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The Zoo Story

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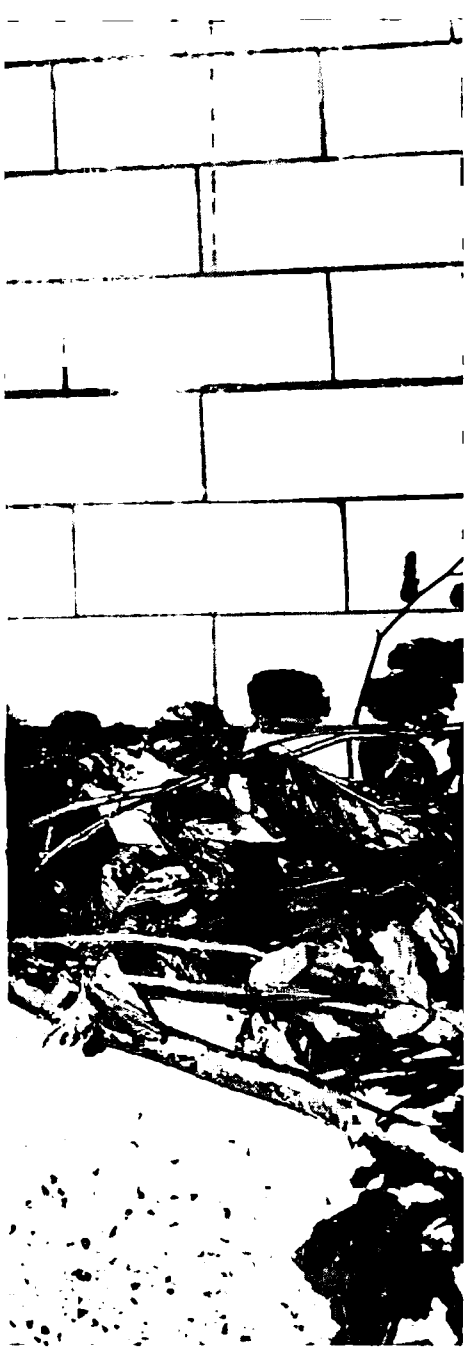
The zoological park extends the reality of the biosphere into the architectural badlands of the city limits



Virtually extinct in the wild, the Mongolian, or Przewalski's, horse, above, breeds successfully in zoos. Since gorillas destroy the more fragile habitat, they are often housed in tile-walled pens, left. Some zoos are replacing these with equally durable, but more natural, enclosures.

There are eight times as many known paintings by Rembrandt as there are whooping cranes and California condors together, and it is safe to say that more living Americans have seen the work of this seventeenth-century Dutch painter than one of these spectacular native birds. But rarities aside, how many people living in Chicago or New York have ever seen a wild otter, a fox, or an American elk? How many have seen a bullfrog, a box turtle, or a ruby-throated hummingbird? A proportionately decreasing number of Americans will ever see any wild animals outside of zoos. This is a bleak, unpleasant prospect. But it is difficult to dispute and has many implications: one is that the role and development of zoos are worth a new look.

In the crowded city the zoo provides an exceptionally diverse area within the relatively homogeneous municipal environment and introduces more living variety into the city habitat. It extends the reality of the biosphere into the unnatural architectural badlands of the city.

Last year zoos and aquariums (to save words, I will call them both zoos) recorded nearly 90,000,000 visits in the United States. This figure surpasses the attendance at any other kind of cultural institution and greatly exceeds the combined attendance recorded at all national baseball and football games.

It does not take forceful persuasion to get children (or adults) to visit the zoo. (In fact the zoo is one of the first places truant officers check for absent school children.) Few people go to the zoo to get educated; they go for fun. But there is no law that says education and recreation must be mutually exclusive. This is the advantage of visiting a zoo, for it is almost impossible there to miss the lessons we have to learn from wild animals.

One of the most significant roles of zoos is that of providing visitors with some feeling for the importance of wildlife protection. While there seems to be a growing awareness of the inherent beauty of wild creatures, it is surprising that the realization that many wildlife species are close to extinction has not yet fully penetrated the consciousness of modern societies. An interest in wildlife does not usually receive the social approbation, or confer upon its possessor the social status, accorded to a patron of the fine arts. A bronze stag by Barye is considered by many to be an esthetically compelling object while the stag itself is not. Although my own view may be overly biased, I suspect that an intellectual

involvement in the protection of wild animals may yet be recognized as the highest form of estheticism. In any event, a concern with the maintenance of a beauty that is not created by man is a highly civilized and altruistic form of artistic appreciation. William Beebe, when curator of birds at the Bronx Zoo, expressed it this way: "The beauty and genius of a work of art may be reconceived, though its first material expression be destroyed: a vanished harmony may yet again inspire the composer; but when the last individual of a race of living things breathes no more, another heaven and another earth must pass before such a one can be again."

