



BORN IN THE ZOO

JÜRIG KLAGES

BORN in the ZOO

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115 Plates



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INTRODUCTION

It is only just recently that people have become aware of the important part that zoological gardens can play in conserving the dwindling wildlife of the world. For a great many years, zoos themselves have been unaware of the important role that they can play, and so it is only comparatively recently that serious conservation work has been undertaken by a large number of zoological gardens.

Whether one approves or disapproves the idea of keeping animals in captivity, one cannot deny the fact that many species would now be extinct if it were not for the fact that they have been kept and bred in zoological collections. At the present rate of man's progress, it might seem almost, indeed, as though eventually the only wild animals we shall be able to see will be in zoos. But one hopes that the interest promoted by zoological collections all over the world will help to make people realize the number of fascinating creatures that share this planet with us and to educate them to the belief that conservation is essential.

This is a delightful book from two points of view. The photographs are brilliant. Anyone who has ever attempted to photograph animals will see the amount of patience that has gone into the taking of these magnificent studies. Secondly, the text is by one of the foremost authorities on zoological gardens and the psychology of animals in captivity. It is a refreshingly sensible appraisal of the role that zoos today have to play, and even if you hold strong views about the undesirability of having captive animals, this book will, I am sure, change your mind.

GERALD DURRELL

BORN IN THE ZOO

Every young animal illustrated in this family album was born in the zoo. Not one of them was taken from its natural surroundings and subsequently reared in captivity. There can be no suggestion, therefore, that these animals might be missing the so-called freedom of the wild.

This is a remarkable state of affairs, and one may well ask whether animals born in the zoo are less fortunate than those born and reared in the wild. There are two ways of answering this question, either subjectively and sentimentally, or objectively on the basis of facts and statistical evidence. Anyone who looks without bias at the beautiful photographs taken by Jürg Klages—the result of many years of careful and sympathetic work—must admit that these young animals, together with their mothers, look well and contented.

Professor Karl Max Schneider, one of the most experienced zoo people in Europe, has rightly pointed out that if healthy young animals born in the zoo are seen playing vigorously together, there cannot be very much wrong with them.

Until the middle of this century, the idea that animals in zoos were to be pitied was frequently aired, in particular by many naturalists and animal lovers. Nowadays this attitude has been largely overcome, particularly where zoos really worth the name are concerned. However, some small old-fashioned ones still regard their animals as merchandise and exhibit and trade them for commercial profit.

By zoos in the best sense of the term, we mean cultural institutions run by professionals. When faced with these, practically



every critic of today is confounded—and with good reason. During the last few decades so much progress has been made in zoo biology—the science concerned with the management of wild animals in zoos—that the decided improvement in the animals' living conditions has become clear even to the man in the street.

In 1931 an article of mine was published in the Swiss Bulletin for Nature Conservation under the title *Zoological Gardens and Nature Conservation*. In it I suggested that good zoos should be seen as a valuable aid to nature conservation. The editor's comment on this article is worth repeating here as it illustrates the state of affairs then current, and is still relevant: 'In previous issues we have noted the beginnings of a controversy between the claims of zoological gardens and those of nature conservation. We now gladly provide space to a supporter of zoological gardens. We are convinced, however, that many nature conservationists would by way of contrast wish to indicate how much the zoos with their systems of exchanges, and also the natural history museums, have contributed to the impoverishment of animal life in general and to the disappearance of rare species. Equally we ought to consider whether we have the moral right, solely for our own pleasure and amusement, to deprive an animal of its freedom and to take young animals away from their parents—a process which in itself is quite gruesome enough.'

This editorial comment amounted to a powerful appeal to conservationists. It is worth mentioning that the opponents of zoos in nature conservation circles have never made their voices heard. This is not surprising, because they know perfectly well that there are many cases in which zoos have served as refuges for threatened species. The decimation of rare animals has not been caused by responsibly-minded zoos, but rather by unscrupulous hunters who care only for trophies and sport, or simply for commercial profit.

Nowadays zoos in general certainly do not 'deprive an animal of its freedom solely for our own pleasure and amusement'. People have come to realize that the presence of living animals in zoos all over the world is in effect the best form of propaganda for true nature conservation as it keeps the problems of conservation alive among the public at large. As for the suggestion that zoos take young animals away from their parents in the most gruesome way, one need only point out that there is no necessity for this. The majority of the animals are born in the zoo, so that to a great extent zoos have become self-supporting. Furthermore the next stage is approaching where animals born in the zoo are returned to the wild in areas where numbers are low or the species have already been exterminated. In the case of certain species a start has already been made in this restocking of the natural habitat.

It might not be out of place to suggest that this book itself is striking evidence of the positive and productive approach of modern zoological gardens. Also, by providing an opportunity to enjoy beauty for its own sake, it performs so important a service that I shall leave considerations of zoology and animal behaviour until later, in favour of the pictures.

There is no need to point out that these photographs could not have been produced during a few routine walks round a zoo. In fact they are the climax of several years of sympathetic study and careful preparation. Even as a hardened zoo man, or perhaps for that reason, I feel like lingering over each picture to savour the details. For those of us who are office-bound there is rarely the chance to get right inside the animal's world as Jürg Klages succeeds in doing with his camera. He achieves this carefully and masterfully with each of his animal models in turn.

Every reader will derive pleasure from this unusual selection of pictures, and as a zoo director and animal psychologist I would like to make a few points about it. It would be an exaggeration to say that Jürg Klages was born in the zoo himself

but some twenty-five years have now elapsed since this master of animal photography first began to photograph animals there. (In fact he began in the Zurich Zoo.) This book therefore represents a jubilee celebration of the artist's work. Born on 1 December 1929, he made his first visit to the zoo at the age of nine, and this made a lasting impression on him. One might even refer to it as a case of imprinting in the biological sense.

It would be somewhat misleading to describe Jürg Klages in his professional capacity merely as a photographer; he is much more an artist. It will come as no surprise to anyone who has watched him at work to learn that he is to be seen in the zoo every day at all times of the year, on many occasions without his camera. This may sound odd for a photographer, but Klages is not the kind of reporter who has to take some sort of picture at all costs with a deadline in mind.

Jürg Klages has his own technique. He is opposed to the use of the electronic flash and prefers to work by observing the state of the light over periods of days or weeks; he does this not only for its own sake but also for any effect which weather conditions may have on the animals. He also takes into account the presence of the public which, generally speaking, can only be a disturbing factor.

After patient preliminary studies, which include the building-up of mutual trust between man and animal, the moment finally comes when natural daylight, lack of disturbance, and the desired form of animal behaviour all coincide to give him the chance he wants of reproducing the subject matter. Pictures such as those of the Canadian porcupine suckling her young, the screamer with her chicks, the motherly brown or polar bear, the contented litter of pot-bellied pigs, the big cats at play, and so on, may all be described as the fruit of hours of preliminary work and careful preparation.

This eulogy of the photographer's creative abilities, however, is really a digression from our primary concern with the fasci-

nating subject of 'born in the zoo'. Looking at even a small selection of the pictures—such as the female jaguar playing with her young, the polar bear suckling her twins, the puma cubs, or the beautifully composed group of Canadian porcupines—we find that all these subjects make an impact not only as photographs but equally as documents illustrating behaviour.

Would it be going too far to suggest that the expressions of the animals in these pictures illustrate such themes as maternal bliss and carefree childhood? In terms of ethology it would undoubtedly be regarded as misleading because the science of the study of animal behaviour is purely objective, often too objective, and categorically refuses to recognize any kind of subjective interpretation.

Laboratory animals are virtually anonymous; they are kept in single cages of minimal size and serviced largely by automation. Zoo animals, by contrast, are supplied with the best possible accommodation that corresponds with their specific needs. Anyone who has looked after animals under such conditions, particularly after the large ones which have considerable powers of expression, will know that by giving them individual care and attention it is possible to establish meaningful contact with them and so learn to understand them.

Zoos are responsible for looking after a wide variety of animals, and people who work in a zoo must understand fully the various animals in their charge. Good husbandry is built up primarily on this understanding and is the basis for a sense of well-being and healthy family life among the animals. Family life in the jargon of the zoo is the equivalent of breeding success, and the latter is universally considered proof of good husbandry. A good circus act can hardly be achieved without a certain amount of understanding between the trainer and his animals. Similarly the successful care of animals in the zoo can scarcely be achieved without a sympathetic understanding of their needs regarding accommodation, social factors, and diet.

Anyone not prepared to accept this automatically denies the validity of much knowledge already gained, and must believe in running the organization on purely mechanical lines. Naturally one must exercise the greatest caution when venturing to make claims about the subjective experience of animals, and this must constantly be borne in mind when attempting to interpret Jürg Klages' pictures in this book. From the point of view of animal psychology, is it justifiable for instance to claim that the pictures of the mother jaguar, bear, and porcupine express maternal bliss or that those of the young animals illustrate happiness?

The question of what is really meant by happiness or its equivalent must be examined next. Far from getting involved in deep philosophical issues we simply wish to find an approximation from the biological point of view. Looked at from this aspect, the happiness of an animal could be described as involving a kind of fulfilment: namely, the fulfilment of its role in life. In the world of an animal everything appears to be directed towards the preservation of the species; this involves the threefold task of avoiding enemies, obtaining food, and ensuring the continued existence of its species in succeeding generations.

For a long time man has nurtured the idea of a 'perfect freedom'. This is however a completely false concept and an example of wishful thinking projected into the world of animals. That it corresponds in no way with reality has now been proved by zoologists working on research in the field. Such investigations, particularly those concerned with territory or the spatial relations of so-called free-living animals, demonstrate quite clearly that an almost uninterrupted struggle exists between many of the animals in the wild. I have purposely avoided the more familiar phrase 'struggle for existence' because this is misleading and implies that all animals are involved in a struggle one against the other. In fact there are perfectly good examples in the wild of animals protecting each other, particularly where

the defence of the mate and offspring is concerned but also in the case of members of other species. As well as threats and surprise attacks, defence and protection also have their place.

Nevertheless, from the facts one cannot doubt that fundamentally the free-living animal runs a constant risk from dangerous enemies belonging to other species, and, therefore, wherever it lives it must always be on the alert. This applies all over the world, in the water and on land, to large and small animals, whether they inhabit open plain or dense tropical forest. It can be described as one of the general principles of natural behaviour in animals. It is reflected in high mortality figures, particularly among young animals. Let us take for example the African big game on which more precise data have become available in recent years: figures show that less than half of the young survive the first two months of life, whether the animal concerned be ostrich, warthog, antelope, lion, or elephant.

Any that are not threatened by four-legged or feathered predators will all too often be exposed to the irresponsible attacks of man; this applies equally to leopards in the interior of Africa, giant snakes and crocodiles in the Amazon swamps, seal pups in the cold of northern Canada, or elephants in Ceylon. The 'alarm calls' made by the nature conservationist and by international organizations such as the World Wildlife Fund would be groundless if this dismal state of affairs were not true.

Let us return now to trying to define happiness in animals, so that we can assess what it really means to be 'born in the zoo'. There can be no doubt that life in the zoo offers greater security than the dangerous life in the wild. It offers protection from predators of other species and from ruthless rivals of the same species; it offers protection from hunger and thirst, from disease and injury, from disturbance by shooting, and so on. The fact that zoo animals have a greater chance of attaining their potential lifespan than their fellows in the wild is something that can be taken for granted.

On the credit side, therefore, zoos offer greater security of a kind which the animal prefers to the continual insecurity of threatened attack and disturbance. National parks and similarly protected areas are voluntarily sought out by many of the animals and permanently occupied even though only one of the many predators is absent, albeit the most dangerous of all: man himself.

This alone might make us ready to believe that such areas are 'animal paradises', but one forgets all too easily that the constant disturbance and threat of attack from predators other than man continue to take place. That is why for example in African national parks quite a few animals live near human camps so as to enjoy the added protection of proximity to man. It is obvious that a zoo offers an even greater degree of protection, for wire-netting and other barriers prevent not only attacks by predators on prey but also the dangers which arise in social quarrels among members of the same species.

