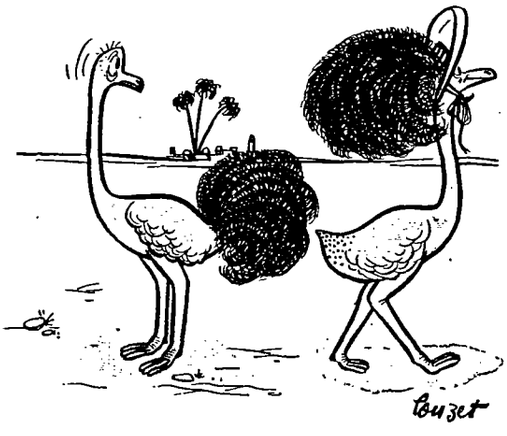
"How many times must I tell you not to ill-treat animals?"

© Pourquoi Pas?, Brussels



"All right, so you don't like me. But, remember, it's your fault if we become extinct."

© The New Yorker



Drawing by Pouzet

'FIRE & AXE' FARMING ON THE WAY OUT

by G. Watterson

Forestry Division, Food and Agriculture Organization

THE day of primitive agriculture in the jungle clearing is drawing to an end. In jungle farming, the trees were felled and the crops were planted. Then after a few seasons the soil fertility began to fall and by and by, the jungle cultivator moved on, the forest moved in and the soil slowly recovered its fertility.

But the impact of modern life is breaking down this traditional pattern of agriculture which has been followed for centuries in the tropical areas of the world. Once tribal wars and disease laid jungle populations low, so the little patches of cultivation in the ocean of the trees were small and infrequent.

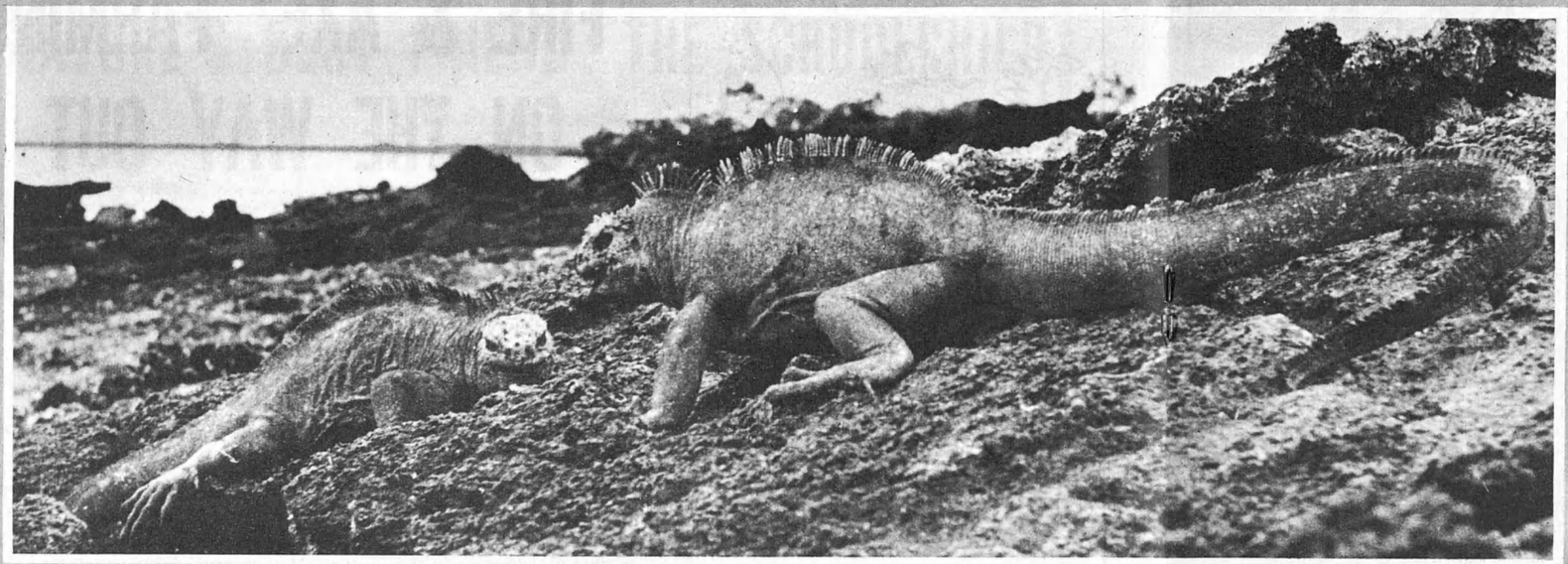
But modern medicine and suppression of intertribal wars are sending birth rates up and death rates down. So the jungle areas must support greater populations, and the people who live in the jungle are all trying to get more out of it than they once did. They are not producing only for themselves; they are producing also for sale in the towns and on world markets. The old leisurely cycle of cultivation and forest fallow is speeding up. The scars of cultivations in the jungle are hardly healed up before they are ripped open again for fresh cultivation. And the people who are cultivating these patches in the jungle are hanging on to their land a little longer trying to get a little bit more out of the flagging soil before they move on. Thus coarse grasses are springing up, stock are coming in and the natural regeneration of the land by the forest is being stopped altogether.

Deterioration of the soil in the tropical forests has not yet reached a very serious stage. But, unless early action is taken to counter it, it will be serious within a very few years. Now is the time for moderately simple action to avoid the necessity for very drastic measures in, say, ten or twenty years' time.

There are two or three very promising countermeasures being practised already against this type of forest deterioration. There is the "corridor system" of cultivation of the Belgian Congo, for instance. In the Congo, the Belgian Government, as an experiment, is requiring the jungle cultivators to clear their land in long corridors rather than haphazard patches. This ensures more rapid natural seeding of forest when the corridor is abandoned and a new one is opened up for the needs of the village. The authorities are also preventing the cultivators from overtaxing the soil by regulating the rotation of crops and preventing the one piece of land from being cropped too long.

Then there is the regeneration of teak forests in association with shifting cultivation which started in the Far East, where the people are encouraged to cultivate newly felled forest land for a period of 2-3 years as long as they plant young teak trees at the same time as they start cropping. When they move on to new land they leave behind them not bare earth but fresh plantations of young teak.

There is a common belief that jungle lands are brimming over with fertility but the falsity of this belief has become very apparent in the past few decades. If they are to continue supporting vegetation, jungle lands must be managed carefully and intelligently.

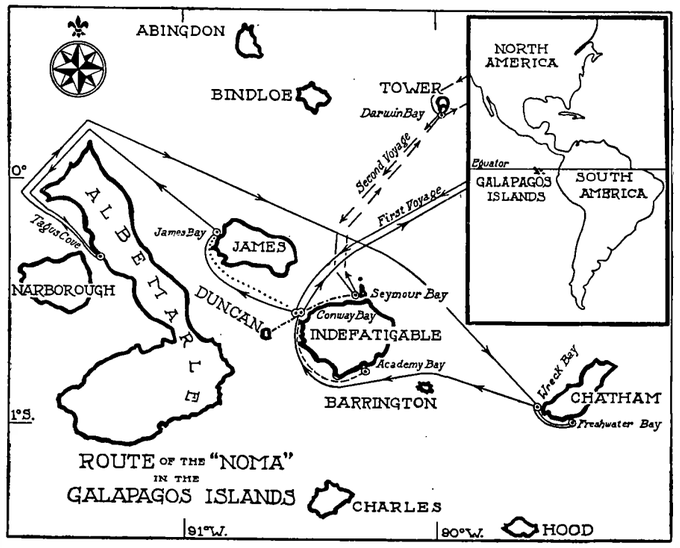


Photos © Eibl v. Eibesfeldt

REPTILIAN AGE seems to have returned to the earth in these photos of sea iguanas basking in hundreds on the rocks and cliffs of the Galapagos Islands (below). These iguanas, quite unknown elsewhere in the world, grow to more than three feet in length. Above, a bloodless "combat" during the breeding season. Loser (left) adopts submissive posture while victor remains in threatening one.

GALAPAGOS

'Enchanted Islands'



© 1924 G.P. Putnam's Sons, New York

'GALAPAGOS: WORLD'S END' was the title given by the American scientist and author, William Beebe, to the account of a two and a half months' trip he made in 1923 to one of the least-visited corners of the world. This map, taken from his book, shows the position of the island group in relation to South America and route around the Galapagos Archipelago followed by the yacht *Noma* in which Beebe and his party travelled.

In December 1831, the naval vessel *Beagle* left England for a five-year surveying expedition to South American, Australian and New Zealand coasts and islands. On board was a young man, just one year out of university, serving as unpaid naturalist to the expedition. Charles Darwin little guessed, as he sailed away, that he would bring back scientific material for a theory that would rock the world. Darwin devoted special study to the animals he found on remote islands, and on the Galapagos Islands, 600 miles from the coast of Ecuador, he made some remarkable discoveries. He noted, for example, that half the plants and birds were different from species in other parts of the world. About a third of the shore fish and nearly all the reptiles also differed. These variations helped to suggest to Darwin the theory of evolution set forth in his *Origin of Species*. The Galapagos Islands, which proved so fruitful for this research, had been discovered in 1535, and named from the Spanish word *galapago* "tortoise" because of the giant turtles found there. Since 1832, renamed *Archipielago de Colon*, they have belonged to Ecuador. The Galapagos are still a Noah's Ark of strange and unique forms of life, but because these are threatened by man and his domestic animals, the International Union for the Conservation of Nature has proposed that one island be set aside as a reserve and that a permanent station of biological research and conservation be established. Last July the Union and Unesco jointly sent Dr. I. Eibl-Eibesfeldt, of the Max Planck Institute für Verhaltens-physiologie, at Seewiesen, Germany, to investigate conditions in the islands. On the next page, Dr. Eibl-Eibesfeldt describes some of the amazing birds and animals found on this unique group of "Treasure Islands for Science".

CONTINUED ON NEXT PAGE

GALAPAGOS (Continued)

Wonders of a Noah's Ark off the Coast of Ecuador

by I. Eibl-Eibesfeldt

Max-Planck Institut für Verhaltensphysiologie
Sewiesen-Starnberg, Federal of Germany Republic

LIFTING its gaunt, grey lava ridges and peaks out of the Pacific, some 600 miles from Ecuador, is a group of islands whose shores are inhabited by some of the strangest animals in the world. They are creatures which have contributed more to the development of the natural sciences than all the rest of the fauna of Latin America put together. In 1835 they provided Charles Darwin with many of the facts from which he drew the ideas which he later presented in *The Origin of Species.*

The numerous islands, islets and reefs of the Galapagos archipelago have a total area of about 3,000 square miles. All of them were spewed up by volcanic activity and the highest of their volcanic cones tower over 5,000 feet above sea level. The flanks of these cones show gaping fissures from recent eruptions and are seamed and furrowed with dried-up streams of black lava. The sun-baked lowlands (the archipelago lies directly astride the Equator) are covered with a desert growth of cactus and thorn trees and only in the uplands is found the refreshing sight of green vegetation.

The Galapagos Islands were never linked to the continent of South America and all their plants and animals must originally have drifted to their shores or been driven there by great storms. On the basis of existing fauna, this is the only possible explanation for the scarcity of species on the islands. For example there is only one species of land snake and only two land mammals—a rat and a bat. If the islands had ever been connected with the mainland, so rich in animal species, the situation would certainly be different (1).

Those animals which succeeded in establishing themselves, developed, for the most part, into highly individual types and species which are found nowhere else in the world. Seventy-seven of the eighty-nine species of birds which breed in these islands are indigenous. The islands are the unique home of sea iguanas. These creatures, more than three feet long and looking like prehistoric "dragons," lie out in the sun in hundreds on the spray-blown cliffs and rocks. Among the colonies of iguanas, flightless cormorants hatch their eggs and penguins and sea-lions fish busily in the cool waters.

Here, the extraordinary sight of penguins (of Antarctic origin) and iguanas (denizens of the tropics) living side by side seems to be the most natural thing in the world. But what surprises a stranger to the islands most is the amazing tameness of the animals. Thrushes will fly to him and alight at his feet, and a hawk, out of mere curiosity, will drop down on a nearby boulder, so close that he can reach out and touch it. None of the cormorants, sea-lions or sea iguanas show any signs of fear—probably because no large beasts of prey exist.