Many of the endangered species that are listed by the International Union for Nature and Natural Resources are now being bred in zoos. The International Zoo Yearbook census records the 1967 breeding of 51 species of endangered mammals, 21 birds, and several reptiles and amphibians. Included are the births of fifteen orang-utans and the hatching of six Galápagos giant tortoises. Without captive collections, for instance, there would not be any Père David's deer or European wisent or Przewalski's horses. Several more birds would be almost extinct.

The stories of man's few captive wards among the long lists of animals that have become endangered in recent years are not as well known as they should be. The Père David's deer, for example, was evidently a resident of the plains of northeastern China. But it had probably been extinct there for more than a hundred years when the French missionary-scientist Père Armand David became the first Westerner to see them in 1865. He found a herd living within the walled Imperial Hunting Park near Peking. Beginning in 1869, a few of these great, grotesque deer began trickling into Europe's zoos and this proved to be the species' salvation for, in 1900, during the Boxer Rebellion, European soldiers slaughtered all those that remained within the Imperial Park. Although the fortunes of the European herd rose and fell as the continent was torn by World Wars I and II, there were 152 alive in 46 collections by 1967. A few had even been returned to China as a gift from the London to the Peiping zoo.

The Mongolian, or Przewalski's, horse (last of the true wild horses) is now extremely rare if not extinct. The animal once ranged through southwestern Mongolia and northeastern Sinkiang. Present captive herds are descended from 28 animals collected during a special expedition commissioned by England's Duke of Bedford and sent to Mongolia by the famous German zoo enthusiast Carl Hagenbeck. Although collections at the Duke of Bedford's estate and elsewhere failed to maintain themselves, thriving herds were built up at the Munich and Prague zoos and were carried through the World Wars. In 1960, the International Przewalski Studbook, established to insure the purity of the wild animals, which interbreed readily with domestic horses, recorded 59 captive Przewalskis. The 1967 census records 147 specimens in thirty-five collections. The opportunity to view these endangered creatures, to see living representatives of species extinct, or nearly so, in the wild speaks well of the zoo's preservationist role.

Most biologists agree that national parks offer the best practical solution for preserving wild animals, but not all parks can be kept permanently inviolate. Outside pressures may change the ecosystems in even the largest parks, as witness the effects of water diversion at Florida's Everglades National Park. Even the most optimistic field conservationists point out that more animals are almost certain to be added to the extinct or vanishing lists within the next few decades. The hope is that at least a few of these animals will be tided over this period in man's history when he seems unable to con-

trol either his population or his devastating consumption or the pollution of all that surrounds him.

We would still have passenger pigeons and Carolina parakeets if zoo animal-management techniques had been up to their present level at the turn of the century. In fact, both species were bred in zoos a time or two: but neither received sufficient attention. It seems likely that the great auk, the dodo, the elephant bird, and the various moas could also have been maintained in captivity had remnants of their populations survived to the present. If they had been, I suspect they could now be reintroduced in reconstituted and managed parks in their homelands.

I am not suggesting that the zoo is an adequate substitute for wilderness or that zoo herds are a substitute for preserving animals in nature.

In an attempt to produce captive progeny, the London and Moscow zoos brought male, left, and female pandas together. A male gorilla, below, displays aggressively before his intended mate—typical behavior whenever these animals are joined for the first time.