In this context 'born in the zoo' means security both for the parents and for the young, such as they can never find in the wild. In the zoo the whole breeding behaviour—from courtship prior to mating up to the final stages in rearing the young—can be carried on in an atmosphere of security and safety. We can see in this natural fulfilment of behaviour yet another component of what is meant by happiness in animals. This also includes the establishment and occupation of an area in space, a territory. In the zoo this is provided by the cage or paddock.

We can interpret the feelings of an animal by its behaviour and general demeanour. The well-established occupier of a territory looks confident and contented; anyone who doubts this should compare the appearance of an animal that has been chased from its territory or has otherwise lost it. This is true whether the animal is a lion or a fish. Occupation of a territory is something that an animal clearly strives for; loss or lack of it brings uneasiness and a sense of insecurity.

The fulfilment of the function of territory involves the formation of a breeding community, which—if allowed to develop undisturbed—leads to the further consummation of animal existence, and therefore signifies happiness in the animal. Zoo biology strives with all the means at its disposal to provide the very best conditions, and the pictures in this book, as I have already mentioned, are welcome evidence of the success of our efforts. 'Born in the zoo' indeed marks the final victory over the old method of keeping animals singly in gloomy and cramped cages; these were well suited for producing neuroses associated with captivity and diseases of stereotyped behaviour, and for hindering the development of normal patterns of behaviour. All this happened only a few decades ago, and at that time a book like this could never have been produced. Instead of contented motherhood and youngsters playing happily one would have found abundant material illustrating 'disturbances of behaviour caused by captivity', a subject on which nowadays there would fortunately be a dearth of material.

It is surprising how much our ideas and our knowledge of the life of animals in so-called freedom and in the zoo have changed in recent times. Thus in one of the scientific publications of The Zoological Society of London for the year 1966 (*Play, Exploration and Territory in Mammals, Symposium of The Zoological Society of London* No. 18, edited by P. A. Jewell and Caroline Loizos: Academic Press, London and New York), I find the following statement as the first sentence in a contribution by P. A. Jewell on the concept of territory in mammals: 'All terrestrial mammals spend their lives in a confined area.'

The surprising thing is that this general statement refers to so-called free-living animals. The knowledge that an animal in the wild does not in fact live free in its spatial, temporal, or personal relations is commonplace today. It is similarly accepted that the properly maintained zoo animal does not feel itself to be

a prisoner in any way, but on the contrary feels like a resident or occupier: we could well add, a contented occupier protected from attack by barriers, secure from the provocative attentions of rivals, and safe within a harmonious social group or family as a member of a healthy breeding community.

The territorial behaviour of lions has recently been investigated in the Nairobi National Park by R. Schenkel (see the 1966 Symposium mentioned above). Among other things he speaks of the proud posture of the occupier of a territory and describes by contrast the cringing behaviour of a lion which is on the move, unauthorized as it were, in a strange area. Above all, however, he notes fierce fights between territorial rivals ending in death. Not only males but also females may be killed.

In a zoo the contented occupier of a territory is spared such conflicts. Care is taken that no one injures this feeling of territorial ownership. The young animals born in the zoo can grow up in complete safety, and according to the social characteristics of the species concerned they are able to remain with the mother, father, or both parents as long as the relevant conditions prescribe, that is until the natural break-up of the family.

Even this necessary event very often takes place more gently in the zoo than in the wild, where the day may suddenly come when the young are firmly and inexorably repulsed and finally turned away; this may happen for instance when the parents are ready to mate again. Such brusque expulsion of the young by the parents, along with the sudden necessity for them to stand on their own feet in the struggle for survival, is followed by a period of particularly high mortality. It means that at one and the same time the offspring lose the protection of their experienced parents and are left to fend for themselves; this involves obtaining food, which has to be learned the hard way, especially when predators are around, and eventually the young have to seize and hold their own territory. Even among fish and birds this may sometimes be the equivalent of running the gauntlet.

Those animals that are 'born in the zoo' survive this crucial transitional phase with far fewer hazards. Separation takes place at the time dictated by nature itself, that is, when the first signs of unavoidable conflict between parents and offspring become apparent. A new artificial territory will be ready for them whether in the same or another zoo. During the journey and while taking up this new territory the animal is protected and cared for by its keeper.

In the process of trying to define the state of happiness in animals, we have already described the contented feeling of an animal which is holding territory; this feeling probably reaches a peak when it succeeds in chasing off an intruder. We have also mentioned the sense of contentment which comes to the victor in a hard struggle to establish social rank. All kinds of fighting and unpleasant experiences such as being turned out into a strange place, with all the hardships that this entails in hunting for food and water, in short all the negative factors, are made less harsh by conditions in the zoo. Conversely, for the animal born in the zoo all the positive factors are increased: security, rest, play, undisturbed family life, longevity, and so on—the results being reflected in the pictures in this book. Ought we then to interpret these changes as justification for the idea that those animals which are born in the zoo are in fact happier than those living in the so-called freedom of nature—a condition which is demonstrably far more dangerous?

I only venture to express this idea as a question because as human beings we find ourselves, in fact, in a very similar situation. Which of us would wish to turn back the wheel of time, to give up the blessings of civilization, often extremely dubious, in order to live once more the life of a cave-man, bare-foot, with cudgel in hand, and clad in skins—but without a portable first-aid kit and without a return ticket?

We humans, in the proud conviction that we represent the peak of creation, often imagine that the course of evolution is

already settled and that once an animal, always an animal—without evolutionary change. On more careful reflection this cannot be so, and I believe that the time has finally come to stop talking vaguely and to make definite plans to prevent the extermination of one animal species after another.

There was a time—scarcely a century ago—when we dealt with certain races of man which belonged like us to the species *Homo sapiens* in exactly the same way as we have dealt with certain animal species up until now. Not long ago, while I was visiting museums in Australia, I examined the few remaining photographs of the Tasmanians, the original human inhabitants of the island of Tasmania. Like ourselves, these people were also members of the same species, *Homo sapiens*. Although harmless, they were shot, often for sport, and finally exterminated. Any aid for development came too late for them.

And what happened to the many tribes of North American Indians who were deprived of the bison which has formed the basis of their life for thousands of years? The colonists reduced a population of some sixty million head of bison, the largest land animal on the North American continent, to less than a thousand. Other examples could be quoted. Irresponsible actions deprived the Indians of any chance of developing and of the right even to live. What is the position of animals today, and how do we stand in relation to them?

It is understood, of course, that an animal is not human. But should we deny it the right to live and evolve on this account? It is generally regarded as sufficient if we allow the animal the right to live. The work done by the World Wildlife Fund and earlier organizations has helped in this. But what is the position regarding opportunities for development? These are usually regarded automatically as the sole prerogative of man, in spite of the impressive record of millions of years of history which clearly contradicts this.

I have repeatedly tried (cf. *Man and Animals in the Zoo*, Routledge, 1969) to indicate that the world of animals is evolving to a considerable extent alongside man, who is the all-powerful catalyst of the present day. A stream of animals threatened and pursued in their original habitats by man is now pouring into the largest cities; they are coming into the zoological gardens which, despite the complaints of people anxious to economize, are becoming increasingly more numerous and necessary in every part of the world.

Nowadays every large city has a zoo, not merely as an amusement and a pastime for us, as was the case a few decades ago, but because mankind, particularly the big-city dweller, finds that animals are a necessity. Man not only uses the domesticated animal—a caricature of its wild ancestors—as a productive source of protein, but also as a yardstick for living phenomena, a knowledge of which is now proving increasingly vital to us.

Konrad Lorenz's much-discussed book (*On Aggression*, Methuen, 1966; Harcourt, 1966) is an important indication of the need to consider the laws that apply to the life of animals in relation to the interests of mankind. The wild animal and its habits form unique material for serious study which we can ill afford to ignore. As we destroy its primary habitat, only the secondary places remain and these are now being supplied by the zoological gardens of the world.

Zoos therefore provide us with our last chance of observing and studying wild animals; even if their new surroundings are somewhat different they are at least as near to the original conditions as possible. Therefore the new category 'born in the zoo' is of infinite importance to mankind; it is significantly different from the category of animals which we use for food and other purposes. And it is to be hoped that it will always remain different. When zoo animals are treated with care and respect they stand closer to the original than all of the domestic and laboratory animals; the latter represent abstract caricatures that today

usually constitute the sole basis for the study of living phenomena on which we rely for our information about the world as a whole. And therefore 'born in the zoo' signifies something different, something definitely more natural than, say, 'born in the stable' or 'born in the laboratory'. It also has a different significance in that it implies something gentler and therefore happier than 'born in freedom'!

In brief, 'born in the zoo' is much more than the title of a book; it is a designation for what is literally a new category of animals with a new status. As an artist Jürg Klages has captured not only the charm and beauty but also the more serious aspect of the importance of this modern type of animal.

In attempting to describe the happiness of animals we can safely proceed on the assumption that death and killing represent an end in the biological sense, and therefore a negative. On the other hand life and birth represent a beginning, something positive. One must of course concede that the animal has no conception of death; and so it has no suicidal tendencies in the usual sense. The popular version of the story of the suicide of a scorpion released into a circle of fire has long been shown to be completely erroneous. The same can be said of other stories of suicide from the animal kingdom.

Even though an animal has no conception of death one could not rightly describe the actual process of living, in which the individual fulfils its natural functions and in which one generation succeeds another, as something negative. Happiness is the ideal of the immediate present, away from the shadow of the future.

Fighting can be regarded as the fulfilment of a function only when it has a positive outcome, in the destruction of the old and the sick. But in contrast to life in the wild the rules are less harsh in the zoo, where a vet can come to the aid of the sick animal or else put an end to its suffering. This too is clearly an advantage.

Apart from any special help, generally speaking the greatest benefit derived from living in the zoo comes from the fact that every need is provided for as it occurs. An animal cannot make preparations for the future and so the provision of daily requirements means a great deal to it. The happiness of animals is tied to the immediate present, and it can therefore largely be controlled by the zoo officials.

Such guidance should definitely be along scientific lines. The unbiological and unsatisfactory method of keeping animals on their own, which was characteristic of early menageries, is regarded today as completely out-of-date. Keeping animals in pairs, families, or herds in suitable enclosures is the only acceptable method that is successful both from the viewpoint of the animals and of the humans watching them.

No animal has greater exhibition value than the young animal born in the zoo. For this reason, and also on biological grounds, every effort should be made to achieve breeding successes there, and gradual but significant progress has been made in this direction over the years. The rearing of domestic animals, taking into consideration the sole interests of man, is an altogether different thing. We should not forget that it is to serve the needs of man that calves are reared in damp stalls in order to produce the palest possible meat at the lowest cost from animals that are rendered artificially anaemic; we should also remember the continuous automatic feeding of young fowls which never see the light of day or even a ray of sunshine. It is up to animal lovers to do something to control the irresponsible and overriding production of meat—which is aimed at satisfying our palate rather than our hunger—in a manner worthy of mankind (cf. Ruth Harrison, *Animal Machines*, Vincent Stuart, 1964; Ballentine, 1966).

In all too many cases therefore, to be 'born in the stable' nowadays may mean an unspeakable fate, which is as unhappy and

unbiological as the brief existence of the battery hen. These attempts at rapidly increasing the production of protein differ as radically from our efforts to breed zoo animals as night from day. Every zoo that is worthy of the name will have nothing to do with this grisly aim.

Fortunately a zoo is not concerned with the production of meat, and it should never come to this. From the very nature of a zoo its purpose should be simply and solely the keeping of wild animals as true or as close to nature as possible. With its collection of beautiful pictures this book provides a truly impressive record of success.