Certain parts of the island ceased to be like the Garden of Eden as soon as the most dangerous of all living creatures—man—set foot on them. In past centuries buccaneers and whalers carried away whole shiploads of *Galapagos,* as the Spaniards called the giant tortoises, which soon became a rarity on most islands and in some places completely disappeared. The arrival of settlers during the last century only made matters worse, and the destruction was completed by cats, dogs and pigs that had run wild. In 1934 the Ecuadorian Government passed a law forbidding the capture of indigenous animals, and some islands were selected as sanctuaries. But laws are of little use unless they are enforced.

In 1954, twenty years after the enactment of these laws, I visited the islands with an expedition led by Dr. Hans Hass, of the International Institute for Submarine Research. I saw what wonderful possibilities the islands offered for biological research, but I was dismayed by the amount of damage that had been done to the animal population, which represents a unique scientific heritage. I reported the situation to the International Union for the Conservation of Nature and Natural Resources (I.U.C.N.) and suggested, among other things, that a Biological Research Station be set up, thus ensuring the presence of an official supervisory body which alone could stop the destruction of the animals.

The I.U.C.N. showed great interest in the project (as did several American institutions) and it approached the Ecuadorean Government. The Ecuadorean authorities approved the scheme and asked UNESCO to send out an expert to choose a site for the Biological Station, to make a preliminary "census" of the animal population and to suggest any new protective measures that might be required.

I was entrusted with this mission and when I left for the Galapagos Islands in June 1957, I was accompanied (thanks to the support of several U.S. organizations such as the Pan-American Section of the International Committee for the Preservation of Birds and the New York Zoological Society) by Dr. Robert Bowman of the University of California and also by a photographer and artist from "Life" magazine. In Ecuador we were given every facility by the authorities, including air transport to the Galapagos group, and the use of a naval patrol boat. This enabled us to visit nearly all the islands during our four months' stay.

The first and foremost fact we were able to verify was that good specimens of every characteristic species of the Galapagos Islands still exist. On James Island (also known as San Salvador, most of the islands having both English and Spanish names) we discovered a large colony of fur seals which were said to have become almost extinct. On Barrington Island, Narborough Island and on the southern of the two Las Plazas Islands we found large numbers of land iguanas. We even discovered some on Indefatigable Island where they were thought to have become extinct. But on Seymour Island we found no evidence that they still exist. This island was used as a military base during the war and the once numerous land iguanas were probably exterminated.

The giant tortoises, to which the Archipelago owes its name, are now extremely rare on most islands. It is worth noting, however, that on Chatham—an inhabited island— a few have survived despite the fact that they were thought to have become extinct here fifty years ago. We only came across larger

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(1) *Readers' attention is drawn to the* 1953 *Norwegian archaeological expedition to the Galapagos Islands, and the study published by Thor Heyerdahl and Arne Skjolsvold entitled "Archaeological Evidence of pre-Spanish visits to the Galapagos Islands", published in* 1956 *by the Society for American Archaeology—Editor.*

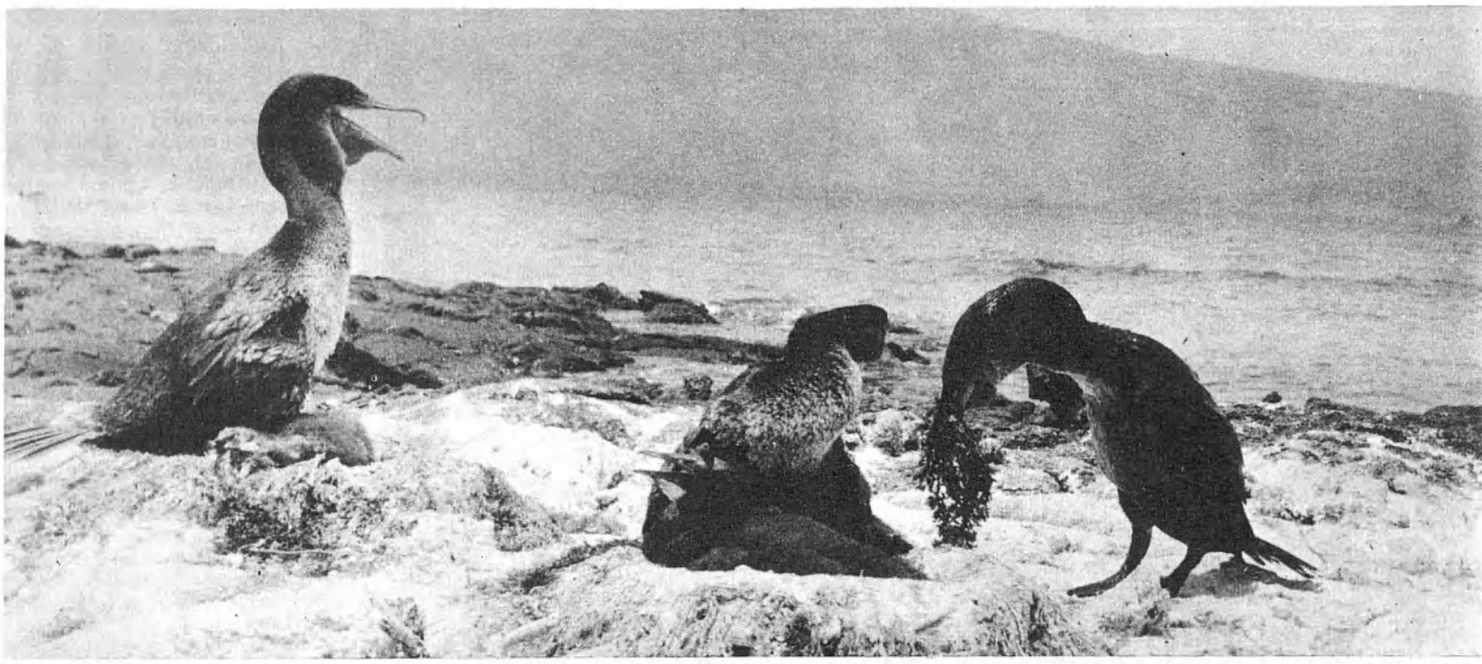
AMONG THE SEA-LIONS

Photos © Eiblv. Eibesfeldt

"On the small Las Plazas islands I found six sea-lions with battered skulls (lower photo). They were rotting in the sun and had not even been skinned," writes Dr. I. Eibl-Eibesfeldt, author of the article on the Galapagos Islands. This senseless massacre was all the more cruel, because sea-lions are the gentlest of creatures, as Dr. Eibl-Eibesfeldt has described in an account of how, for twenty-four hours, he was the guest of a family of sea-lions on the tiny island of Osborne. He writes : "There were a few signs of surprise when I moved into the middle of the herd, but no hostility. Just the same, the leader, an old male, seemed anxious when he saw me stretched out there and he came closer with a rather threatening air. When I stood up he probably decided that as I outclassed him in height, he would have to make the best of things and put up with me.

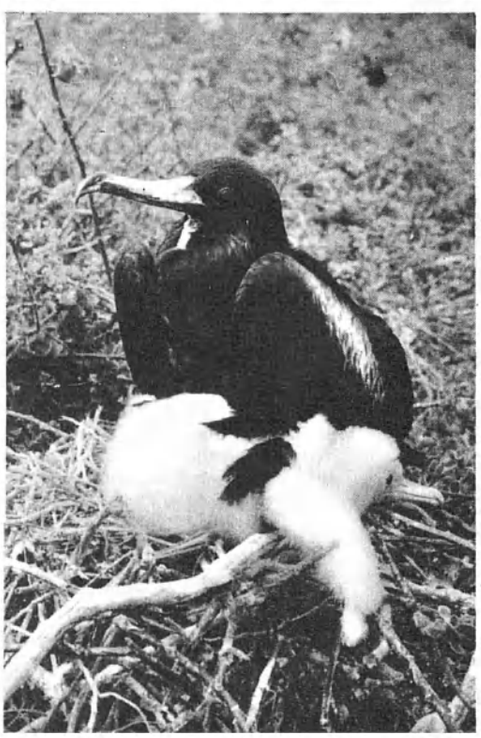
"Quietly I sat down again and soon they had all become used to me. A young female crawled up to my feet, nibbled at my shoes, looked at me for a moment with round eyes, then yawned and went to sleep. However, the rest of the beach was alive with games which both young and old seemed to be playing. They passed stones to each other, they squabbled, and the most agile of them played at hurdling waves in the surf. I started to throw pieces of wood at them, which they caught, threw up in the air themselves, and tried to catch again. There are no animals more playful than sea-lions. Only the big male proved to be an exception. Never relaxing his vigilance, he patrolled out to sea, carefully protecting his herd.

"Then came sunset, the shadows of the bushes lengthened, and the western sky turned a deeper and deeper purple. One after the other the animals returned to the shore, each one heading for the rock where it usually spent the night. But when the animals had found their accustomed places, one little sea-lion still remained alone. It had moved up and down the beach frantically searching from one herd to another. But its mother was not to be found so the poor little animal climbed as high as it could, and, raising itself up, it began to wail and utter heart-rending cries. Then to my surprise from out to sea there came a deep and soothing call. Galvanized into action, the little sea-lion rolled and ran towards its mother who was also hurrying to the shore. Soon it reached the shore and for fully a minute the two animals stayed there, affectionately rubbing their muzzles together.."



FLIGHTLESS CORMORANT with stunted wings found on Galapagos Islands, is the largest cormorant in the world. Parents take it in turn to seek food for their young. They have an unchanging procedure (above): the parent returning to the nest always brings a bunch of sea weed in its beak. The mate always greets returning bird by raising its head and uttering a special cry.

FRIGATE BIRD defends its young as scientist comes close to photograph a nest on Tower Island. Frigate birds have breast pouches which they can distend with air like huge bladders, until they are hidden from the front. Scientists have noted that when a ship appears the female frigate birds fly to it and swarm around the mast; the males, of a less curious nature, stay put.



GALAPAGOS
(Continued)

Giant lizards clash in chivalrous trials of strength

colonies of tortoises on Albermarle and Indefatigable Islands.

Our excursion to the tortoise country on the second of these two islands was an unforgettable experience. Setting out with a local guide we first made our way through the cactus belt. Prickly pears as high as trees and giant cacti bordered our path. Then at 300 feet above sea level the vegetation began to change; the cacti became fewer and fewer and were replaced by trees and shrubs. Finally we came to luxuriant, damp woods where there were Scalsia trees with green leafy tops crowning their straight, slender trunks, and Pisonia trees whose reddish trunks were overgrown with fern. Everywhere, long, dark green tufts of moss hung from the branches, and the wet and slippery soil was covered with ferns. The Galapagos Islands certainly offer a variety of contrasts. I know of no other place where a difference of a few hundred feet in altitude brings such a radical change in the landscape. A march of several hours brought us from the forest belt into a more open region. Fresh green meadows with clusters of trees stretched before us, and there in the twilight we came across the first bleached shells of tortoises that had been killed.

Next morning when we set out in search of the tortoises we discovered the track made by a giant one quite close to our camp. It led to a shallow pool where we found the beast lying in the water. It was a remarkable size—some eight feet around the body—and so heavy that four of us were unable to lift it. Then we found others, and at the same time we saw traces of the hunters who come here regularly for the sake of the tortoise fats. However, tortoises are now so plentiful on Indefatigable Island that their future seems assured. When the time comes for them to lay their eggs they move down to the coastal regions, and in the arid belt, a few miles from the sea, I found young tortoises, between four and six inches long. Unfortunately these young ones are an easy prey for the wild pigs which abound here.

From the zoological point of view and also that of scenery the most interesting of the Galapagos Islands is Narborough. Our experiences here made a vivid impression on our minds. The island has a giant volcano, its sides marked by flows of lava from recent eruptions, which rises steeply out of the sea to a height of 5,000 feet. There is a central crater several miles across, whose sides plunge steeply to a blue-green crater lake in which a second volcano in turn enshrines a lake.

But for zoologists the chief attraction is the coastal zone which is the home of the largest colonies of sea iguanas anywhere in the islands. Coming across these huge lizards sunning themselves in hundreds on the cliffs, the visitor feels he has been miraculously transported to the reptilian age.