It would be an ironic distortion of our purposes if the existence of endangered animals in zoos were used as an excuse to diminish the support needed to preserve their wild populations. But the zoo does seem an appropriate center for the promotion of conservation efforts. Until recently, "zoo" was a bad word to many conservationists, perhaps because of the feelings of some that zoos contribute to the decimation of wildlife or that confining an animal is cruel. Insofar as I can determine, zoos have not been a significant factor in the reduction of any wild species with the possible exception of the orang-utan. But even the orang suffered far more from hunting, habitat destruction, and collecting for pets, circuses, and special scientific purposes than from zoo collecting. Nevertheless, the American Association of Zoological Parks and Aquariums became so concerned over the deteriorating condition of the orang-utan population that in 1962 they began self-imposed boycotts of the big primate. An AAZPA committee, headed by John Perry of Washington's National Zoo, watches over the trade and attempts to head off improper importations. The Wild Animal Propagation Trust has set up another committee, composed of zoo administrators, that strives to increase captive breeding of orangs. Males of proved potency are now shipped around the country to formally arranged assignations with ladies of their kind in one zoo after another. The zoo association has also voted boycotts of other species that, it is felt, zoo collecting might endanger.

However, the zoo trade is but a fraction of one per cent of the live animal business. In 1967, wildlife importations into the United States alone (according to a Department of Interior news release) included 74,304 mammals (of which 62,526 were primates largely for laboratory use), 203,189 birds (not including canaries, parrots, or parakeets), 405,134 reptiles, 137,697 amphibians, and 27,759,332 fish. By contrast, the total number of all the vertebrates in all the zoos in the world is approximately 500,000 and many of these are captive bred.

If it is contended that any confinement or restriction of freedom

is cruel, then zoos may be justly condemned. But in a similar way schools, church classes, social stratification, and lack of money are also cruel. It seems to me that captive exhibition per se is not cruel, but that poor captive exhibition may be. It would be as foolish to deny that there are poor zoo exhibits, ill-suited to the needs of their subjects and those of their viewers, as it would be to deny that there are poor schools, hospitals, and churches. Every zoo in the world has bad cages, but there is also an increasing and continuing effort to improve them.

Poor exhibition of captive animals is very difficult to define, for there are so many specialized creatures with so many different requirements. Further, the human concept of cruelty is sufficiently ambivalent as to defy rational description. I happen to be especially interested in frogs, but no matter how badly they are cared for in pet shops or zoos, I have never heard anyone complain about their treatment. One must not beat a dog, a cat, or a horse, but we complain relatively little about the comparable (if necessary) stress wild monkeys or rats receive in the normal course of laboratory study. We complain about a zoo birdcage as being too small to allow its occupants to migrate, then go home and whisper sweet nothings to our pet parrots or myna birds confined in cages where they can scarcely open their wings. No one thinks anything of allowing some freshly caught bass or trout to flop its life out on the bank or in the creel, but both the local police and fire departments will respond to a call to rescue a bird-hunting cat stuck in a tree. If zoos were to provide whole carcasses for their big cats and eagles to feed upon, someone would probably stop to complain about this implied cruelty on his way to pick up a steak at the butcher shop.

Dacca, the Bronx Zoo's famous tigress, was bred in the zoo, lived there for 20 years while producing 32 fine cubs, and spent her entire life in an indoor cage that measured 15 by 16 feet and an outdoor cage approximately 20 by 25 feet. Frankly, I think these cages are too small, too homogenous, and too unattractive to be good exhibition from the standpoint of animal well-being or visitor enjoyment and education. But Dacca's good temperament, near world-record longevity, and marvelous breeding record, as well as her large following among zoogoers and staff members, belies my opinion. Her cage was larger than many other tiger cages, where big cats have also done well and smaller than many where tigers have done less well.

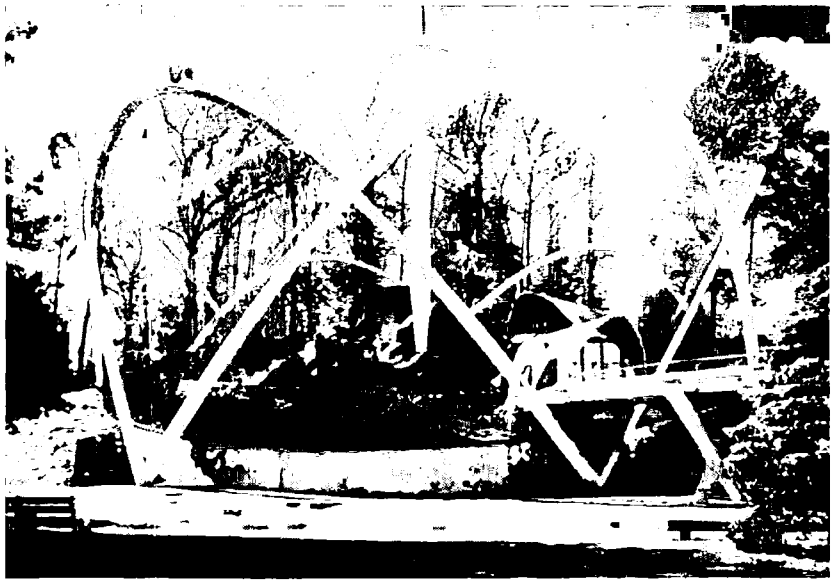
Few people realize that the expression "free as a bird" is generally a misnomer. For wild creatures are captives of their requirements, their adaptations, and their environment. In the wild, a prairie chicken needs prairie or something very close to it. He is limited there by his food and nesting requirements and by his specialized defenses against predators. When his prairie "cage" is destroyed, he dies out with it whether or not a hunter ever fires a shot at him. It is curious that no one ever thinks of habitat destruction in terms of cruelty to animals.