Let us now take a look at some theories which have been held in the past. Charles Darwin (1809-1882) held the view that in captivity there was a specific sterilizing factor at work in the menageries of his time, and this excluded any possibility of breeding amongst wild animals in the zoo. He had every reason for holding this opinion, because in fact he did not know of a single case of successful breeding in for example any of the anthropoid apes (chimpanzee, gorilla, orang-utan, gibbon) or in the elephant, rhinoceros, polar bear, flamingo parrot, squirrel, and many others.

At the time of Alfred Brehm (1829-1884), the author of the world-renowned *Tierleben*, the position was still exactly the same. Even as recently as 1923, in his foreword to the comprehensive work on disease and causes of death in zoo mammals and birds by the great pathologist of the Philadelphia Zoo, Herbert Fox, Charles B. Penrose was able to make the following statement: 'Most wild animals in captivity are sterile. The reason is not known, but it does show the profound effect of captivity.'

At an international symposium held in London in 1951 I read a paper on the reproduction of wild animals in zoos. Naturally the sterility theory of Darwin and Fox was long since out-dated, but nevertheless I was forced to record a great number of

animals which, up to 1951, had never been born in a zoo in any part of the world. This list included the gorilla, Indian rhinoceros, okapi, cheetah, and flamingo. Since then, all these—and many others—have been bred repeatedly.

This shows quite clearly that the living conditions for wild animals in zoos are steadily improving. Every year brings news of fresh successes in breeding. Today we can with satisfaction regard the old sterility hypothesis as obsolete and thus report with increasing frequency the positive feature that is so delightful and full of promise for the future: 'born in the zoo'.

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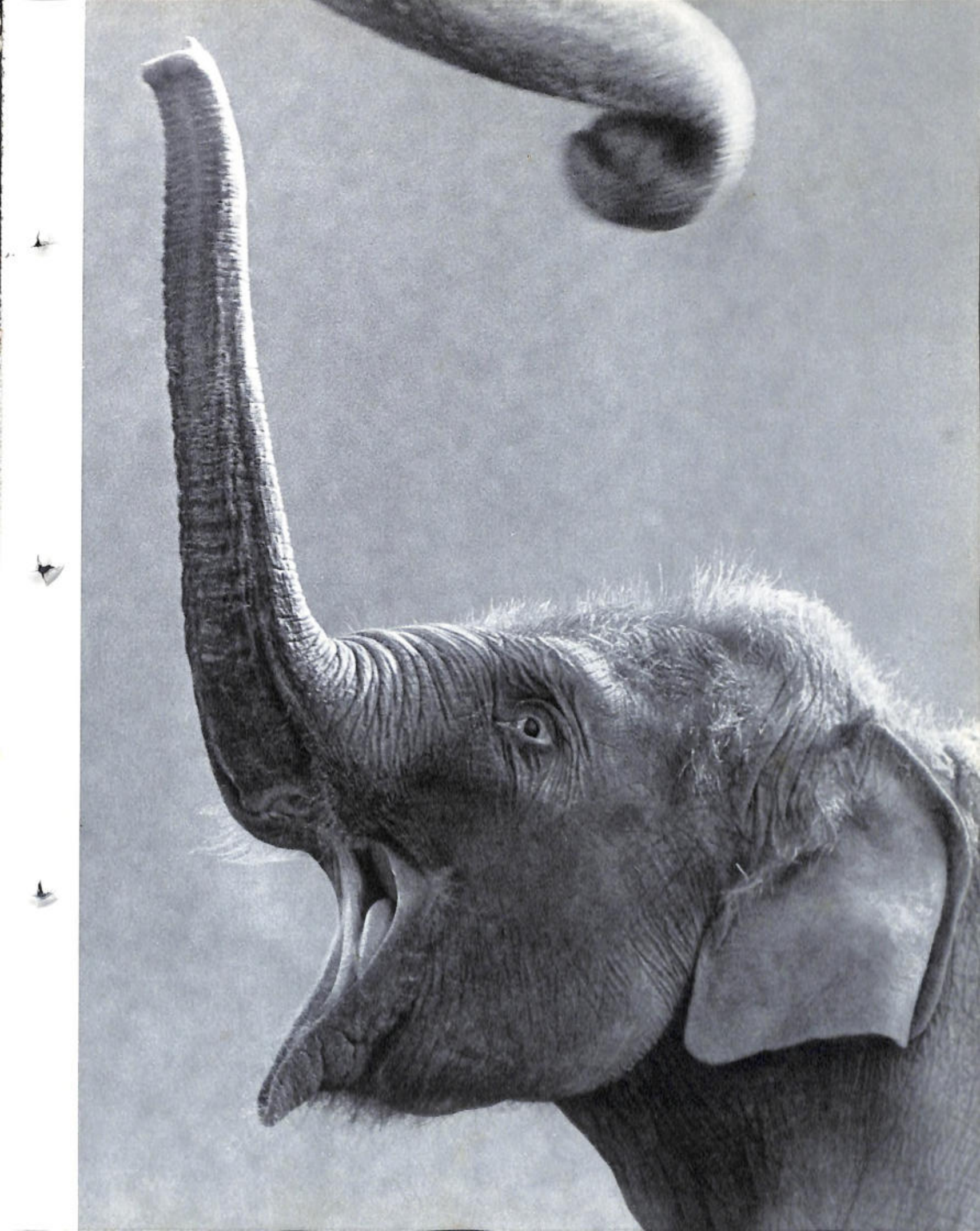
1 CAPUCHIN MONKEY These brown monkeys from the New World have a prehensile tail that is remarkably practical. Zoologists are still not in complete agreement as to how many species and races of capuchin monkey there are living in South America, but every zoo man will agree that these are extraordinarily intelligent animals and more tolerant to other members of their own species than the guenons, macaques, mangabeys and baboons from the Old World. The young, which are born singly (twins are rare), are carried around not only by the mother, but also by older sisters and aunts. Sometimes even the father has to lend a hand and when this happens it looks as though he is literally accepting the burden in order to keep the family peace.

ZOOLOGICAL GARDEN
CALCUTTA
ALIPORE



2, 3 INDIAN ELEPHANT The expression in its eyes—if one can judge by human standards—is in marked contrast to the unrestrained but gentle movements of this two-hundred-pound baby. It hardly looks as if it possessed a child's love of play. To our way of thinking the conspicuous wrinkles are out of place in a youngster of tender age and otherwise so soft. The short trunk, which is still weak and not very muscular, and the floppy ears give an unusually strange appearance to the face of the young elephant. The youngster suckles directly with its mouth on the nipples between its mother's forelegs.





4, 5 YOUNG ELEPHANTS Compared with a young Indian elephant (left), the young African one has strikingly large ears. The gestation period in elephants is about twenty-one months, after which the young giant is still looked after for some years by its mother and other members of the herd. Up to now very few African elephants have been born and reared in the zoos of the world—barely half a dozen in all. And in India, where elephants have been trained to help man for thousands of years, scarcely any effort has been made to breed them. Probably more young Indian elephants have been born in the zoos of Europe and America than in the elephant compounds of India.





6 SOUTH AMERICAN TAPIR In the young tapir the coat has a combination of spots and stripes which provides very good camouflage. This pattern disappears completely with age and adult American tapirs are almost uniformly brown. In the tropical forests of South America tapirs lead an amphibious life. Their heavy wedge-shaped body combined with a very tough hide allows them to push through the thickest and most thorny undergrowth, the spreading hooves support them through swamps, and in addition they are good swimmers. These varied methods of travel, together with their mainly nocturnal habits and the absence of anything on them that would make an imposing trophy, have protected tapirs from excessive hunting by man. Their principal natural enemy is the jaguar, the largest big cat in the New World.



7, 8 CANADIAN PORCUPINE The Canadian porcupine was regarded for a long time as stupid and sinister like many other animals that are slow-moving and also nocturnal. But this porcupine has no need to hurry; it does not have to leap about the branches of various conifers or to run away from its enemies, because its spiny armour of needle-sharp, erectile horny spines with barbed hooks protects it effectively against lynx and puma, although not against man. This much-persecuted but endearing and extremely interesting rodent eventually found a well-disposed ally in the person of Dr. Albert R. Shadle, a biologist at the University of Buffalo who has written several papers on the Canadian porcupine and invented the term porcupette for the pincushion-like young.



9 MOORMONKEY In this thickset black monkey from Celebes the newly-born babies have initially a pale face, as in many other primates. In the fox-red Japanese macaque the young have snow-white fur, which becomes dark in about three months, like the faces of their relatives. ▶

10 MANDRILL This young mandrill is only a few days old. Protected by the arm of its mother it already shows the longitudinal furrows reminiscent of an African tattoo pattern. In the male mandrill these furrows develop into conspicuous ridges which together with the brilliant coloration gives the appearance of a demon's mask. ▼







◀ 11 EMU CHICKS In these Australian relatives of the ostrich the unison of their movement accentuates the striped pattern which runs in the direction of the march. It is not difficult to guess that they are making for the cock emu, which does not let the young birds of this age out of its sight. The dark green eggs are incubated entirely by the cock for almost two months; the hen never relieves him of his incubation duties. Breeding in the emu offers one of the most imposing examples of a purely patriarchal family in a large animal.

12, 13 REINDEER CALF In their cold northern home the young reindeer are often born on a bed of snow. The fine soft pelt is very useful to them in these conditions. In the new-born of most species of deer, such as red deer and roe deer, the pelt is marked with pale spots but the reindeer and the elk, the two large deer of the north, do not have this pattern. The reindeer is the only deer in which both sexes carry antlers, but of course there is no trace of these in the young.