These sea iguanas are only found in the coastal region. At ebb-tide they climb down from the cliffs and feed on the sea-weed uncovered by the receding tide. During the mating season, when the males become aggressive, their haunts are the scenes of the most curious fights. The males choose small areas where they live with a few females. If a rival approaches any of these reserved areas, the male "owner" tries to intimidate him, first by erecting his crest and opening his jaws, then by stalking round his adversary and repeatedly bobbing his head. If the rival does not withdraw a strange battle begins.

The two opponents rush at each other with lowered heads and, skull to skull, try to push each other out of the way. As soon as one of them finds the other is stronger he gives in and lies flat in front of the victor in a submissive posture. The other simply maintains a threatening posture until the loser retreats. It is like a knightly tournament of old, the two animals measuring their strength, but not harming each other at all. In behaving this way, they must be guided by an instinct for preserving their species, for if they were really to fall on one another with their sharp jaws, they would almost certainly be seriously injured. As it is, the weaker of the two animals, usually a young male, thus has the chance to mature. Chivalrous fights of this kind occur among many vertebrates.

It is also on the shores of Narborough Island that the two rarest birds of the Galapagos—the flightless cormorant and the Galapagos penguin—are found. The flightless cormorant is the largest cormorant to be found anywhere in the world. Its wings are stunted, showing that on islands where there are no enemies, a function can be lost without detriment to the species. Similar examples were provided by the dodo and the great auk. Now that these birds are extinct, the flightless cormorant is one of the few remaining examples of this phenomenon. I sat for hours beside the nesting hollows watching the parents taking turns to feed their young. The procedure was always the same: the bird which went to catch fish returned with the bunch of seaweed in its beak and gave it to the parent on the nest, this bird greeted its partner by raising its beak and uttering a special cry.

Narborough really seems like an untouched island. Land iguanas swarm in the interior and because there are none of the domestic animals which laid waste the other islands, the giant tortoises have survived here in great numbers. It is therefore vital that this island be declared a sanctuary, for even short visits by settlers or fishermen are likely to change things. For instance, on the small Las Plazas Islands, I myself found six sea-lions with battered skulls. Those who kill these tame animals do so for sport.

Apart from supervision, which would be an essential part of a conservation programme, education is the other main hope of remedying the situation. This seems likely to succeed, judging by the reactions of people with whom we came in contact. They were all proud of their islands even though they did not realize what extraordinary animals they had around them. For instance, they had no idea that the iguanas, which to them were such commonplace animals, were only to be found in these islands. When such things were explained to them, they were willing to learn more and seemed ready to help in the task of preserving these precious species.

The Ecuadorean Minister of Education has promised his support, and if the Biological Station can be set up soon, there is every reason to hope that the islands will, at least in part, be preserved in their natural state.

The Galapagos Archipelago is historically of great scientific importance, since it was its fauna and flora which more than anything else convinced Charles Darwin of the fact of evolution.

It provides indeed one of Nature's most clearcut experiments in evolution, and for this reason, and as a memorial to Darwin's great achievement, its flora and fauna should be studied, preserved and safeguarded.

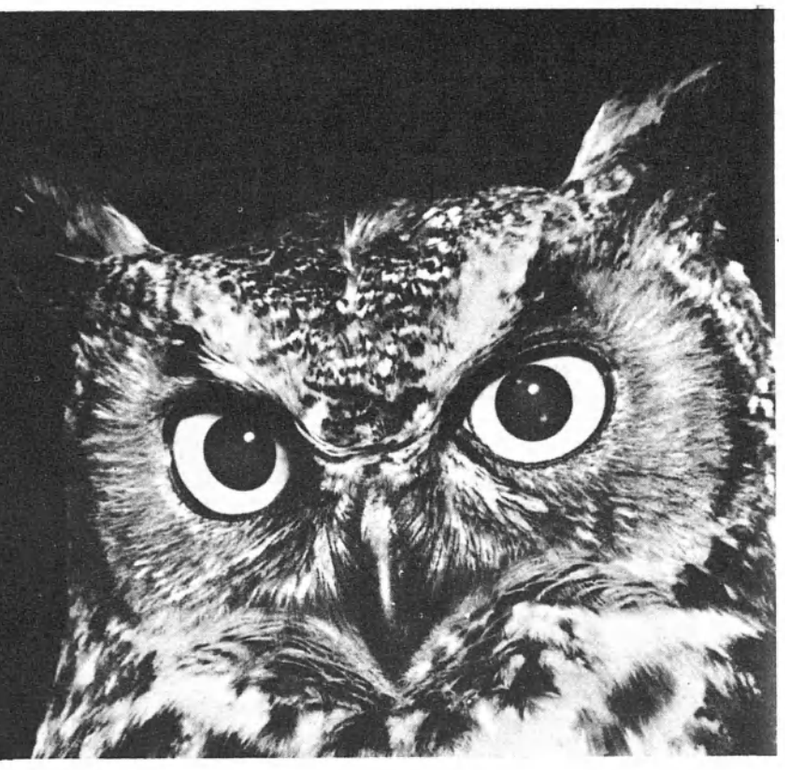
In addition, a great deal of research remains to be done on the ecology of the archipelago and on the details of evolutionary change on its various islands, and any results would be of outstanding interest, Accordingly, I hope very much that a permanent Biological Station may be set up on the Galapagos with a view to the scientific study and active conservation of their native animals and plants.

Julian Huxley

Harmful Animals
Are They Not Hidden Friends?

by Jean-Paul Harroy

Governor of Ruanda-Urundi
Former Secretary-General, International Union for the Conservation of Nature and Natural Resources



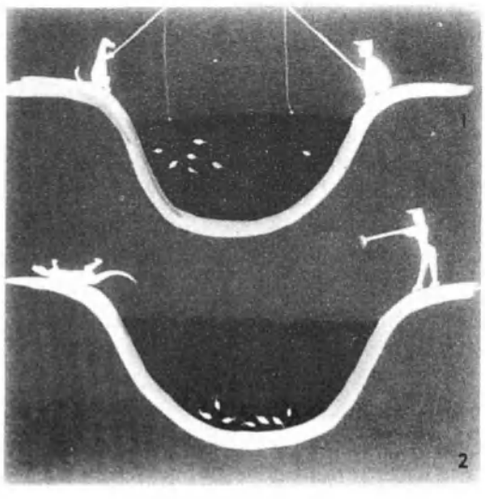
Since prehistoric times certain animals have been regarded as "harmful" and as such condemned to relentless extermination by every possible means. Sometimes the death sentence was justified on practical grounds. Beasts of prey were hunted down because they directly threatened man and his domestic animals. No one could blame our Neolithic ancestors for their determined and systematic war against the wild beasts which menaced their existence. Yet, until recently, some very different reasons have been invoked in condemning to death animals which in no way represented a threat to man. Superstitious beliefs which grew up concerning them or simply their physical appearance—repulsive to men's eyes—were sufficient to make them hated and to provoke the utmost cruelty towards them.

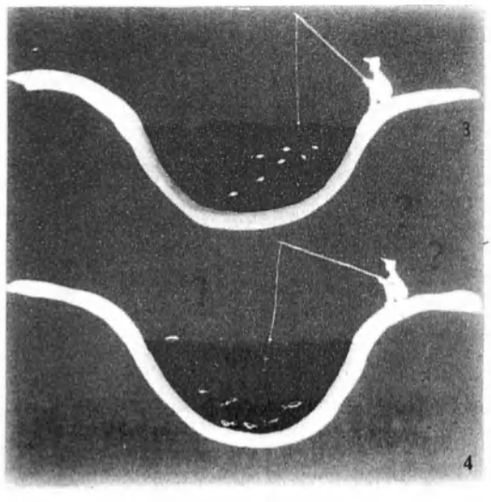
The most obvious example, of course, is that of the screech owl. Even today it strikes us as an uncanny bird with its muted flight, night-prowling habits and—to our ears—dismal, haunting cries, not to mention those sounds it emits which are said to resemble the death-rattle. It has long been regarded as a bird "of ill omen", and throughout the Middle Ages, and even up to the end of the last century in some places, these owls were crucified on barn-doors in Central and Western Europe as a protection against the Evil One.

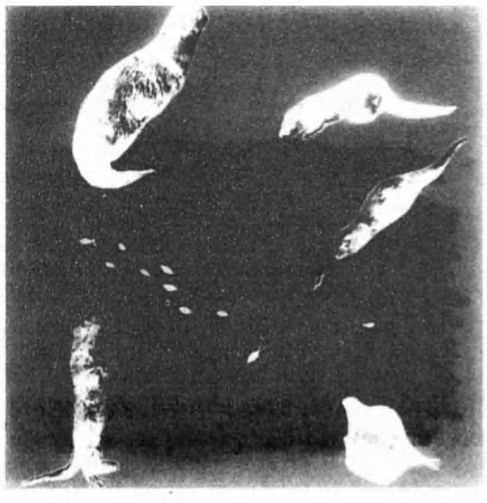
Yet the screech owl and other members of the owl family though the chief victims of such superstitions, were also the first to win rehabilitation. Peasants are shrewd observers of the workings of nature. What they saw of the owl gradually convinced them that whatever its supposed guilt in the realm of sorcery, it was more than making up for it in the more practical sphere of agriculture, by destroying rats, mice and other rodent-ravagers of the crops.

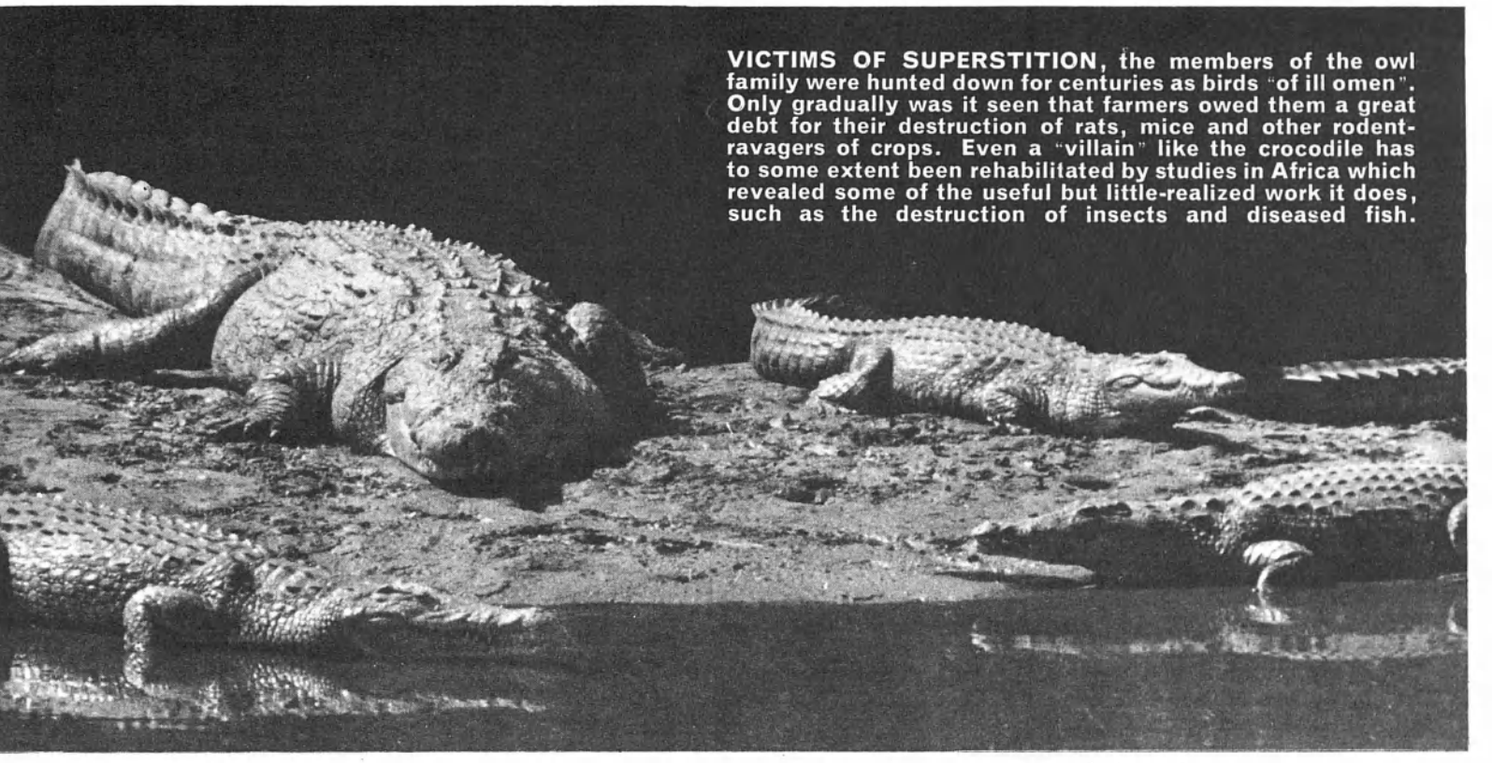
Thus was born the idea that even where an animal has been judged as harmful to human interests universally, there may have been a miscarriage of justice; that a fuller investigation may reveal it to be a friend of man. People were beginning to see that judgement should not be pronounced too hastily.