When wild animals breed consistently, rear their young, and attain good longevity, I think we may infer that their confinement, even though it may not meet our anthropomorphic precepts of optimum space, sunshine, or opportunity to chase and kill prey, is not cruel. However, there are numbers of local and roadside menageries, pet shops, and animal-dealer compounds where animals are so crowded, so poorly housed, or so badly cared for that captivity is ever afterward associated in the viewer's mind with cruelty. National laws and standards must be promulgated to eliminate this wild animal suffering. It is disgraceful that a people that lavishes so much attention upon the well-being of dogs and cats, pays so little to the plight of delicate wild animals. In good zoos, captivity is rarely cruel even if not ideal.

The zoo profession seems to be growing constantly more critical of its own past efforts in exhibition and animal maintenance. Until recently, many zoos competed in a sort of species race, each foolishly attempting to have more kinds of "mugwumps" or "fiddlesaurs" than their competitors. The large number of cages dictated that each enclosure be

small. Often only one representative of a species was shown so that more room could be made for showing more species. Social groups and mixed displays, except among hoofed animals, were not common. The zoo merely tried to show its visitors what kinds of animals there were rather than demonstrate where or how they live. Relatively few animals were bred. I have been told that at least one of my predecessors thought breeding animals in a zoo a little bit questionable if not indecent.

Attempts at providing "natural habitat" exhibits, using a simulated section of some portion of the animals' home area, are still relatively rare—and for a good reason. Imagine trying to prepare a museum-type habitat for a living family of gorillas. Live plants and trees and anything else that could be destroyed would be out of the question. This helps explain why we often house such animals in tile-walled cages that look like giant bathrooms.



The modern walk-in aviary at Washington's National Zoological Park is among the newer structures being used in zoos. European wisent, left, are displayed in a natural habitat in East Berlin.

If a zoo animal is to be seen, there must be some restrictions on display space, especially if its lighting, temperature, and humidity must be controlled. And, like man, wild creatures are subject to myriad diseases. Sanitation is a necessity: cages must be cleanable. Yet the "lavatory type" of exhibit so distorts the impression of the animal, its adaptations, and its place in nature that it proves unfair to the zoogoer. A group of gorillas sitting in one of these tile-walled monstrosities is scarcely more meaningful, as a wild animal exhibit, than a picture window on a community privy, and gives a poor idea of what a gorilla looks like in the wild. The animal should be seen, if possible, against a suggestion of the forest to which evolution has adapted him, not disenfranchised in tile and concrete.

Recent developments at Tucson's Arizona-Sonora Desert Museum and at the Bronx Zoo show that indestructible, cleanable, and realistic zoo habitats are within reach. A fiberglass jungle-floor exhibit in the Bronx Zoo's monkey house has withstood the wear and tear of a large and prolific family of mandrill baboons for more than three years. Although the cage is too small to be ideal, its fiberglass trees and simulated lichen-covered rocks give a far more meaningful view of the baboon than a tile-wall cage could ever essay. In bird and reptile exhibits, live plants and even open-fronted displays and "walk-in" cages are increasingly better employed in several zoos. The Bronx Zoo's aquatic bird exhibit has four open-fronted displays where only low railings separate viewer and viewee. The birds seem to know that the best place to be is in their exhibit where there are plants, water, and food and which is usually kept lighter than the public space. Because some of the zoo's less disciplined visitors might get the same idea, closed-circuit TV monitors viewers at such installations.