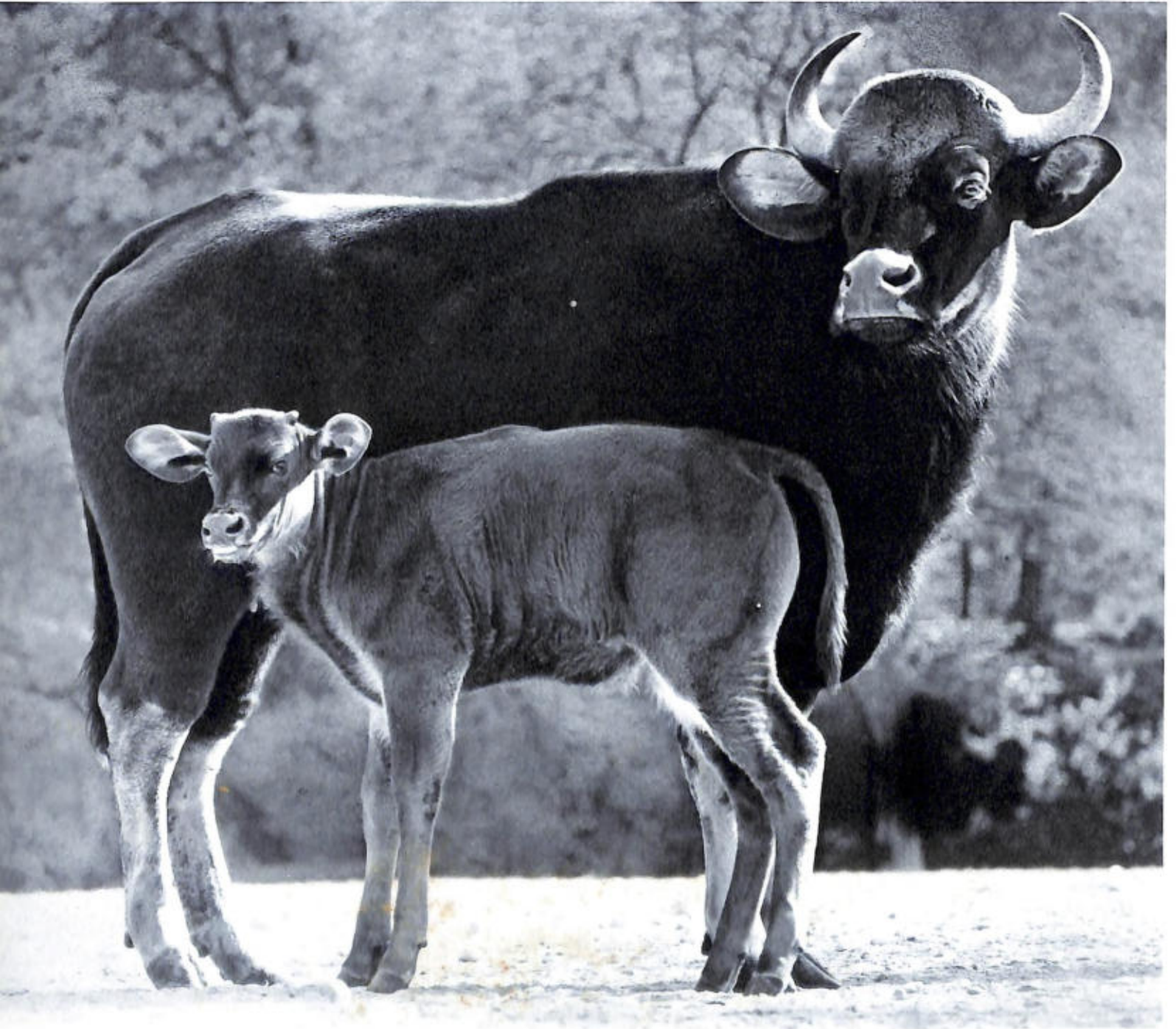


14 LEOPARD This peaceful picture of maternal bliss has a special meaning in the context of 'born in the zoo'. The mother leopard, named Pat, was herself born in the zoo but was not reared by her own mother. As a new-born orphan she was taken to the home of an animal lover in Zurich who reared her there. Later Pat was brought back to the zoo and her human foster-parent had the pleasure of seeing the former orphan become a mother and rear her own leopard cubs. This is proof of the fact that everything to do with breeding and rearing is inborn in this beautiful big cat. By contrast the capture of prey is not inherited but has to be learnt; in a zoo, however, this is not necessary. The leopard family was visited virtually every day by the human foster-parent of the mother leopard. In my opinion anyone who watched the meeting could not but describe it as a mutual occasion for joy.



15 BISON During the second half of the last century the American bison was massacred on the prairies in such numbers that the dumps of weathered skeletons could be recovered literally by 'open-cast mining' and processed as fertilizer. It was the New York Zoo Director William Hornaday who succeeded in saving a pitiful remnant of the largest land animal of the New World. This new-born calf is not yet half an hour old. ▶

16 GAUR With its handsome pale leggings the gaur is the largest of the Indo-Malayan races of jungle cattle; the beautiful curved horns are very thick at the base. The gaur is rarely seen in zoos and so a birth and successful rearing are particularly gratifying. ▼







17 STANLEY CRANE As a rule this elegant South African bird rears only a single chick: it is cared for by both parents, which often pair for life, as in the case of some geese. It appears that in this species the young crane does not automatically follow its parents, but rather vice versa. Is this perhaps because the bird has no effective call?

18 SARUS CRANE This chick, shown here at approximately natural size, grows in the course of a few months into the largest of all the living cranes: the red-headed Sarus. Pairs in India are regarded as inseparable. The length of the slender legs may increase by as much as a third of an inch per day. ▶



19, 20 PYGMY DONKEY The principal task of zoological gardens is to show wild animals, but there are scarcely any that do not also have a few domesticated ones. One of the most attractive of these is the pygmy donkey of Sardinia, or a related form, in which the coat of the foal is soft and silky. The dark cross on the shoulders indicates that these donkeys have descended from wild ancestors in Africa which are now threatened with extinction.

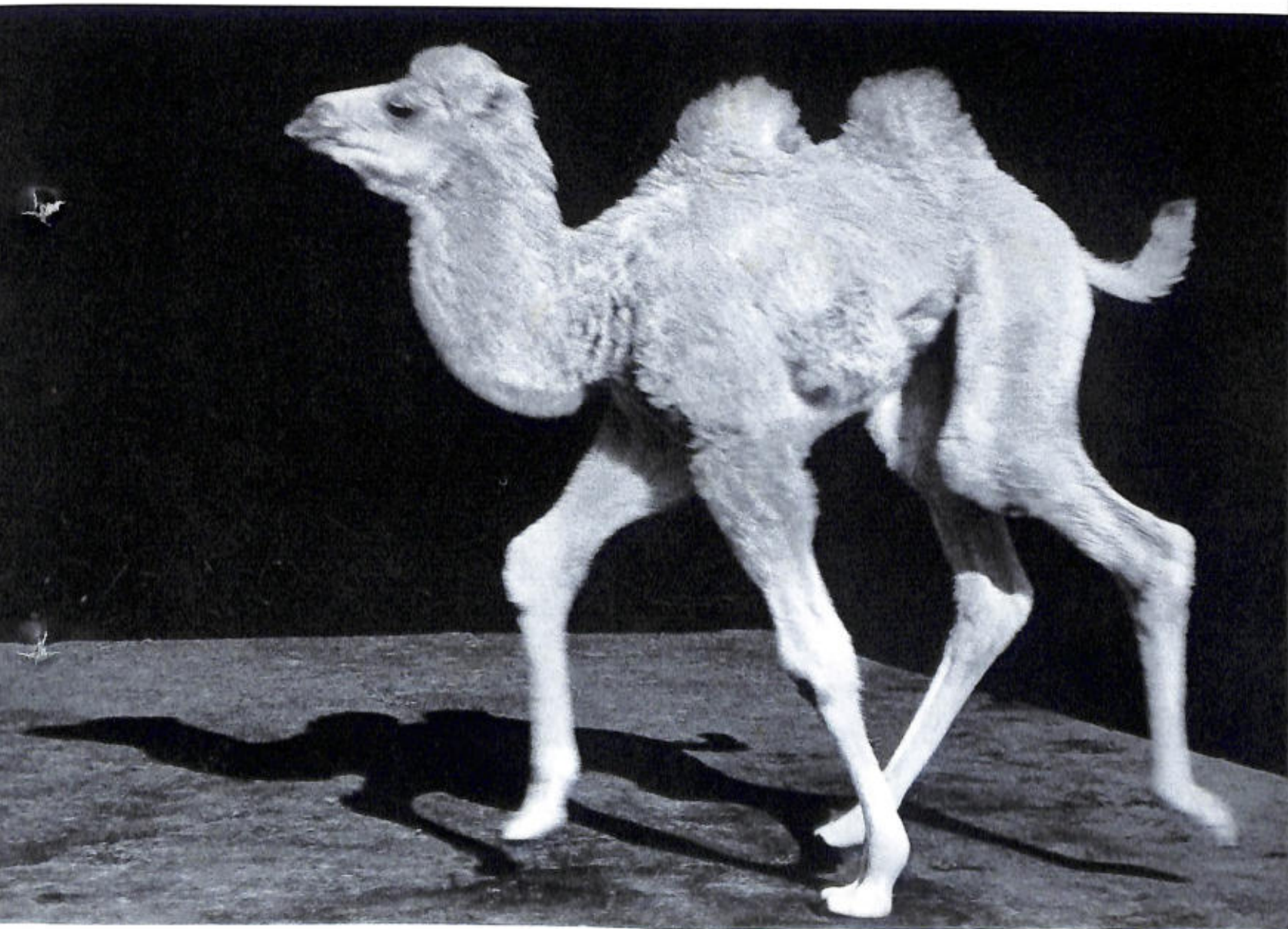
The attractive donkey foal lives in a zoo and is more fortunate than some of its relatives. In the Mediterranean and places farther east this patient animal is often grossly overladen and driven to the limit of its capacity—and often beyond.





21, 22 CAMEL The camel, like the donkey, is one of the most ancient of man's domesticated animals. The two-humped form, known as the Bactrian camel, is completely restricted nowadays to a few places in northern Asia, where thanks to its dense coat it is able to withstand the worst of the Siberian cold. Recently some so-called wild camels have been put on show in a few zoos in the East, but these may in fact only be feral camels, corresponding to the dromedaries or Arabian camels which have gone wild in Australia.

The foal on the left shows the humps, looking like empty bags of skin, lying over the right flank; this indicates that it is only a few days old. Humps would be a dangerous obstruction at the time of birth; during the first weeks of life they start to fill up with fatty tissue, as shown in the picture on the right. This also demonstrates the peculiar but elegant light-footed gait of the young camel.



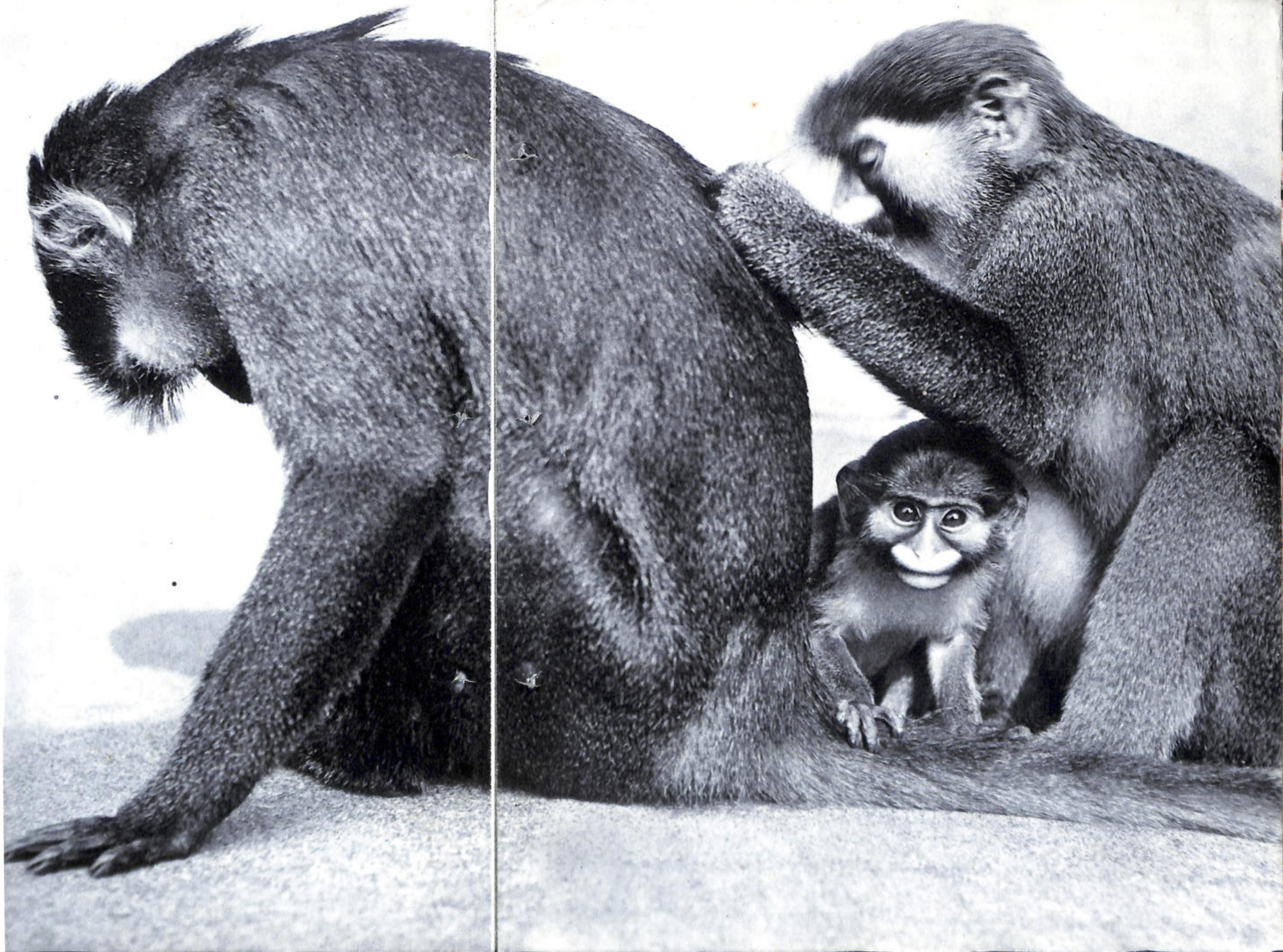
23, 24 SCREAMERS The screamers, of which only a few species exist, are characterized by having two sharp horny spurs on the front edge of the wing; these are raised as a form of threat display and can be effective weapons if necessary. The family life of the screamers, unlike that of the emu, is typical in that both sexes, which are not easy to tell apart, share in incubation and in rearing the young.