But this first rehabilitation did not immediately open the way to the modern theory of natural balance which maintains that every living creature has its part to play in the biological complexes—biocenoses, as ecologists call them—in which the removal of a single link produces









VICTIMS OF SUPERSTITION, the members of the owl family were hunted down for centuries as birds "of ill omen". Only gradually was it seen that farmers owed them a great debt for their destruction of rats, mice and other rodent-ravagers of crops. Even a "villain" like the crocodile has to some extent been rehabilitated by studies in Africa which revealed some of the useful but little-realized work it does, such as the destruction of insects and diseased fish.

© National Parks Board by W. F. Schack

effects which are nearly always unpredictable and in the long run harmful.

Until very recently game-laws of nearly all countries made wide use of such terms as "noxious" or "harmful animals", "vermin" and "pests". Laws of this kind still exist in some parts of the world, for instance in Africa, where beasts of prey, snakes, crocodiles and a few luckless birds and mammals can be destroyed by any means whatever, without possession of a licence. Fortunately, however, the idea is now growing that the vast majority of such judgments on animals should be reviewed because they have been based on superficial evidence.

In this respect, Africa itself has just provided a classic example of a complete reversal of policy. Until recently the leopard figured here on the "black list" of harmful animals and its destruction was encouraged by the authorities and actively pursued by all those who were able to do so.

The result was soon felt. Over vast areas the leopard became practically extinct. At the same time, wild pigs and baboons, whose young had previously been decimated by the leopard, increased so greatly that farmers found the destruction of their crops by these animals far more disastrous than the damage previously done in poultry-yards and sheepfolds by the leopards. Several governments, including that of British East Africa, have openly admitted their mistake and have transferred the leopard from the category of harmful animals to the list of protected ones—yet another convincing lesson, encouraging us to think twice before condemning.

In general, and for good or bad, sentiment still influences man's attitude to and treatment of animals. Public feeling aroused all over the world by the fate or a dog involved in the experiments conducted with an artificial satellite is a recent and striking example of this.

Another example is the basic difference of the reaction to the destruction of what are regarded as predatory creatures, according to whether they are vertebrates or invertebrates. In West Africa the crops are ravaged, to an extent which is catastrophic for the population, by flocks of birds, the *Quelea Quelea* or weaver bird, and by swarms of locusts. Faced with the famines caused by this repeated devastation, the authorities have resorted to measures which unfortunately must be brutal to be effective for the destruction of *Quelea* and locusts alike. Associations and individuals protested strongly against the mass killing of the birds but no one deprecated the slaughter of the locusts, probably because people still think of them as "the plague of Egypt".

Even so, in the twentieth century, with its rational outlook and increasingly planned and controlled economies, action taken on utilitarian grounds is yearly increasing at the expense of purely emotional behaviour.

The problem therefore is to determine the pertinence of these utilitarian aims and strike a balance between them. When the original reason for the verdict of destruction ceases to be the only factor under consideration, it may be found to be offset—or even more than offset, as in the case of the owl and the leopard—by other factors, favourable to human interests, but previously underestimated or unrecognized. Unfortunately, the precise importance of these factors is often revealed only when the species has been wiped out and the loss of its activity begins to be felt.

A practical illustration of this idea of striking a balance is given in an excellent pamphlet, "Predator Control. Why and

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THE OTTER AND THE FISHERMAN

Man frequently seeks to destroy a particular form of wildlife that he believes to be harmful to his interests, without thinking of consequences that may arise. In doing so he risks upsetting the delicate balance which exists between the four essential elements of his life and nourishment: water, soil, flora and fauna. The otter, for example, had a bad reputation as a fish robber (1) and in some countries fishermen began to destroy their rival (2). At first after the otter had gone there was fishing in plenty (3), but suddenly the fish started to vanish (4). Why? The otter had been catching mostly sick fish which had less chance to escape him. When the otter disappeared, sickness spread among the fish and destroyed many. (These drawings are taken from "Precarious Balance", a film strip prepared by the I.U.C.N. with Unesco's assistance.)

THINK BEFORE YOU STRIKE TO KILL

How", published by the Conservation Commission of the State of Missouri, U.S.A., in 1955 (Jefferson City; I. T. Bode, Director). "For instance," it says, "we might study the food-intake of a number of coyotes and find that of their total foods, they killed about $500 worth of poultry and livestock. But most of the rest of the food was mice and rats which, if predators hadn't eaten them, would have ruined $700 worth of crops. The answer seems clear: we have a $200 profit in those coyotes..."

This theoretical example, incidentally, is based on a proven fact. In 1953 the ranchers of the Toponas district of Colorado, U.S.A. embarked on a campaign for the extermination of coyotes. They abandoned it on discovering that the value of the lambs and calves whose lives were thus saved was less than that of the increasing damage inflicted on crops and grazing grounds by the rabbits and rats which now began to swarm over the district.

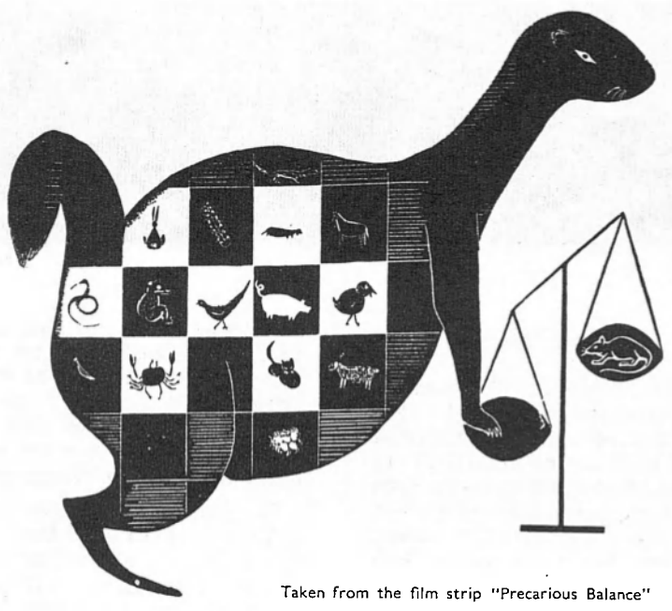
Which is the best policy: complete non-intervention, leaving carnivorous animals to do the useful service of killing off sick or crippled herbivora, or, on the contrary, the organized slaughter of a certain number of beasts of prey, to help hoofed animals to increase in number? So far, the biologists working in national parks and nature reserves have not yet agreed which is the best course to follow.

The otter is considered as an enemy by most fishermen. Yet in pools where otters were exterminated—in Poland, for instance—there was a decrease in the number of fish. Disease now spread more rapidly since the disappearance of the sharp-fanged beasts which had formerly caught and devoured any fish weakened and slowed down by infection. In Switzerland, where the otter had been classed among the so-called harmful animals which could be killed during part of the "close season" for other animals, there was a change of view and it was proposed to make the otter a "Federally protected" animal as had been done with the leopard in Africa.

In Africa, the crocodile is universally detested, but its status has still not been established to the satisfaction of ecologists. A recent report of the East African Fisheries Research Organization listed the useful work done by crocodiles (destruction of insects, shell-fish, predatory crustaceans, diseased fish etc.), though it concluded: "It is a great pity that they also sometimes attack human beings."

Science is putting more and more effort into weighing up these pros and cons. On Valcour Island, in Lake Champlain, U.S.A., a study following a costly operation to reduce the number of predators, showed that for the first four years the birds and small mammals increased in number. So did the popular "game"—grouse and hares. But once this period was at an end, disease became rampant and the numbers of animals declined rapidly.

Other research has little by little revealed the unsuspected usefulness of some much-abused species. The black cockatoo, hunted down in Australia because of the harm it does to shrubs, has recently been recognized for its value in keeping down the beetle known as the dendrophagous longicorn. This year the shark has been revealed as a prolific source of batylic alcohol, valuable in the treatment of certain pathogenic effects of radio-activity. The porcupine, another enemy of trees with a price on his head, is now said to be less of a criminal than was previously thought. The extenuating circumstances in his favour are that by stripping off the bark of young trees he carries out a process of "selection felling" and that in wintertime he is unintentionally useful to the deer by scattering the ground with vegetable refuse which would otherwise be out of their reach.



Taken from the film strip "Precarious Balance"

THE RAT AND THE MONGOOSE. In Jamaica, in 1872, the mongoose was brought into the island to kill off the rats which were causing serious damage to sugar cane plantations. Ten years later the mongoose had killed off nearly all the rats and, looking for new food supplies, it started to destroy lambs, kids, pigs, poultry, kittens and puppies. Then wildlife also began to suffer: the greater part of the island's fauna vanished into the hungry stomach of the mongoose. Eventually the mongoose killed so much that its own food supply was scarce and its numbers declined. The rat, meanwhile, had become a tree dweller and raised its families in safety. Thus a new balance was established in the midst of the destruction. And the rats were still there, for in three years a couple of rats may produce as many as 257,762 descendants.

Finally, I should like to mention two aspects of the campaigns or policies for the extermination of "harmful" species which may have greater consequences than the promotors intend.

One concerns the method of extermination. In many cases this is not specific enough so that in trying to get rid of real or imaginary predators, we also destroy species which are definitely useful, or seriously disturb some important natural balance. Traps and poison do not discriminate between harmless species and those they are intended to kill. The best-known instance of this is the large-scale spraying of chemical insecticides, which sometimes exterminate an entire entomological species—leading to the starvation of insectivorus animals—and are also harmful to crustaceans, fish, batrachia, birds and even mammals. Thus great damage can be done when only one "harmful" insect species is attacked.

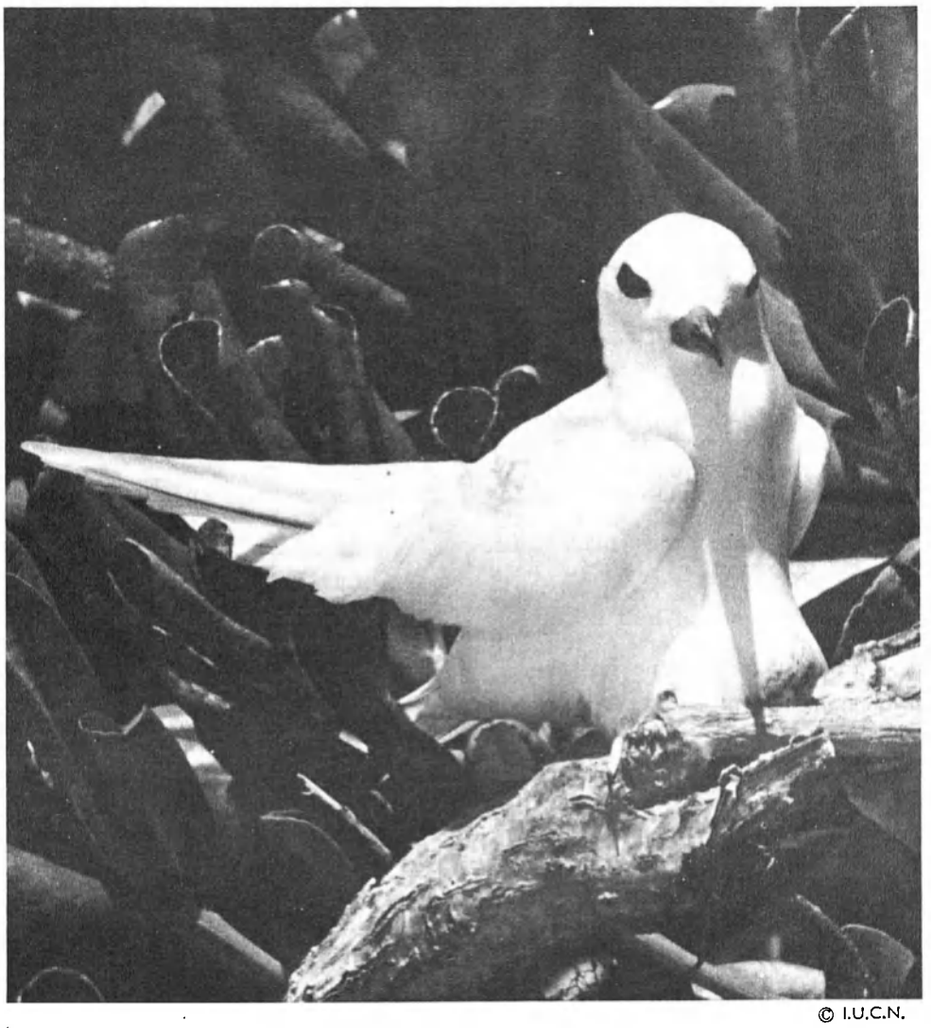
The other aspect which I feel should be mentioned relates to those campaigns to eliminate predators as a protective measure which are over-successful. After the predator has been eliminated from the biological cycle the numerical increase which was sought after for certain species is achieved. But in some cases proliferation is not impeded by disease. Is success necessarily a good thing?