Traditional presentations of animals, in related groups, are now being supplemented by thematic presentations embracing ecology, zoogeography, and even animal behavior. A fine example of an innovation in behavioral exhibits is found in recent zoo expositions of nocturnal animals. Until 1960, when the Bronx Zoo's Joseph Davis began experimenting with red light, few zoos had attempted to solve the problem of exhibiting that great proportion of the world's mammals that sleep all day and become active at night. Generally such animals as bush babies and flying squirrels were seen only as lumps of unmoving fur that evidently lacked habits and even faces. But by brightly lighting these exhibits with white light at night and

with red light during the zoo visiting day, the activity cycles of these creatures were successfully reversed. It is a pleasure to look at a bush baby actively looking back in many zoos today. In the spring the Bronx Zoo will open a whole new building, entitled the World of Darkness, based upon this activity reversal scheme.

The actual management of wild animals in zoos is undergoing intense study, as is their exhibition. The bond between the animal keeper and his charge is an especially important one. Effects of reduced behavioral opportunities in captive animals and the importance of sociality are also receiving special attention. The need to maintain animals in groups is underlined by many little-understood observations: that cows and chickens in groups eat more than they do as individuals; that tadpoles whose tails have been amputated regenerate them more rapidly when in a group: that some animals, when reared together, may be slow to breed. Sophisticated curators are now exploring the problems incurred by groupings of species whose innate patterns of dominance and aggression are not accommodated in a traditional exhibit. We have learned that species reproductively dependent upon innate and complex courtship programs cannot be expected to reproduce consistently in captive habitats that do not provide the special tools and environmental cues necessary for their breeding behavior. We are attempting to remedy these situations. A bird that needs a vertical twig for a particular part of his courtship, a mammal that needs a scent post and a burrow, or a reptile that requires cyclical temperature change are more likely to reproduce when the proper ecological furniture is provided.

Captive propagation of many species is now so routine that there may soon be no way to dispose of the progeny. Many zoos have stopped maintaining pairs of hippopotamuses for this reason. Lions and some species of deer and antelope are beginning to reproduce so freely in captivity that they have become giveaways in some collections.

The food of wild animals in captivity has also received a great deal of attention. Complex formulas—based upon information available for domestic livestock, modified on the basis of our understanding of the animal's wild diet, and then tested by trial and error—have been developed, which appear satisfactory for most zoo animals. Less emphasis is being placed upon forcing the animal to adapt to zoo conditions and more upon adapting the conditions to the animals.

Although space limitations are ever present in the zoo picture, many animals react to their enclosures as places of security to which they will willingly return when they have been properly cared for. When I was with the St. Louis Zoo, three goose-sized horned screamers grew new feathers on their clipped wings, flew off, and soared over the zoo each day about noon for nearly two weeks. It was only when they made the error of returning to their enclosure while a keeper was looking for them that it was realized they were working for the zoo only on a part-time basis. When a storm blew out a large glass window in an exhibit housing a pair of Himalayan red-billed blue magpies at the Bronx Zoo, the frightened birds flew out and disappeared. The following day when the winds had died down, they were back in their cage, and the extent of their travels between times is still unknown.

At right, Kodiak bears are now contained within barless enclosures at the Bronx Zoo. Traditional bear cages are shown above.

The need for added knowledge of the wild-animal world, combined with the availability of wild animals in city zoos near universities and research centers, points to the zoo's developing role in research. Although surgical manipulation of these animals is rarely practiced, behavioral observation and experimentation can be accomplished with unparalleled intimacy. Major research efforts now under way in several American and European zoos and aquariums, including those in San Diego, London, Washington, Frankfurt, Philadelphia, and in New York, the Aquarium and Bronx Zoo, are proving especially useful as a supplement to field work. It is much easier and more tactful to determine a tiger's gestation period in the zoo than in the wild. Comparative studies are also appropriate. How else could an investigator interested in large, flightless birds compare the emus and cassowaries of Australia and New Guinea, Africa's ostriches, and South America's rheas in any direct way? Although the development of research programs has lagged in many zoos, it seems safe to predict that zoo research efforts will become at least as significant as their programs in conservation and education.

Zoos are symbolic outposts of living wildlife; they lend an urgency and reality to efforts to preserve the quality of our environment at a time when its destruction—through overpopulation, exploitation, and pollution—is finally in sight. If nothing else, they will insure that at least as many people see elephants and whooping cranes as Rembrandts.