Zoologists usually regard the screamers of South America as being closely related to the geese, although the feet lack webs and the bill has no lamellae for straining food. The curved bill resembles that of a bird of prey; this is more marked in the chicks than in the adults. Apart from this the golden-yellow fluffy chicks are more like goslings, particularly when they are seen swimming behind the parents.



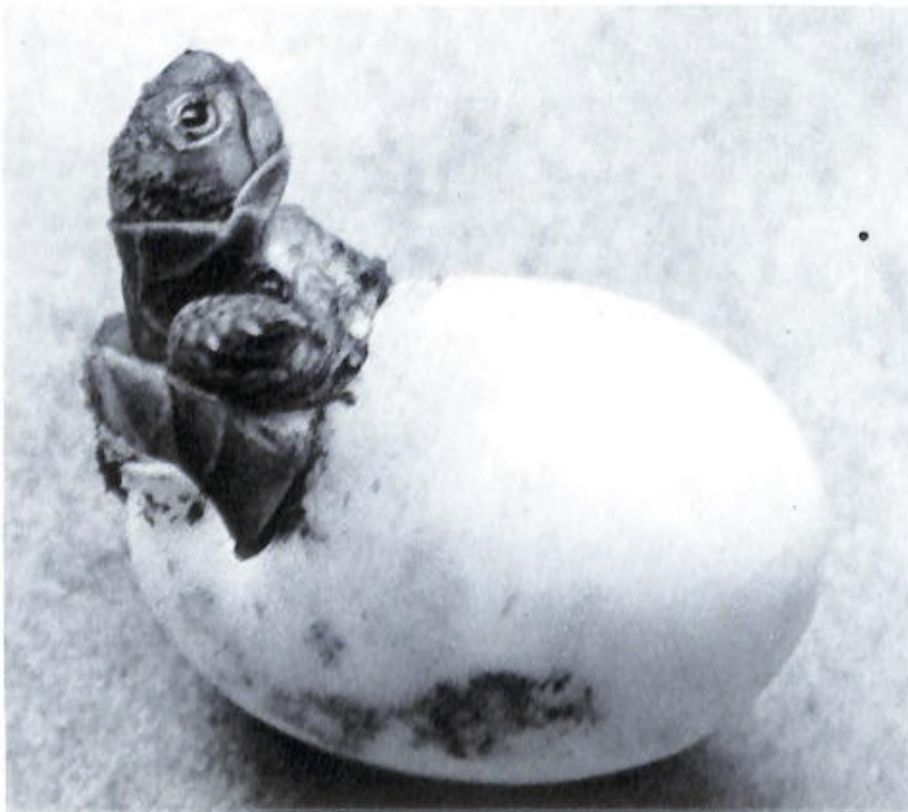


25, 26 MOUSTACHED WHITE-NOSED MONKEY Young monkeys only have the chance of being reared when they grow up under the constant care of their mother and protected by their father, who is well-armed and full of fight. The ability of the male to defend his family will be apparent to anyone who has seen the long, pointed canine teeth which are revealed as flashing ivory daggers by the upper lip and which can be brought into play exceedingly fast. For some months the young monkey prefers to cling to its mother and always seeks refuge with her. While social grooming is going on and on other occasions the young monkey has many safe places in which to shelter.



27, 28 GREEK TORTOISE This is a rather general term applied to at least four different kinds of tortoise from the Mediterranean area; Greece is only a relatively small part of their range. These forms are not easy to distinguish; some are pure vegetarians but others willingly take pieces of meat.

Although the group on the right appears to be a family idyll, it is misleading because the young tortoises are literally on their own from the moment they break out of the hardshelled eggs, using their egg-tooth in the manner of a tin-opener. They are not tied to their parents or trained by them and they do not play. Nevertheless these young reptiles—the size of half a walnut—make attractive pets. They are not particularly difficult to rear provided they can be kept in a sunny garden in the summer months. In some circumstances females kept on their own may lay fertile eggs for as long as four years. The female merely digs a hole in loose soil and lays her eggs in it. The eggs are carefully covered up and the young hatch out quite alone after two to three months, according to the temperature.







29, 30 BLACK PANTHER The tender gesture of the mother inviting her offspring to play is in striking contrast to many people's idea of the black panther as a sinister character. Why should this much-slandered animal be given such a bad name? It seems odd that the black cub which is sometimes born in a litter of normal-coloured leopards should be regarded as more wicked than the spotted members of its species. Perhaps it is man who has always invested these black leopards with gloomy forebodings. If they are born in the zoo and kept tame by proper handling, they can become just as friendly, attached and playful as the ordinary leopards that are decorated with rosette spots.



31, 32 BLACK SWAN Europeans instinctively associate the idea of black with the uncanny, with death and with sadness. Thus the beautiful Australian black swan is sometimes known in German as the 'sad swan' (Trauerschwan), despite its cheerful appearance. Close examination reveals that it is not completely black: the snow-white of the primaries shows under the folded wings. The attractive cygnet is no darker than the whitest mute swan. Unlike the latter, both adults in the black swan share in the duties of incubation and in looking after their young, leading them to land or down to the water. Like some other birds from Australia the black swan is not immediately ready to abandon the calendar of its country of origin. In Europe therefore it sometimes breeds in the middle of winter, but of course with no success.



33 CANADIAN BEAVER The beaver, whether the Canadian or the European form, is the largest of the living rodents after the capybara of South America. It is able to interfere with the habitat of man and of other animals as no other animal can. It is well known that beavers are great engineers, capable of blocking rivers and streams with dams that are so strong that men and even horses can often walk safely over them. These carefully maintained constructions may be a hundred or more yards long. Beavers obtain the building material for these astonishing structures of branches and sticks by felling trees up to eighteen inches in diameter and transporting them by water to the building site. The waterways consist of a series of channels which are again made by the beavers. The branches are skilfully anchored and interlaced with each other, the holes between them being filled with earth and mud. The tree-felling alone represents an unheard-of undertaking. It is accomplished by the use of the sharp, chisel-like incisor teeth of the lower jaw; the upper incisors serve only as an anvil. The work must be difficult and dangerous even for such a skilled engineer as the beaver; the animal's head has to be held horizontally while it gradually gnaws round the trunk until it resembles an hour-glass and finally becomes so weak that it falls.

The tree-felling beavers are able to foresee the direction in which the tree will fall so that they only need to move a short distance to the side to reach safety. The branches are used not only for constructing the dam but also as food stores for the winter. Unlike the alpine marmots of Europe, beavers do not hibernate. This means that it is particularly important for them to store sufficient nutritious bark beneath the ice.





34-37 CANADIAN BEAVER The method by which beavers transport their young is not only exceptionally charming but also of scientific interest. During the last century it was maintained that they carried their young literally in their hands. This statement appeared so unlikely that it was not taken seriously by experts, and was regarded merely as an attractive anecdote. For this reason the Zurich Zoo is proud of the fact that Jürg Klages managed to take these pictures in the Zoo. When the beaver parents think that their young have spent enough time playing around in the cold water, they will chase after them and push them towards the bank, nudging them by their sides; after this they take each one in their arms, raise themselves up and waddle ashore, walking on two legs like a goose, and bearing their precious burden into the beaver lodge or into the inner cage in the zoo.



38, 39 WHITE-TAILED GNU The white-tailed gnu is one of the antelopes of southern Africa which like so many others has already been exterminated in its original home. Nowadays it survives only in a few reserves, farms and zoological gardens. To be 'born in the zoo' therefore offers a young gnu the security from exposure to enemies which—as mentioned in the introduction—still continues in reserves. New-born calves are therefore particularly welcome in the zoo. They attract attention by their relatively pale coloration and by the lack of the curved, hook-like horns which are such a striking feature in both parents. When the horns first start growing from the skull of the young gnu they are like small straight spikes and it is not until much later that they acquire their characteristic shape. In the closely related white-bearded gnu of central and east Africa mortality in the wild has usually been found to be over fifty per cent. In bad years, for instance when there is a drought, the mortality of the calves may be as high as one hundred per cent. In the zoo, on the other hand, each individual calf receives the most careful attention from its keeper and from the veterinary staff.

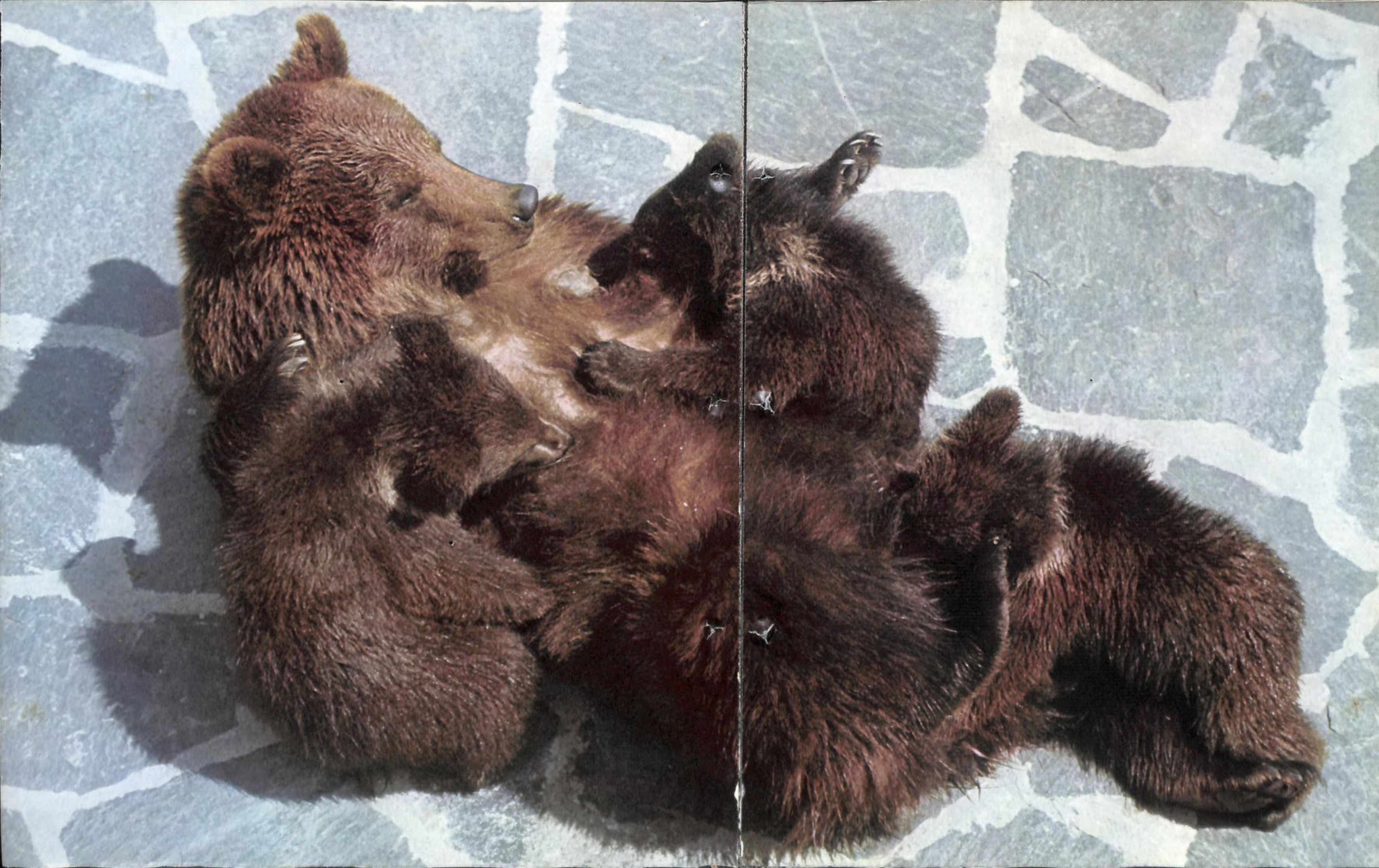




40 BROWN BEAR The mother's upturned nose and baring of her lips suggest that she has just delivered a reprimand, but at the same time it is doubtful whether the youngster has accepted it as such. The upright stance, propped up against the rock, scarcely suggests a submissive cowering attitude. Even bear cubs have to learn from experience the meaning of good behaviour. It is true that up to a certain age young animals will take liberties with their parents and these are tolerated with good humour. But this period soon comes to an end and then the young have to conform to the social customs of the community or else expect a reprimand. This applies even to those born in the zoo. ▶