There is the example of the Kaibab plateau in north-western Arizona, where, following the extermination of wolves and pumas, the deer of the plains have increased to such an extent that hundreds of them are now starving for lack of pasture. And without becoming involved in polemics, we might also remind ourselves that our mastery of the microscopic predators on the human race, since the time of Pasteur, is now resulting in a staggering and in many ways alarming increase in the world's population. Is mankind preparing for itself the fate of the Kaibab deer? Make no mistake about it, the question "Friend or enemy?" deserves some serious thought.

THE TALE OF THE GOLDEN EGG

Threats to Nature's delicate balance

THE roof over our head, whether made of brick, slate or straw, is an offering of Nature, and so are the walls that shelter us, and even the windows that let in the light. Whether we travel by stage coach or carriage as in the past, whether by the "iron horse" or whether in modern cars, now as then the materials are furnished by Nature, source of the iron, and the stone, the coal and the spark, the sand and the water. But Nature is a whole, a sum total of self-adjusting elements that intersect and depend on one another like the complicated wheels of a chronometer. These elements are held in a delicate balance, more or less unstable, each factor being linked with all the others. All that is required to destroy that balance is one element, one disturbing agent, one blundering interference. One fillip is enough to bring the card-castle toppling and to start a chain of repercussions that involve a series of unexpected catastrophes. The composition of a landscape, for example, is not a matter of chance. It is decided by the nature of the soil and the climatic conditions. These conditions, in their turn, bring about the appearance of whatever plant, whatever tree and as a result, whatever animal may find the environment there suitable for its needs. It all adds up to form an association in which the elements are intimately intricate.



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FLOURISHING FEATHER TRADE in the early years of this century led to millions of seabirds being killed in the volcanic and coral islets to the north-west of the main Hawaiian Archipelago. Since then many varieties of birds—petrels, terns, albatrosses—have been given protection in the Hawaiian Islands National Wildlife Refuge. Above, a fairy tern on its nest in the National Refuge.

Hippos raise fish crops

THE interrelationship of natural elements is illustrated strikingly by the role played by insects in pollination of plants. Certain industrial crops are entirely dependent on this. Without bees, our orchards would bear no fruit. The olive groves of Sardinia were sterile for an entire season after insecticides, spread to exterminate malaria mosquitos, had destroyed the bees in the region as well. The relations between living beings cannot always be foreseen, they are often linked in most unexpected ways. Who, for instance, would think of linking hippopotami, that live part of their mysterious existence in African waters, with fish farming? But they are valuable auxiliaries, especially in the case of East African lakes that are fed a relatively small quantity of water by their tributaries, where every plant and animal plays the role of a regulator. The excrements of the hippopotami fertilize the water depths, favouring the formation of phytoplankton which, for its part, nourishes the tilapias. These indigenous fish are widely used by large fish farming enterprises and supplement the protein so essential to the peoples of the African Continent.

Plundering and blundering

MAN himself is an element of Nature. It is normal that he should draw his own subsistence from the natural world. The complex mechanism that is called "natural balance" will be seriously hampered only when human levies on natural resources are mismanaged and

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MAN—THE SORCERER'S APPRENTICE

immoderate. The coexistence of living beings in a natural state takes place in accordance with biological laws governed by their vital needs. But man, through his ingenuity, dispensed with the rules that limited his population. He discovered hygiene and developed antibiotics, comfort and means of achieving it. He found ways of preventing infant mortality and of prolonging life for the aged. Consequently, the human population is growing at a fantastic rate: two and half billion today, four billion by the end of this century. It is hardly surprising that this rising figure should have serious repercussions on natural associations.

Dwindling fossil fuels

AMONG those resources which are indispensable to man, certain of them are not renewable. The exploitation of coal and oil and other products furnished by the mineral kingdom cannot be continued indefinitely without risking the exhaustion of the source. On the other hand, vegetable and animal living resources on which our lives are dependent, will renew themselves indefinitely on the condition that moderation and good sense govern their use. They must be used as shares and not as the appropriation of capital. The soil is our basic capital. The well-being of a country is linked with the few inches of arable land, formed of decomposed organic matter, and of soil nutrients. The farm produce which forms a large part of our economy depends on the thickness of this fertile layer, and so does the food for the livestock which is also part of the human diet.

Green anchors of the soil

WHERE man has inherited the land intact, it is the vegetation—forests or prairies—that anchors the arable layer to the base soil. This plant life has protected it against the violence of the elements in such a way as to balance the inevitable losses against the rate of renewal. Vegetation also contributes to the formation of the organic matter that nourishes the soil and helps the circulation of water and nutritive salts. It shelters the earth, especially in tropical regions, from the burning force of the sun which would oxidize organic matter, and render the top layers sterile. All forests contribute to the formation and renewal of humus. Trees hold the hillside soils and protect the shallow leached mould from the torrential tropical eroding rains. One of the most important roles played by forests is in stabilizing the water cycle. Vegetation facilitates evaporation. The roots then absorb precipitation moisture, allowing it to filter slowly through the soil feeding the underground water tables, and maintaining them at a high level. This process of percolation, aided by the vegetation which keeps the soil porous and permeable, takes place gradually. Thus, the forest earth becomes a reservoir in anticipation of dry spells. On the other hand, rain and snow held by vegetation and filtered through the soil will not swell floods by their volume, but, purified by their passage through dead leaves and humus, will flow crystal-clear into streams. The trees are thus one of the surest stabilizers of natural balance, controlling the supply of water under the ground surface as well as above it, channelling it to rivers and torrents. They are bulwarks against spring floods and summer droughts.

Science seeks living relics

FAUNA, too, is a valuable resource. Wild game has played a part in human economy since ancient times, and numerous peoples are still entirely dependent on it for food and clothing. Our own domestic livestock can be traced to certain wild species. In the isolated habitat provided by certain islands, ancient forms of vegetable or animal life have been able to survive, cut off and safe from the threat of large types of aggressive fauna and the competition of introduced species. These living relics offer remarkable testimonies to science and have formed a basis for studies in evolution. Darwin's observations on the finches of the Galapagos Islands inspired him in his revolutionary deductions. Australian marsupials have provided a curious phenomenon of evolution by convergence, and there is much that remains to be learned through their study. The Koala is among these marsupials. Hunters in pursuit of their fur have destroyed ten million on these bears in the short space of half a century. The loss of such subjects of research would be an irrevocable mistake.

Death of the land

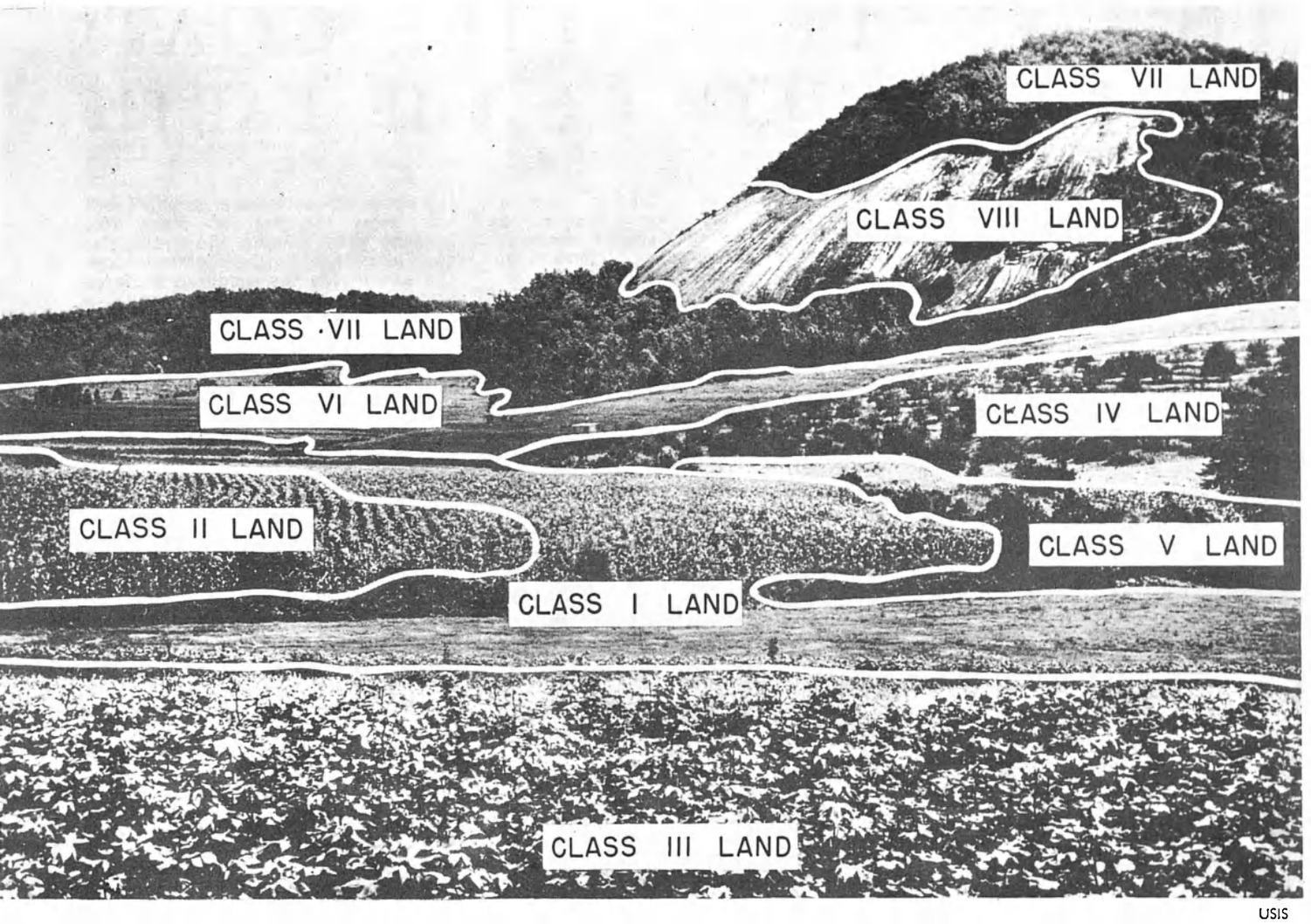
TO increase his crops and acquire more land to meet the ever increasing demands of a rapidly growing population, man clears new land, denudes it and exposes it to the intemperate elements, to heat, wind and storm. Rains wash the soil and rob it of mineral salts. The terrible process of erosion sets in. Erosion costs the United States alone around four thousand million dollars a year; in Northern China, vast territories, formerly forested, have been victimized by its destructive force. They have become useless expanses of dust and rock. The inhabitants of these areas find their only firewood by uprooting stumps left in the ground after it has been cleared. Nevertheless, in the 6th century A.D. the great philosopher Lâo-tseu had already warned his people against the tragic consequences that would arise from a policy of deforestation.

Deserts on the march

PAYING no heed to the inevitable consequences of their actions, the agriculturist and the herdsman push ever farther, one seeking fresh fields, the other new pastures. They burn the forest for it is the quickest and most destructive method. They leave behind exhausted and sterile soil and desolate landscapes, and they will push yet farther. This is one of the causes for the advance of desert land. Certain writers hold that the Sahara has encroached upon 300 kilometres of African land during the past three centuries. Once the forest has gone and the earth's green mantle brutally torn away, the soil is at the mercy of winds that carry off the valuable top soil. In the United States, this wind erosion carved out the "Dust Bowl". The exodus during the ensuing years is well remembered. The farmers were forced to leave the forbidding regions where there was no longer any land that would yield crops. Europe itself, though favoured by a mild climate, is now beginning to know the consequences of deforestation. Dust storms have occurred, notably in the vicinity of Hanover (Germany) where 30 per-cent of the surface of fields was carried off by the wind to such an extent that the roads were sometimes covered with about 15 inches of humus and sand. For the same reasons, other Eastern European countries are threatened with gradual transformation into steppes.

Incas' forbidden islands

THE old tale of the goose that laid the golden egg is still to the point. Peru's chief source of wealth is guano, a manure deposited by certain birds on Peruvian islands. Of these birds, the Cormorant is the foremost producer of this valuable resource. Guano was so important that even the Incas were well aware of its value, and punished by death any intruder who ventured to these protected islands without permission. Virtually abandoned for many years, the supply of guano replenished itself until a considerable stock had accumulated. Finally, in the middle of the last century, exploitation started on a large scale. The birds themselves were looked upon as harmful to crops and were driven from their nests by boys specially hired for



USIS

TREAT THE LAND RIGHT. The U.S. Soil Conservation Service's formula for sound land treatment and use is: Treat the different kinds of land on a farm according to their individual need or condition; use each kind according to its capability for continued safe and economical production. Each conservation measure is specifically designed to fit the land on which it is used. Taken on a South Carolina Farm, this photograph, shows eight different classes of land, each differing from the others in soil or slope, or both. The first four are those suitable for cultivation: (1) Requires good soil management practices only. (2) Moderate conservation practices necessary. (3) Intensive conservation practices necessary. (4) Perennial vegetation-infrequent cultivation. The second four classes of land shown here are those not intended for cultivation, but for pasture, hay, woodland and wildlife: (5) No restrictions in use. (6) Moderate restrictions in use. (7) Severe restrictions in use. (8) Best suited for wildlife and recreation.

the job. The supply was rapidly exhausted until at last, in 1909, the Peruvians decided to create a conservation society, "Compania Administradora des Guano", which is now a member of the I.U.C.N. Among the typical cases where the natural balance is destroyed, those involving the introduction of a foreign species into a new environment seem to react in the most unpredictable ways. In these cases too, man is the sorcerer's apprentice. Although often unintentionally, he introduces a plant or an animal into an environment where it is freed from whatever natural enemy controlled it in its original habitat and prevented it from reaching excessive numbers. The first step to avoid such dangers is to see that the general public understands the problems. An enlightened citizen will more readily respect regulations when the authorities impose them and will even encourage them when necessary. The I.U.C.N. has assumed this role of educator and informer as one of its primary functions. The message must be addressed above all to the young. Towards this end, the I.U.C.N. organizes or sponsors international camps for the study and protection of nature where young people of diverse nationalities can exchange ideas and share their experiences. The first of these camps was held at Houyet, Belgium, in the summer of 1952, and it has since become an annual event, held each year in a different part of the world.

Nature ignores frontiers

It is essential that the youth of the universe should realize that all nations aspiring to prosperity must recognize the great importance of conserving their natural resources. The International Union for the Conservation of Nature has spoken in the interests of a progressive transition towards new knowledge and new understanding for children in primary schools, in their relations with their physical and natural environment. It has strongly urged that the simple principles of the conservation of nature and natural resources be incorporated in primary school programmes in urban as well as rural areas. Nature ignores the political boundaries set by man. Regulations, if they are to be effective, often call for concerted efforts on an international scale. This applies, for instance, to the conservation of marine species, migratory birds, and to the prevention of pollution of the seas by oil residue, a practice that results in general pollution of coasts and coastal waters. Bathers complain of the black sticky residue that spoils the beaches and clings to the rocks, robbing much of the charm from their summer pastime. The fish suffer, the owners of pleasure-boats are dissatisfied and the sea birds perish by the hundreds of thousands. Unable to fly or to seek food, they are doomed to die from cold and hunger.

THE GENTLE LITTLE GOAT: ARCH DESPOILER OF THE EARTH

by

Raymond Furon

Assistant Director,
Muséum d'Histoire Naturelle, Paris
Member of the Académie des Sciences
d'Outre-Mer

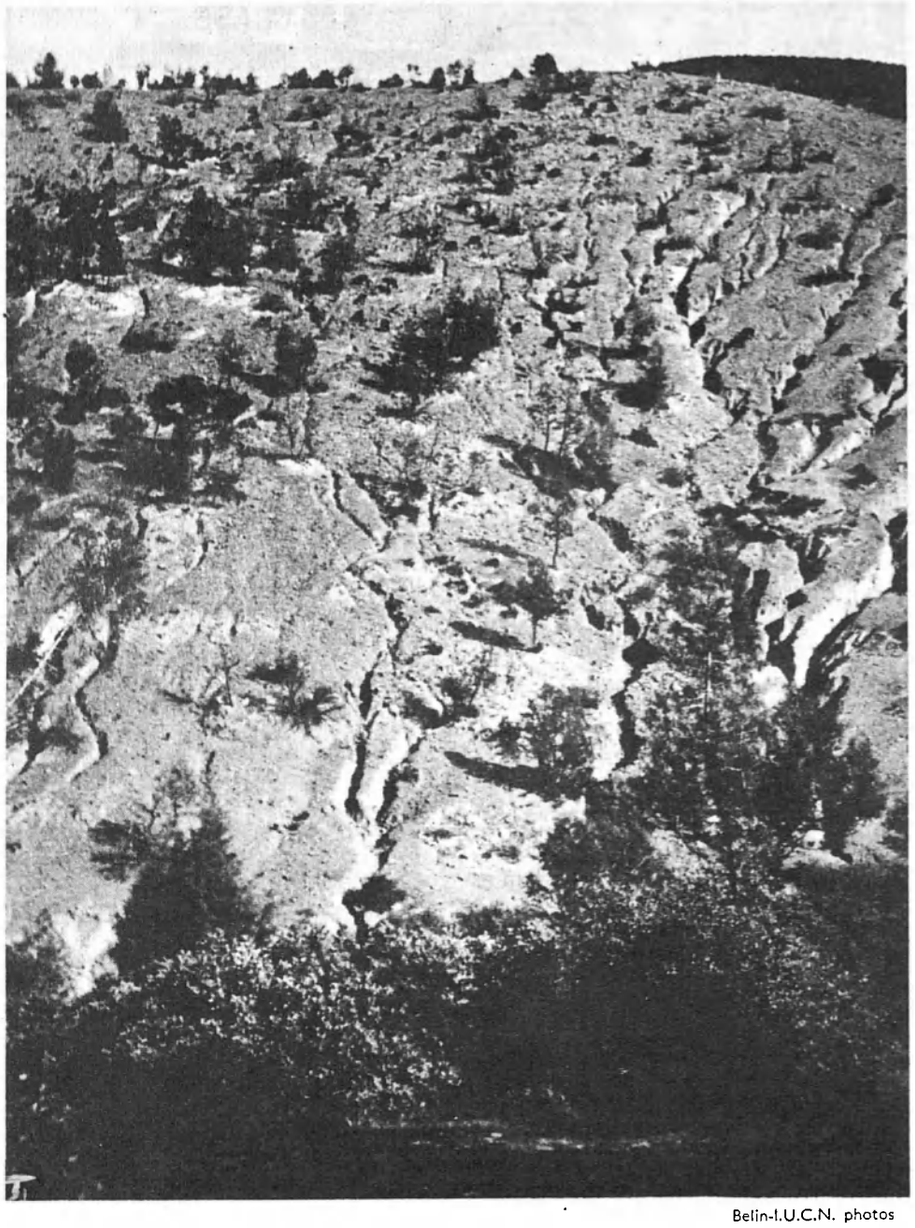
WHENEVER specialists meet to consider the question of soil erosion and its effect on food production the talk always comes round to a familiar, domesticated animal—the goat. You might well wonder what connexion there could be between such an unremarkable animal and great world problems like soil erosion and famine.

Consult an encyclopaedia and you will probably read: "Goat. A ruminant quadruped of the genus *Capra*. The common goat is found in all parts of the world ; it is easy to feed and valuable for its milk and meat. Goat-hair is used for weaving." At first sight the goat seems to be an outstandingly useful animal, making an important contribution to world food supplies.

Now consult some specialists in the field of natural resources—in particular those from UNESCO, the Food and Agriculture Organization and the International Union for the Conservation of Nature and Natural Resources (I.U.C.N.)—and ask them their opinion of the goat. Their unanimous conclusion : The goat is man's worst enemy.

It is largely due to the goat that the whole of the Mediterranean basin has been stripped of trees. Not content with grazing the grass, the goat tears it up by the roots and does the same with the seedlings of trees and shrubs, which never have a chance to grow and spread.

Worse still, the goat will stand on its hind legs to get at any low branches it can reach and even manages to climb some trees. No hillside is too steep to daunt this prodigiously agile creature, and no seedling, even if hidden under a small stone, escapes its voracious appetite. By thus destroying every trace of vegetation the goat exposes the naked soil, especially on hillsides, to rain and sun which quickly cause violent erosion.



Belin-I.U.C.N. photos

THE DESERT MAKER. It is largely due to the goat that the whole of the Mediterranean basin has been stripped of its trees. Not content with grazing the grass, the animal tears it up by the roots and does the same with seedlings of trees and shrubs, which never have a chance to grow and spread. North Africa in particular has suffered from the goat's insatiable appetite. In the Atlas Mountains its destruction of trees has exposed the earth to erosion by rain and wind.

Much of Spain has been stripped by flocks of goats and sheep—which of the two animals was the greater culprit and did the most damage will never be known—and much the same can be said for the entire Mediterranean area. Already in Roman times flocks of sheep and goats were driven up seasonally into the wooded mountains, which were gradually deforested. In the second century B.C. no less a thinker than Cato wrote : "If, owing to lack of water, you have no natural grass-grown meadow land, prepare some dry grazing-ground on the steepest possible slope." This bad advice was followed and resulted in the disappearance of the holly-oak forests which steadily receded as the ever-increasing flocks climber higher.

In North Africa the final ruin of the Berber country was brought about by the introduction of great flocks of goats. In Morocco the cedar tree is now rare, and no young cedars have been growing up since goats were established there. In the Western Sahara the Moors cut down the mimosas to provide easy feeding for their goats. A leading botanist, Auguste Chevalier, has described how these animals, not content with destroying the vegetation, "literally graze the soil, to get at the seeds of grasses and other plants which have been scattered over the surface and which might have sprouted during the next rainy season." The whole of Africa, from North to South, and including Madagascar, has experienced the same misfortune. In Asia the limestone mountains of Syria, the

Lebanon and Israel have been laid bare by goats whose ravages can be traced as far as China.

When expressed in general terms the tremendous damage done by goats is always received with a certain amount of scepticism. Some people defend the goat and call for an indictement of other guilty parties such as sheep, rabbits, opossums and all animals which can do serious harm to vegetation.

Naturally it is difficult to produce figures which reveal the damage done by goats alone, since the process has been going on for centuries. But, in the most suitable places for investigating the disastrous work of goats—islands—we find damning and irrefutable evidence.

Fodder for the sharks

We know that when the old-time navigators sailed away in search of virgin lands and unknown islands, they always took with them some domestic animals, especially goats, and that they left a few pairs in each newly-discovered territory. In uninhabited or sparsely inhabited regions these animals, once they managed to acclimatize themselves, ended by multiplying beyond measure. Outstanding examples are the horses of South America and the rabbits of Australia. Even more striking is the story of the goat.

The island of St. Helena, in the middle of the Atlantic, was discovered in 1502. It was entirely uninhabited and covered with forests. In 1513 the Portuguese brought goats there. Two centuries later these animals had almost completely destroyed the vegetation. In 1745 the Governor of the island complained of their devastations, forseeing the disappearance of the last patches of forest and in particular of a special ebony-tree. His complaint went unheeded and no action was taken until 1810, when the Governor had every goat on the island destroyed. By then it was too late ; for lack of protective vegetation the fertile soil formed from the volcanic rock had been swept into the sea by erosion, leaving a naked, sinister crag.