41 The mother bear with her triplets—a beautifully composed picture expressing the height of maternal bliss. The cubs, which still have the pale fur collar characteristic of the young, are busy suckling. In these surroundings there are no human hunters or male bears to threaten them. There is not even a single museum specimen of the north African brown bear, nor are there any live specimens surviving in central Europe; this bear has been driven back everywhere and remaining populations exist only in pitifully small numbers. In Europe we are reminded of its former status by the many place-names associated with it and by its representation on the coats of arms of several cities and states—and fortunately also by the bears to be seen in zoos. ▶▶







42, 43 LLAMA The llama, like the guinea-pig and the turkey, is one of the few domesticated animals which have come to Europe from the New World. From the zoological point of view the llama, which is a member of the camel family, has nothing to do with the guinea-pig, which is a rodent. Nevertheless they have certain things in common: both of them are clean, easy to breed and rear, attractive to look at and completely harmless, as well as being intelligent and interesting. The guinea-pig can be recommended for children who like pets for the home or garden, whereas the llama is equally appropriate for parks and more extensive grounds. There are far fewer problems in rearing llamas than deer, for instance, which zoos are asked to supply from time to time for breeding purposes. The foals with their stilt-like legs are particularly charming. They are born after a gestation period of eleven months and it does not take them more than thirty minutes to get to their feet, unaided except for the 'moral support' of their mothers—because there is nothing like a llama for looking after its young.





44, 45 TIGER There is no doubt that among the big cats the tiger shares pride of place for popularity with the lion, and for this reason it should be represented in every zoo. Many zoological gardens make a point of having tigers belonging to one of the special races, such as the relatively small, dark island tigers or the huge, pale Siberian tiger which is especially sought after at the present time. As novelties there are also a few so-called white tigers in zoos. These are not true albinos, but animals in which the background area between the dark stripes is very pale, indeed almost white.

During recent years lions have been bred on so many occasions in zoos that there is often difficulty in disposing of them, but there is still a lively demand for tigers, and there are times when one looks forward impatiently to the end of the gestation period, which lasts 110 days. The tiger, the lion, the leopard and the jaguar are all closely related; among other things this is shown by the voice and especially by the circular pupils, which characterize all members of the genus *Panthera*.



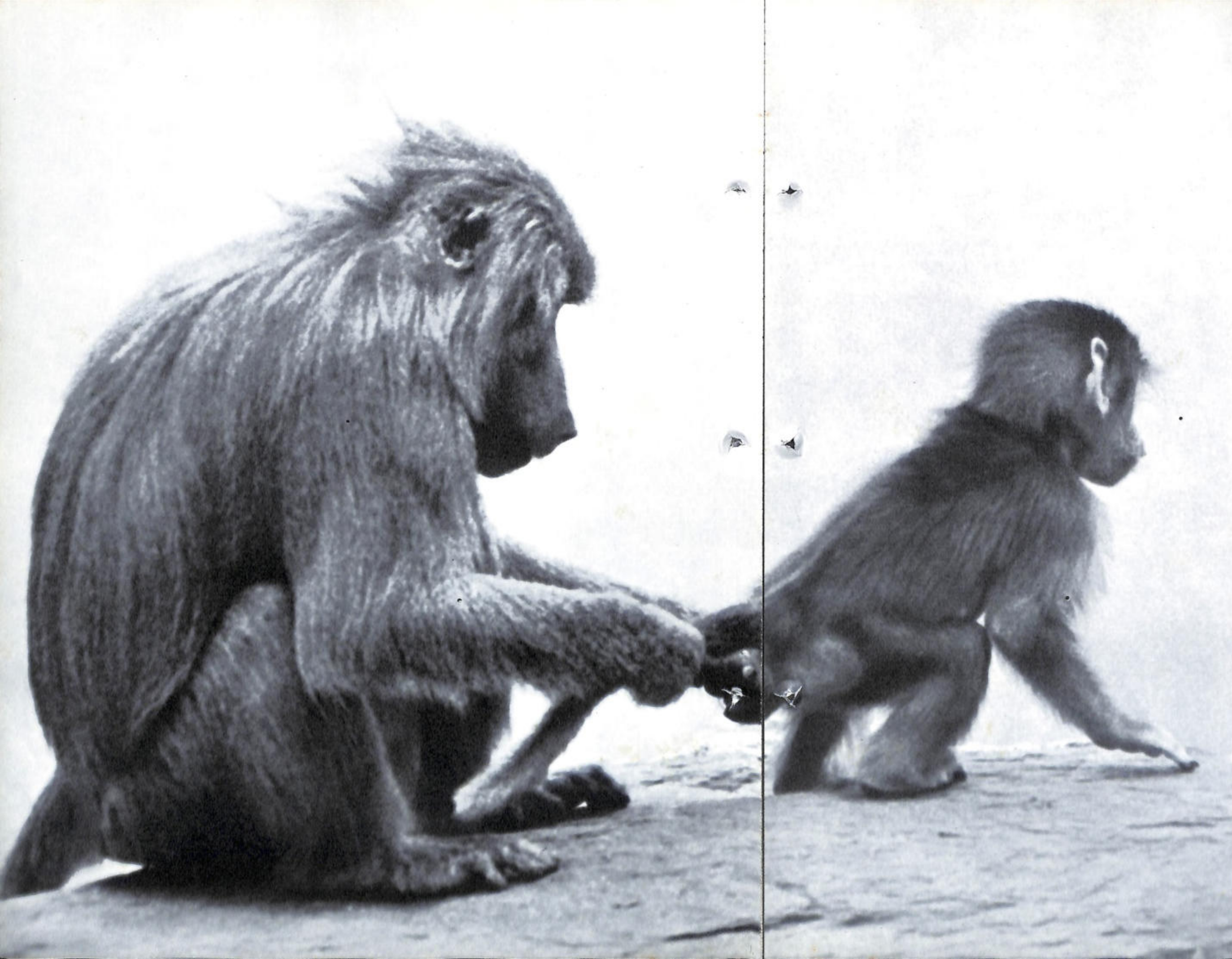


46,47 POT-BELLIED PIG The small domestic pig of Vietnam is so low-slung that the underside of the belly almost touches the ground, in fact it may even do so when the animal walks along. This remarkable feature makes it look like a caricature pig. As is typical of the Old World pigs, the young suckle lying down beside the sow; this is in contrast to the peccary of the New World (shown below).



48, 49 COLLARED PECCARY These temperamental pigs from the New World are long-legged and slender with an attractive pale collar marking. In many respects they are the exact opposite of the squat and ponderous pigs from Vietnam. Peccaries, which are the true wild pigs of the New World, have a wide distribution from Mexico through Central America to Brazil. Remarkably enough they have three toes on the hind feet and the stomach shows signs of a subdivision such as is found in the ruminants. As a rule they only give birth to twins and these suckle while standing or sitting, while the mother stands.





50, 51 SACRED BABOON For this powerful monkey, too, to be born in the zoo means security, above all from its arch-enemy the leopard as well as from other predatory animals and venomous snakes. Baboons are essentially ground-living monkeys, although they are also skilled in climbing trees and cliffs. During the first weeks of life the young are carried hanging from the mother's belly and it is only later that they take to riding jockey-style on the maternal back, as shown in the next photograph. This young animal has already taken the liberty at a surprisingly early age—or has been invited to do so. It shows an extraordinary ability, for it has anchored itself with its own tail to the base of its mother's tail—although officially this is something that only the New World monkeys with prehensile tails are capable of doing. This is thus a very rare picture. During development the prehensile ability of the tail is lost, and by the time the animal is adult the tail is carried in the prescribed manner. In a young animal the tail serves as a convenient method for the mother to hold her inquisitive youngster from straying and in this phase, therefore, the tail provides a practical leash.



52-54 CHAPMAN'S ZEBRA Anyone who has spent any time living in the plains of Africa, whether in a tent or a remote bungalow, will know that the zebra, together with the gnu, is a favourite prey for the lion. People who have slept under canvas in these regions must be familiar with the shrill contact calls of the zebra stallions; these calls can be heard at night, repeated at short intervals, as the anxious stallions try to maintain contact with the animals in their herd. The aim is to keep the herd away from the danger zone of lions on the hunt. In among the neighing of the zebra and the roar of the lions—a sound that never fails to impress humans as well as animals—one sometimes hears the thud of hooves in the darkness as the alarmed zebra are chased first in one direction and then in another; quite often the terrified animals come into the immediate vicinity of human habitations, where from time to time they still hope to find a refuge. In these pictures, however, there is no sign of nervousness or terror. Here one can literally sense the complete absence of danger, and the striped foal, close to its mother, is absolutely safe in an atmosphere which can only be experienced by those animals 'born in the zoo'.









◀ 55 INDIAN RHINOCEROS There is no doubt that the first birth of an Indian rhinoceros in so-called captivity—in Basle Zoo in 1956—marked a milestone in the history of zoos. Later the successful breeding of the African black rhinoceros represented another step forward, and the subsequent breeding successes with the Indian rhinoceros bid fair that some day the other three species of rhino will be similarly bred: these are the white rhinoceros of Africa, which is the largest of them all, the extremely rare Javan rhino, and the hairy Sumatran rhino, which is the dwarf of the group.

56 CHIMPANZEE Approximately one million different species of animal are known to us at the present time. Of this immense number the closest to us are the anthropoid apes, that is to say, the chimpanzee and gorilla from Africa and the orang-utan and the various gibbons of south-east Asia. (Some authorities regard the gibbons as monkeys rather than apes.)

The first of these anthropoid apes to be bred in captivity was the chimpanzee; strangely enough this event took place not in Africa nor in a European or North American zoo but in a private collection in Cuba as long ago as 1915. Other successes followed later. Nowadays the chimpanzee has become almost a laboratory animal. Medical research has virtually taken possession of it. It was with the help of the chimpanzee that improved methods of treating infantile paralysis were developed. Intensive research continues into the possibility of transplanting organs, such as kidneys, from the human-like chimpanzee into sick people hitherto regarded as incurable. We are still only at the start of organ transplantation but so much has been achieved already that the chimpanzee has earned its right to a medal.