Charles Darwin in the 19th century reported that the Juan Fernandez Islands in the Pacific (from 1704 to 1709 one was the home of a shipwrecked Scottish mariner, Alexander Selkirk, on whose experiences Daniel Defoe based his story of Robinson Crusoe) had formerly been covered with sandalwood trees. These had now nearly all been destroyed by goats, the only remaining trees being on some uninhabited islets. The situation on these islands is today so serious that when the I.U.C.N. met in Caracas in 1952 it asked the Government of Chile, to whom the islands belong, to protect the remaining vegetation by destroying all the goats.

In Cyprus the goats carried on the work of destruction on whatever remained of the forests after the depredations of the Phœnicians and those who followed them.

In the Hawaiian Islands goats have become such a scourge that children organize drives in which the animals are chased down to the beaches to be killed and thrown to the sharks.

All these are specific and documented examples which admit of no argument. These are well-known islands and their vegetation has been destroyed by goats—and by goats alone.

AGILE AND VORACIOUS, the goat will not only stand on its hind legs to get at any low branches it can reach, but even climbs into a tree of the right shape and devours its leaves. In Morocco cedar trees are now rare and no young cedars have been growing up since goats were taken there.

Man is also to blame

Responsible people long ago realized that the goat was a dangerous animal. In 1636 the Parliament of Provence in France decreed that goats were no longer to be allowed to enter the woods, which had already suffered heavily. But public resistance was so stubborn that the act of Parliament was repealed in 1731 and replaced by another law, far less stringent and therefore ineffectual.

The solution to the problem is a very simple one: the complete extermination of goats in the most seriously threatened districts and the proper supervision of flocks in areas (if any still exist) which can still sustain them without danger.

Many specialists would like to see the goat become extinct, except in zoos. This, the ideal solution, is in fact unattainable because it fails to take account of certain facts.

The goat behaves not only in accordance with its nature, but is also a domestic animal, belonging to man and wreaking destruction wherever man leads it. A goat tied to a stake in the ground can do little or no harm. A flock of goats in a valley meadow will do scarcely more damage than a flock of sheep. But a flock of goats roaming freely over a mountain district where the vegetation has already suffered will end by ruining it completely. So a way must be found to limit the rights of the owner of such a flock and prevent him from maintaining it at a cost which spells ruin for the land.

The obvious answer would seem to be a law or regulation to fit the case. Laws do in fact exist in some countries but are generally not respected and goats thus ravage the countryside without any official efforts being made to prevent them.

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In North Africa, in the Sahara and in the territories south of it,

GENTLE LITTLE GOAT *(Continued)*

flocks of goats are still destroying vegetation, including new plantations made by the Forestry Departments. To bring all the culprits to book would call for legal action on such a vast scale that the Administration has had to forego imposing penalties.

Highlighting the facts about erosion and the part played by goats has made no impression whatever on the people it primarily concerns whether they be goat-owners, politicians or senior government officials. From Madagascar come these striking official figures. About 1936 the Administration introduced Mohair goats into the south of the Island. There were a thousand of them in 1937, 23,000 in 1946, 147,000 in 1948, 203,000 in 1949 and 276,585 in 1950. Already the goats have transformed a number of areas into desert.

Thrice-proven guilt

WHAT proof do we have that the extermination of goats would be a beneficial thing? The same question has been asked about the rabbit whose ravages have been widely verified by agricultural and forestry experts. When myxomatosis suddenly reduced the number of rabbits, the I.U.C.N. made a survey (Edinburgh, 1956) which proved quite definitely that vegetation had improved since their numbers had declined. In the case of the goat, three equally convincing experiences can be cited—in Cyprus, Venezuela and New Zealand.

In Cyprus, at the request of the Forestry Department, the local Government passed an "Anti-goat" law which came into force in 1914 after its purpose had been widely explained to the population.

There was no question of exterminating goats by official decree, so the people were consulted. The Government promised to pay for the goats and to provide cultivable land. In any village where at least ten owners of land and goats favoured slaughtering the animals, the local leader called a meeting of all goat-owners, explained matters to them and asked them to vote for or against the destruction of the flocks. When a majority agreed, the number of goats was reduced and the remaining ones were kept tied to stakes. During the Second World War submarine action in the Mediterranean menaced food supplies by sea and the island had to become largely self-supporting. The anti-goat law was strictly enforced despite many protests. Its good results are now self-evident. Reafforestation is proceeding normally and the reduction in cultivable land has halted.

Venezuela's example comes from the area of the Tacagua river-bed, which runs between Caracas and La Guaira. This was once a prosperous district as can be seen from the ruins of many farms and mills. In 1934 it had lost all its inhabitants and the forests had disappeared from its hillsides. By 1947 the situation was catastrophic and natural balance had been completely destroyed. As Professor Francisco Tamayo explained to the I.U.C.N. congress in Caracas in 1952, for three quarters of a century the goats had been at work destroying everything that had survived the woodcutters.

Then the Venezuelan Forestry Department set up an experimental station in the area and began reafforestation. Its first demand was that all goats should be banned from the area, and a law was passed prohibiting the presence of flocks on any land with a slope of more than 1/7, and prescribing heavy fines and imprisonment for recalcitrant goatherds.

The Government agreed to buy up the goats and between 1948 and 1952 it paid for some 16,000 belonging to 77 families living in the area. In three years there was a great improvement, thanks to reafforestation and the re-growth over the area of self-seeding grasses which were no longer devoured by the herds.

In a report from New Zealand, written in 1954, Mr. G.G. Atkinson describes how the Mount Egmont National Park was invaded around 1920 by goats which farmers had imported ten years earlier to destroy the brambles which hindered crop cultivation. Campaigns to wipe out the goats went on from 1926 to 1943 and altogether over 15,000 were slaughtered in the National Park. To put an end to any further danger the farmers also killed off their goats. Mr. Atkinson declares that even a single goat left at liberty is a national danger. Following similar ravages in the Kermadec Islands (which belong to New Zealand) the Royal Society of New Zealand intervened to demand the extermination of the goats there.

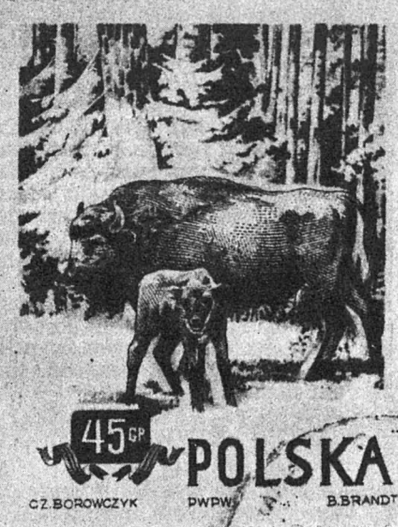
World panic would help

I HAVE said enough to show that goats are a great danger because they are one of the chief destroyers of vegetation and therefore the cause of soil erosion which threatens mankind with famine. Experience shows however that efforts to convince people of this fact have met with no success. When pressure has been put on them the reaction has been so strong that governments have been forced to give up this method too.

Mr. Tracy Philipps, Secretary-General of the I.U.C.N., has reminded us that the word "panic" derives from the name of Pan, the Greek mythological goat-legged god of flocks and shepherds, who it was believed, ran through the countryside at night, spreading terror. It would be a good thing if the people of today (all three thousand million of them) became panic-stricken just at the thought of goats.

I myself believe that our main effort to arouse people to the danger of the goat should be made in schools for here young people do believe what they hear from their teachers. Thus, in a few years' time, young men and women, more aware of realities than their parents, will be ready to propose or accept stringent laws for the extermination of the goat.

Crested penguins are among the wildlife depicted on the stamps of French Austral and Antarctic Territories (Crozet Islands). Penguins are protected in several reserves, in particular those of the Kerguelen Islands.



European bison, now greatly reduced in numbers, is shown with its calf on this Polish stamp. Now protected in Polish and Russian reserves, they are showing signs of recovery.

Yugoslavia, where these three stamps were issued, has done much

STAMP COLLECTORS' WILDLIFE ALBUM

by C.W. Hill

THE value of postage stamps as vehicles for all kinds of campaigns has long been recognized by both governments and stamp collectors, and one of the most worthwhile purposes for which special stamps have been issued is the protection of the world's living creatures.

As long ago as 1851, the Canadian Post Office issued a stamp whose design featured a Canadian beaver and since then hundreds of stamps of many countries have depicted animals, birds, fish, flowers and insects.

Improved methods of production and the strong preference shown by modern stamp collectors for pictorial designs have led certain enterprising postal authorities, including those of Switzerland, Roumania and the Soviet Union, to issue stamps on which animals and flowers are depicted in their natural colours. Among the most striking of these have been the Yugoslav series which in recent years have shown animals, flowers and herbs, and fauna of the Adriatic Sea, all in accurate colour.

Both the United States of America and Canada have been taking urgent steps to conserve their wildlife and as part of their campaign several attractive stamps have been issued. The whooping crane, one of the rarest birds in the world, is paradoxically one of those best known to stamp collectors, for a Canadian stamp of 1955 and an American stamp of 1957 both featured whooping cranes in their designs. The king salmon and the pronghorn antelope have also appeared on American wildlife conservation stamps, while the sad-looking countenance of a mountain goat and the hardly less solemn-looking ones of a musk-ox, a walrus and a moose, are among the animal portraits which have appeared on the stamps issued by the Canadian Post Office each year to mark National Wildlife Week.

Another country which is alive to the necessity for preserving its wildlife is the German Federal Republic. Only recently to support International Animal Protection Day, the Post Office of the Federal Republic placed on sale two special stamps. One, bearing the inscription "Protect the Birds", portrayed a robin, and the other, inscribed "Protect the Flowers", showed a water-lily in natural colours.

Real educational value is to be found in the beautiful stamps of the Portuguese colonies of Angola and Mozambique, on which are depicted the exotic birds, fish and butterflies to be found there. Equally beautiful are the tropical flowers shown on many stamps of the Belgian Congo.

Many collectors have forsaken the old method of collecting the issues of a certain country or group of colonies. Instead they collect stamps whose designs illustrate a favourite theme, regardless of the country of origin or the date of issue. The stamps which depict the wildlife of the world form one of the most interesting and attractive themes and the world will be so much the richer if the message conveyed by such stamps is studied and accepted by stamp collectors and non-collectors alike.

Three stamps issued in France in connexion with the opening of a travelling exhibition, "Man Against Nature", organized by the Museum d'Histoire Naturelle, Paris with aid from Unesco and the International Union for the Conservation of Nature.

Three animals from the Galapagos Islands—the sea-lion, a giant tortoise and an iguana—figure on three of these four stamps issued by the Republic of Ecuador to commemorate the I.U.C.N.-Unesco mission which visited the islands in 1957.

to protect its wildlife by a special conservation law passed in 1946

and also by the setting up of national parks and local reserves.

From the Unesco Newsroom...

VERSATILE AS A BAMBOO: The bamboo tree which has been traditionally used in Indonesia to make anything from water containers to musical instruments has now a new career ahead of it in some of the country's science teaching centres. It is one of the many ready-at-hand materials which are now being used there to construct low-cost laboratory apparatus. Hammers, other tools and nails on a modestly priced list of equipment are being supplied to schools and with their help—and some ingenuity—bamboo sections can be converted into pumps and other kinds of apparatus. This is all part of a new trend in Indonesian science teaching reported recently by a UNESCO technical assistance expert, Dr. H.H. Grantham of Canada, on his return from a mission to Indonesia. Science teaching methods now stress learning by doing instead of sitting and listening.