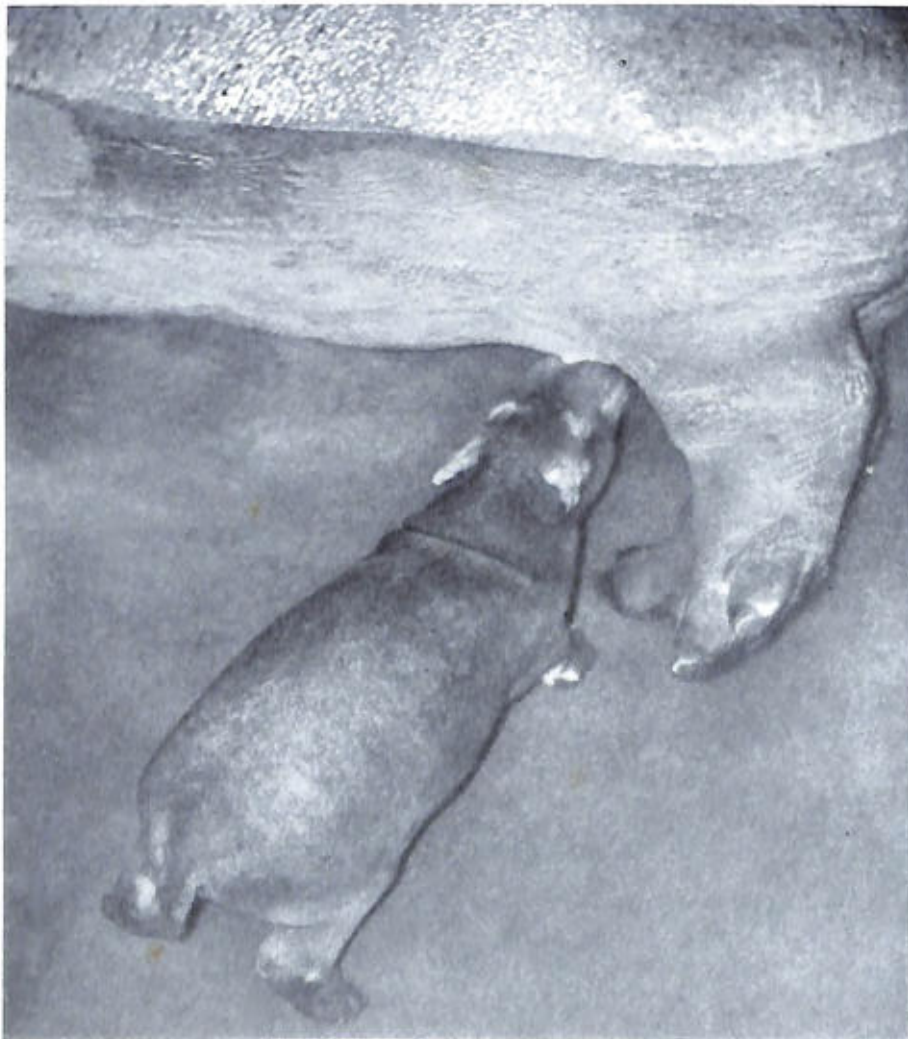




57-59 CHIMPANZEE These three pictures of a young chimpanzee in the arms of its mother were taken one after the other in a matter of seconds. Its facial expression reveals a somewhat uneasy awakening followed by growing interest. Chimpanzees are superior to humans not only in strength but also for example in natural acrobatic ability and in speed of reaction.



60, 61 HIPPOPOTAMUS As is well known the hippopotamus was already mentioned in the Bible as a masterpiece of creation. At that time the hippo still occurred in biblical lands. Anyone who becomes familiar with this animal is compelled to agree with that assessment. The hippopotamus is like a gigantic, rounded freshwater buoy, peaceable and contented by nature. A pure vegetarian, it feeds at night using the bristly lips to pluck the grasses. Full value is obtained from its food by a complex stomach with three chambers and by a very long intestine. During the daytime hippopotamuses rest in their home areas in herds of ten to thirty individuals; they live in or near rivers and lakes in central Africa. The gestation period is short—only eight months—and the young hippo weighs 50–80 pounds at birth. It is normally born underwater, and has to move to the surface as quickly as possible in order to breathe. As this interesting picture shows, it has to submerge again in order to suckle from the mother, who is lying on her side. The powerful tusks serve to protect hippos from enemies, mainly crocodiles.





62, 63 WISENT For hundreds of years the wisent or European bison has been confused with the aurochs, which is the other species of European wild cattle. The aurochs became extinct and later the wisent was threatened with the same fate. It became one of the first animal species to be offered asylum in the zoos. When the International Association for the Preservation of the Wisent was formed at Frankfurt in 1923, due mainly to the initiative of zoo directors, there were only a few pure-blooded specimens alive. This organization has recorded each pure-blooded wisent in a carefully maintained stud book and success has been such that there are now more than four hundred wisent alive today. About half of these live in extensive nature reserves in Poland and the Soviet Union, the remainder being distributed among a number of zoos.



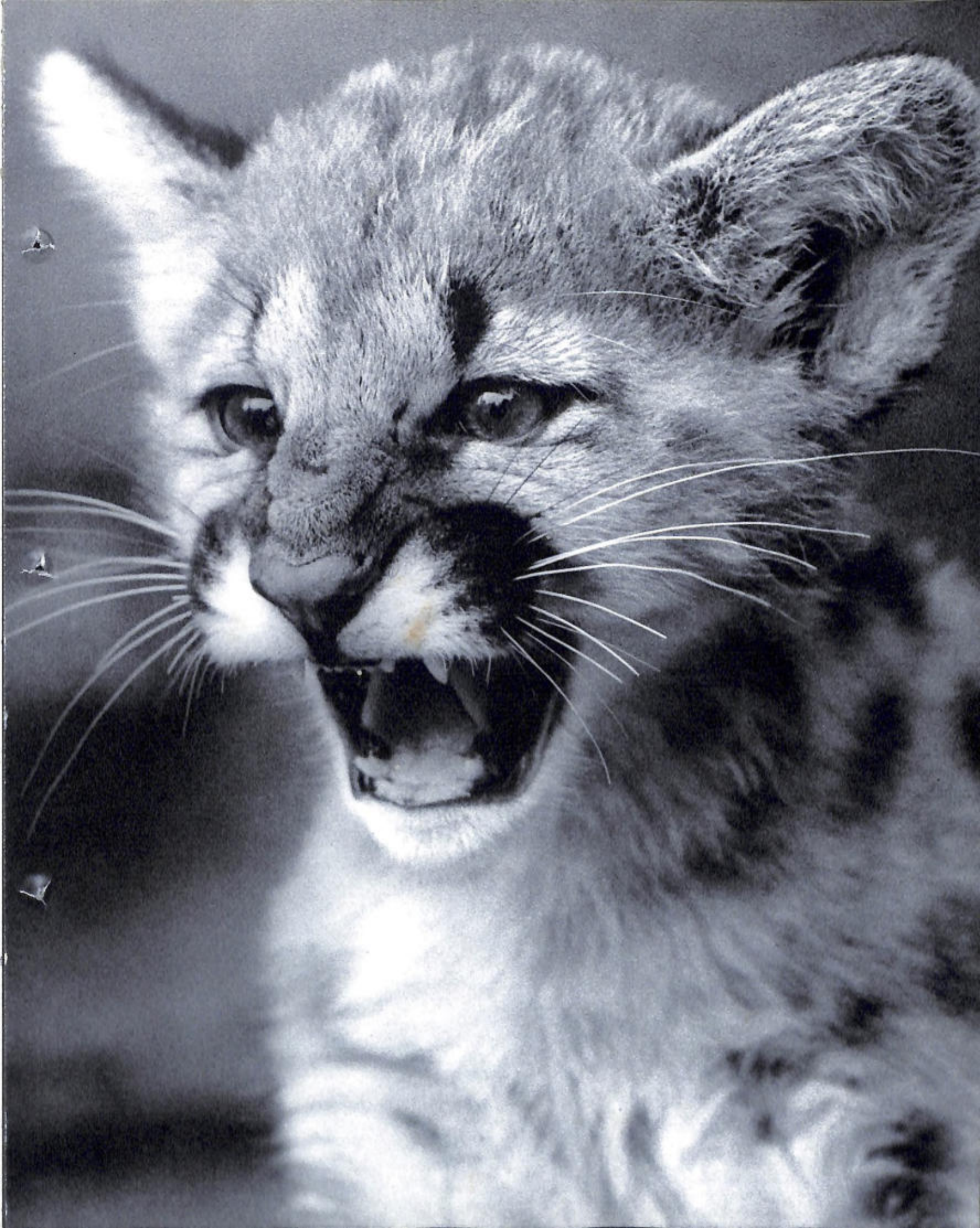




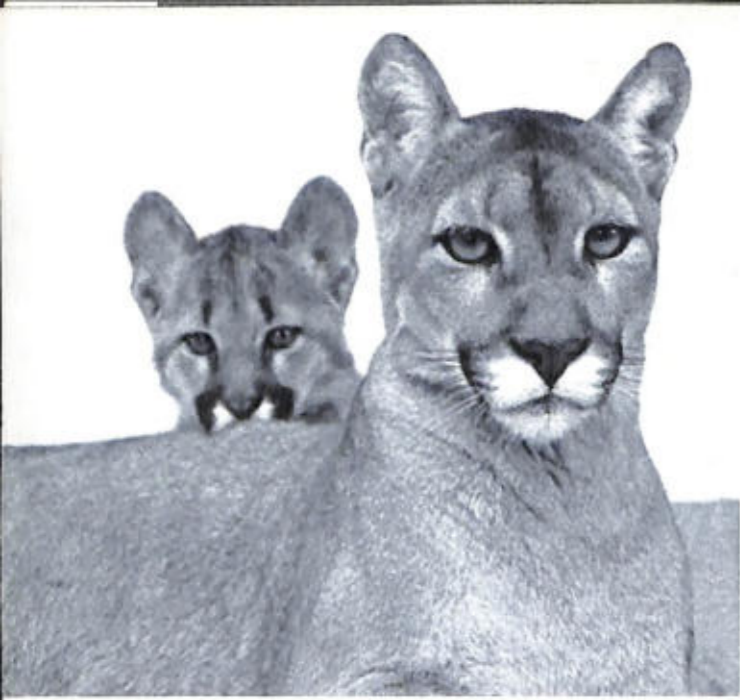
◀64 NORTHERN LYNX The lynxes may be distinguished from the other cats by the very short tail, which is usually only a stump, and by the characteristic tufts of hairs at the tips of the ears, as can be seen in the picture of this attractive young animal. This lynx was at one time widespread in west Europe but is now largely extinct there. It is still present in wooded areas of eastern Europe and northern Asia. The Spanish form is still to be found in the Iberian peninsula but only in small numbers. It is smaller than the typical form and has shorter fur and more spots.

65 PUMA Together with the jaguar the puma is the largest cat in the New World. At one time it had a wide distribution from Alaska to Patagonia but its range is much reduced today. On the other hand, zoos offer a welcome chance to see this graceful cat with its short-haired pelt, varying in colour from sandy to silvery or beige. It is only in the small cubs that the fur is spotted rather like that of a leopard, but this juvenile marking disappears before the end of the first year.