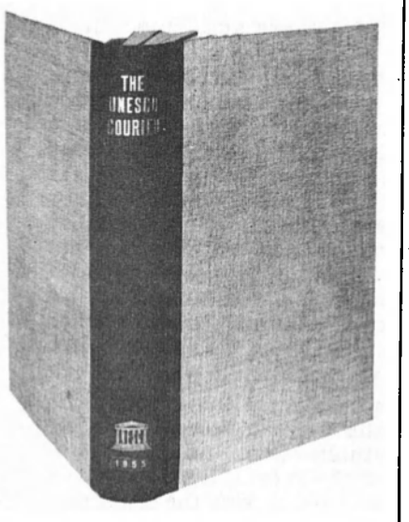
■ **FREE FLOW OF INFORMATION:** *Belgium, France, Luxembourg and the Netherlands have become Contracting Parties to the* UNESCO *Agreement granting duty-free entry to a wide range of educational, scientific and cultural materials. These four countries, which have been applying the Agreement provisionally by decree, have now deposited formal instruments of ratification. This action by the four countries follows a 52-nation conference which met in Geneva last month to review application of the Agreement and encourage wider adherence to it. Twenty-six countries now apply the Agreement which grants free entry to books, newspapers, magazines, works of art, maps and music scores.*

COLOUR REPRODUCTIONS: Art albums and colour reproductions serve the plastic arts as gramophone records and radio serve music, or the printing press serves literature. Few individuals have the means to purchase original works of art and, in fact, there are entire peoples whose only chance of getting to know the art of the last 100 years is through reproductions. UNESCO has rendered an important service by publishing in recent years art catalogues listing paintings for which high quality colour reproductions are available. The latest UNESCO catalogue lists 992 paintings for the period 1860 to 1957 and thus brings up to date a previous volume covering the years 1860 to 1955. The catalogue gives the artists' dates, places of birth and facts about the original painting such as catalogue number, title, medium of the original and exact size ; the process used in reproduction, the printer and the publisher and price of the reproduction. ($4.00 ; 20/- (stg) ; 1,000 Fr. fr.)

■ **GUIDE TO STUDY ABROAD:** *Volume IX of* Study Abroad: International Handbook of Fellowships, Scholarships and Educational Exchange, *published annually by* UNESCO *is now available. It gives full details on over* 75,000 *awards offered in* 1957-58, *including where to apply, who is eligible, field of study, length of courses, amount of award, etc. This* 840*-page guide can be obtained from* UNESCO *national distributors (see page* 35). *Price:* $2,50; 12/6 *(stg);* 750 *Fr. frs.*

AMATEUR PHOTO CONTEST: A photographic competition which is open to young people in Europe is announced by the German National Commission for UNESCO in collaboration with "Photokina" (International Photo and Cinema Exhibition, Cologne). The competition which closes on March 31, 1958 is based on the theme "How We Live", and will comprise the following photographic subjects: *Youth at work*, including school and apprenticeship activities, and young people working on their jobs; *Youth at play*, including organized spare-time activities (sports, youth clubs, etc.) as well as personal pastimes and hobbies. Prizes will be awarded to participants from each country. All young people up to the age of 25 are eligible to enter the competition. Photographs should be 5½ by 7½ inches (13 by 18 cms) in size, black and white, glossy, or colour prints. For detailed information, photographers should contact their own National Commissions for UNESCO.

■ **IGY FILM/TV SURVEY:** *During the International Geophysical Year film and TV cameras are busy recording the many aspects of this world-wide scientific research. Because it is difficult for any single country to cover the vast scope of operations,* UNESCO *is making a survey of material being prepared in its Member States, and passing the information to TV stations all over the world so that exchanges of programmes and films can be made directly. Fifteen countries have so far prepared films or have productions in hand. At the end of the* IGY, UNESCO *will gather* TV *and film documentation to prepare a film record of the international effort as a whole.*



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Letters to the Editor

AUTHOR-ARTISTS

Sir,

I read the August issue ("Famous Authors as Artists") of THE UNESCO COURIER from cover to cover and enjoyed every page. It's a first-class, unique issue—perhaps the subject can be pursued further. We have a place in a small town called Swanton, in Vermont. I've arranged to give our back copies of THE UNESCO COURIER to the editor of the local newspaper in the hope that he may find ideas and information. The paper covers all the northeastern section of Vermont, and so has a fair coverage. When he finishes with the copies he will turn them over to the local library. Again, congratulations on the August issue.

Rowena Ferguson
Montreal, Canada

Sir,

In the August issue it is stated "...it is indeed regrettable that no edition of Alice containing Louis Carroll's own illustrations is available to the public today." I don't know whether you are aware that in 1929, Messrs Dent published in Everyman's Library an edition of *Alice in Wonderland* (and some other pieces) with the author's own illustrations. It may be out of print now, but I have cherished a copy for years. I enjoy each issue of THE UNESCO COURIER very much indeed.

Mary F. Moore
St. Annes-on-Sea, England

Sir,

I have read with great interest your issue of August, 1957. I am interested in obtaining the works of some of the many foreign artists who are completely unknown in this country. I would like to begin this programme by presenting the work of Rabindranath Tagore in some of my exhibitions. I would like to prepare an entire show about the poetry and drawings of this great poet who is almost completely unknown here in this country...

Harold James McWhinnie
The University of Chicago, U.S.A.

Sir,

I should like to say with what pleasure I read the August issue. It was a delight to the eyes and left me with a lasting impression of enriched knowledge. My own feelings are shared by several of my friends who are assiduous readers of your magazine. Nowadays there are so many undertakings which seem to aim at lowering and debasing the public taste. The cultural standard maintained by your magazine is therefore a source of comfort and re-assurance to me. I have, however, had one small disappointment. As a native of Geneva I was sorry that you did not deal with the works of Rodolphe Toepfer. I know you have not room for everything, but I would like to suggest that you devote some space in a future issue to this strange and sometimes little-known author. His works have sociological aspects (*L'Héritage*); anti-militarist ones (See the indictment against "armed force" in *Le docteur Festus*) and broad international scope (*Voyages en zig-zag:* in France, in Italy and elsewhere) which would certainly interest you.

J. D. Candaux
Geneva, Switzerland

Ed. Note. Rodolphe Toepfer was, in fact, referred to in Bertha Gaster's article "Famous Authors as Artists", in company with G. B. Shaw, Winston Churchill, Ibsen, Anatole France and many other famous author-artists, of whose works lack of space prevented more than a mention.

CREATIVE TRANSLATIONS

Sir,

In THE UNESCO COURIER of June, 1957 ("Great Literature of East and West") I read "Poetry loses much of its charm in translation..." Statement as rough as that creates at least one opening for a number of THE UNESCO COURIER on types and art of translation. Hop on it! Happens that I can name a dozen translations that created as well as the original writer did. The translation, of course, involves much more time and study and genius than the original writer used. As a matter of fact, in many cases the translater can be placed beside the writer as a genius of equal credit. Seems to me, unless someone like you doesn't point it out, the fact will not be recognized in this age. Maybe with desperate jobs ahead of all of us, including surviving at all, it might not matter at all. And yet, you are dedicated otherwise.

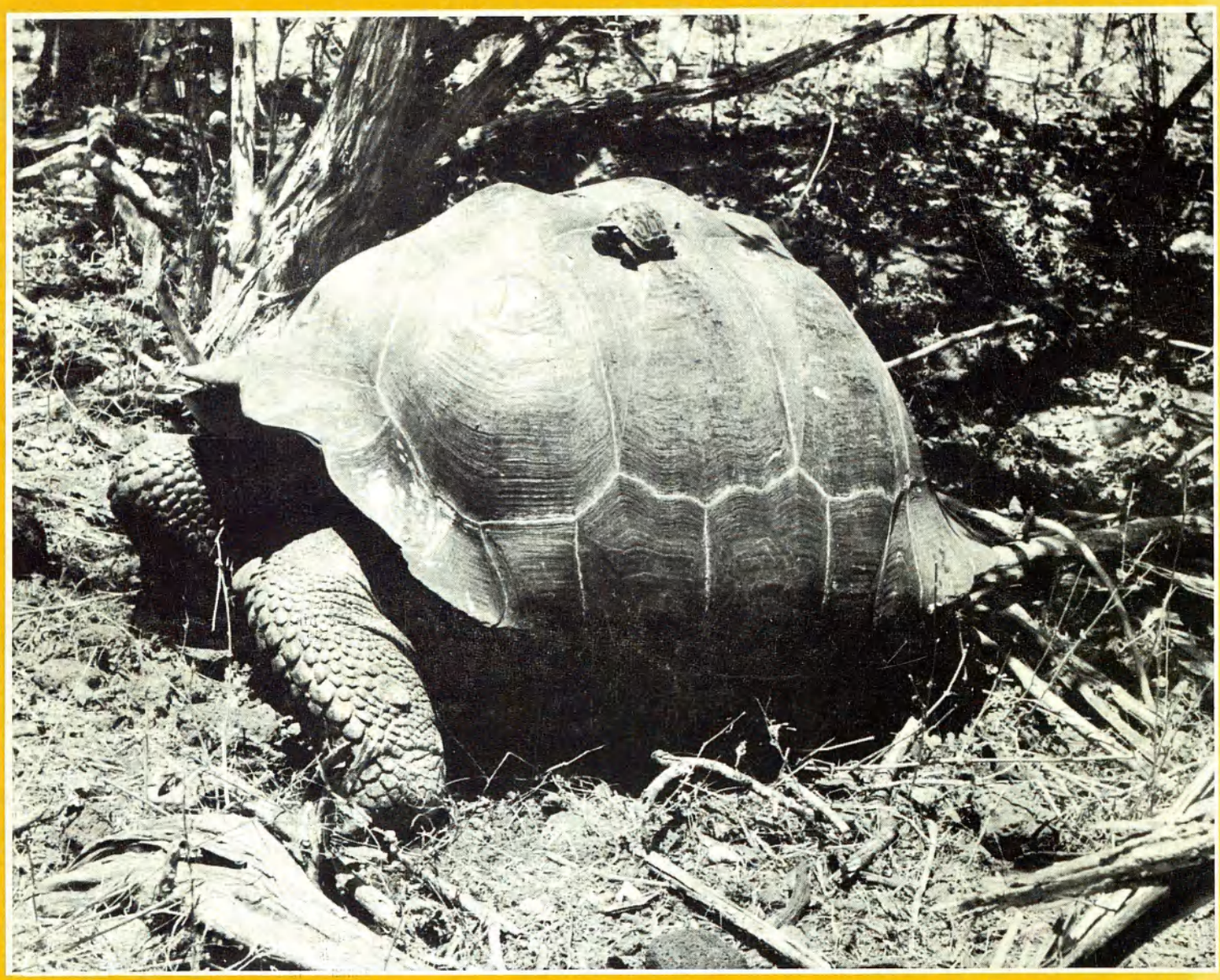
Don Round
(boatbuilder, workman, linguist, student, cynic, old man in ill-health, traveller, seaman)
South Colby, Washington, U.S.A.

VALUE OF SCOUT TRAINING

Sir,

I read with great interest in your October issue the article, "High Intelligence—Asset or Liability" by W. D. Wall. I am surprised he makes no reference to the value of scout training in overcoming defects of which we are all aware. The patrol system gives the young scout an appreciation of the fact that it is not the stripes which make him a leader, but his own personal example... The badge system gives him a wide background of practical experience to counter the narrow specialization which so often prevents him from fully applying his knowledge. The Scout Law and the Scout Promise provide him with a foundation on which to base his life... You refer to the particular dangers among the "able members of a developing but still primitive community educated abroad". In these places the old scouts do not generally suffer from unwillingness to do manual labour. Many come to this country [England] on scholarships and for some, a course at Gilwell Park (International Training Centre of the Scout Movement) is obligatory. The sight of a general, the leader of a big business or a high-ranking civil servant doing the chores in the morning is a great shock at first but they learn a lot.

Rowallan, Chief Scout,
British Commonwealth and Empire,
The Boy Scouts Association,
London, England



IN THE KINGDOM OF THE GIANT TORTOISE

The Galapagos Islands, 600 miles from the coast of Ecuador, are a kind of Noah's Ark, among whose animals are some which exist nowhere else in the world. One of these unique species is the giant tortoise, after which Spanish explorers named the islands. In the days of sail, mariners caught these tortoises by the hundreds and dumped them in the hold where they lived without food and water until needed. Many of the other animals on the Galapagos, which had no fear of man, have been slaughtered indiscriminately. In the past 100 years, scientists, of whom the most illustrious was Charles Darwin, have gathered a rich harvest of knowledge from this Pacific archipelago. The disappearance of any of the species which dwell there would therefore be an irreparable loss for science. Recently a joint mission was sent to the islands by Unesco and the International Union for the Conservation of Nature to investigate the present state of the animals and to suggest ways of protecting them. Photos show, above, a giant tortoise (some live to be hundreds of years old) with a three-year-old specimen placed on its back for purposes of comparison ; left, a tortoise "turned-turtle". **(See page 18)**