Zoologists have some difficulty in defining the exact place of the puma in the classification of the cats. Whereas everyone recognizes the close relationship of lion, tiger, leopard and jaguar—which can even be crossed with each other—the puma is apparently an outsider. It is true that it has the round pupils of the big cats named above but its voice, which incidentally is seldom heard, and the associated development of the hyoid bone are more like those of the small cats with their more oval-shaped pupils. Thus one occasionally hears the puma spoken of as a giant small cat. In this picture the milk teeth can be seen in a young puma. ▶





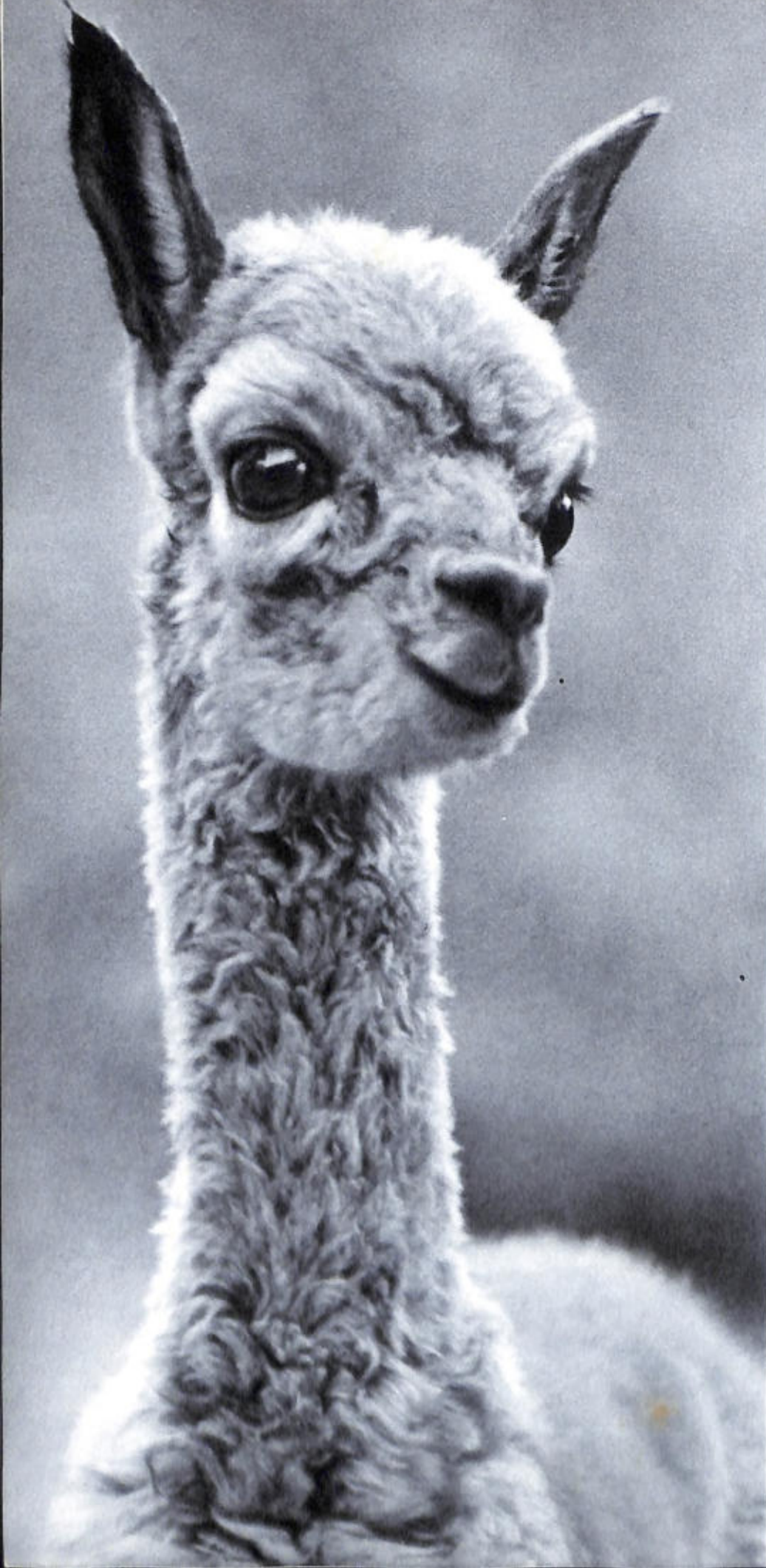


72 VICUNA It is almost impossible to avoid superlatives when writing about this elegant representative of the camel family. The vicuna is the smallest member of this family and its natural range is higher than that of any of its relatives; it is found at 12,000 to 15,000 feet above sea level. The soft, silky wool is the finest textile fibre provided by the animal kingdom, and also the most expensive. The supply has never satisfied the demand and hence the price: a mink coat is quite cheap in comparison with one of pure vicuna wool. The emphasis lies on the word pure because attempts are often made to eke out this costly material with alpaca wool or something similar. Expert buyers of vicuna wool therefore use a kind of portable microscope which allows them to test the purity of the wool samples. ▶

73 DYBOWSKI'S DEER The sika deer of the far East, of which the Dybowski is the largest form, have been bred for a long time in zoos and private animal parks. In the big cats dark spots on a pale background form a commonly occurring pattern, but in the deer the pattern is often reversed. This attractive, hardy deer ranges from Korea through Manchuria into south-eastern Siberia. ▼



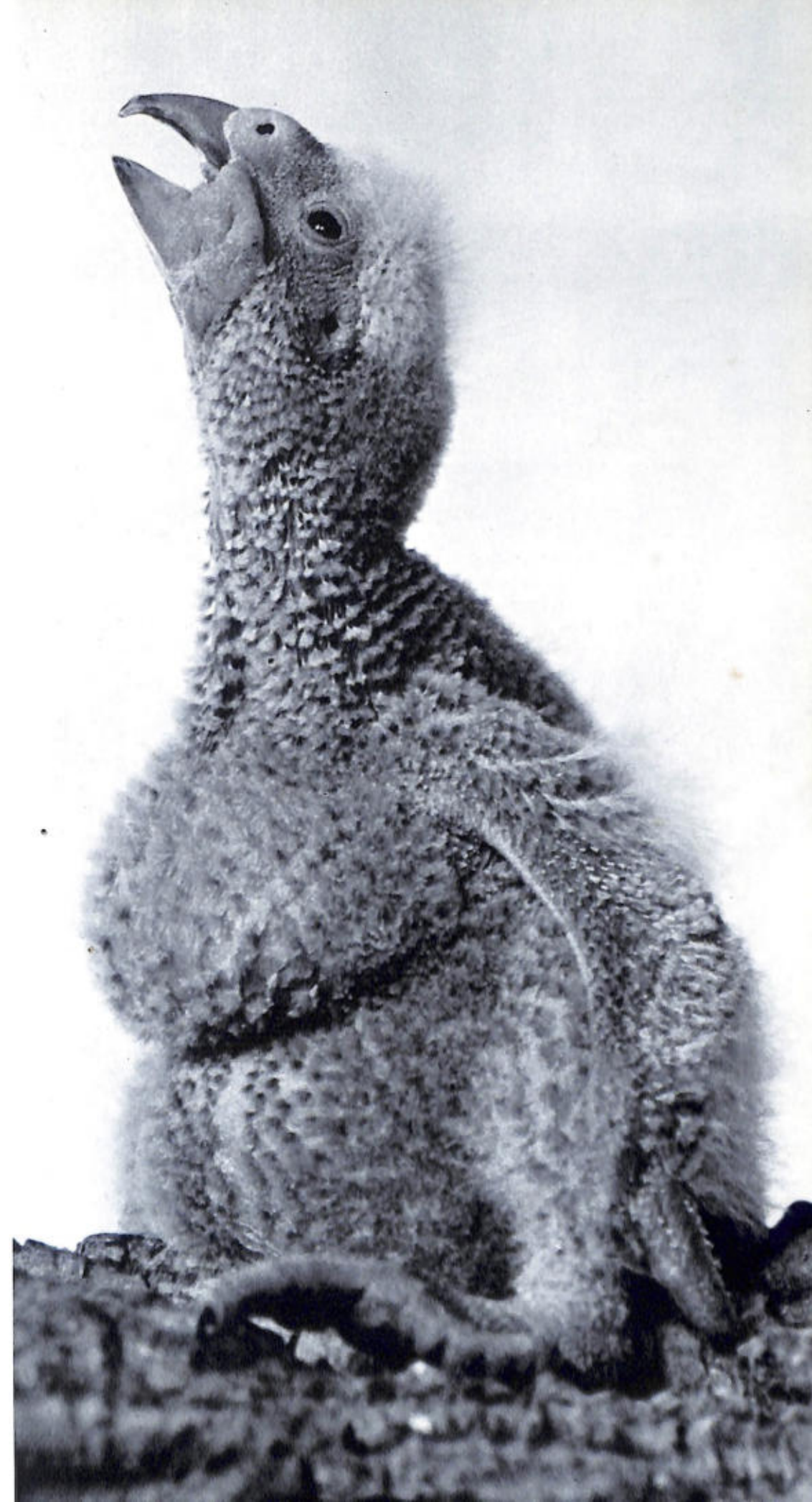




74, 75 VICUNA After looking at these pictures surely nobody could doubt that the vicuna foal with its big eyes is the most attractive youngster in the camel group. At birth it weighs only about ten to fourteen pounds. In spite of the delicacy of its hooves, very soon after birth it can literally jump over hedges and ditches. As inhabitants of high mountains, vicunas have aptly been called cloud camels; they are not sensitive to the cold or to harsh winds. Poor grass and scrub suffice for their food. They will even gnaw branches and nibble bark. For this they have an anatomical peculiarity that is unique among the ungulates and otherwise known only in the rodents and lagomorphs (rabbits and hares). The incisor teeth of the lower jaw (there are none in the upper jaw) are extremely fine, curved chisels which are deeply embedded in the bone. These teeth continue to grow throughout life and the sharp front edges are worn down at the same rate by extensive gnawing.



76, 77 KEA The kea parrot of New Zealand is in many respects rather different from its relatives. Thus, for example, it lacks the beautiful plumage which we admire so much in other parrots. This is associated with the fact that it is a crepuscular or even nocturnal bird, unlike most of the others. The plumage with subdued tones of olive is reminiscent of the owls and nightjars. It is only when the wings are raised that a few blood-red patches can be seen. From the geographical point of view the kea is also an outsider in the true sense of the word, because it does not live in the tropics or subtropics like the majority of its relatives, but has extended its habitat into the cold snow and ice of the South Island of New Zealand. Here it uses its powerful curved beak to dig up all kinds of roots and bulbs, even when the soil is frozen. The first successful breeding of the kea in Europe took place in the Zurich Zoo, and mating occurred in the winter! Another remarkable fact was that the young took raw veal. On the left the male is feeding two fledged young; on the right a 14-day chick weighing twelve ounces has a very full crop.



78-82 LION When looking at these pictures of lions born in the zoo it is difficult to remember the harsh conditions under which even the 'king of the beasts' lives in the wild. I am well acquainted with the natural conditions in which lions live in Africa, but it is only in the zoo that I have seen the contentment of motherhood and childhood, completely safe from all danger, as shown in these pictures.

In the second half of the last century the lion was still widely distributed in India as well as in Africa. It was then exterminated in India except for a pitiful remnant which now survives under rather wretched conditions in the Gir Forest Reserve in the Province of Kathiawar. And what is the position in Africa? The famous Berber lion from the region of the Atlas Mountains in north Africa no longer survives; it had the most luxurious mane extending right back to the hind legs and was quite the most handsome of all the races. Its opposite number at the southern end of Africa, the imposing Cape lion, has also been exterminated. It is only in the central part of Africa that lions still survive and even there they are not so numerous.

Incidentally the lioness shown in these pictures is called Simba and we occasionally have a chat together. Simba was found abandoned as a newly born cub on the roadside in the Kruger National Park. She was reared in a garden in a South African town until the police intervened and said that even in Africa lions cannot be kept as domestic pets. So her guardians had to find a home for Simba. By chance Zurich Zoo was at that time anxious to have a young lioness. As the pictures show, Simba has grown into a fine specimen and a model mother. To careful observers of free-living lions these pictures show three striking features: first, the tranquillity brought about by the security of a zoo; secondly, the lack of wounds and scars resulting from fights with other lions; and thirdly, the complete absence of blood-sucking ticks and other pests with which free-living lions, even those in reserves, are usually infested.

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83 SITATUNGA This beautiful antelope, which is not always striped, comes from central and southern Africa, where it lives in marshy areas as this picture suggests. This young animal is standing in shallow water and so its unusually long and pointed hooves cannot be seen; the hooves can be spread, thus making it easier to wade in shallow water. In the zoo sitatungas must be provided with a pool. ▶

84 PERSIAN GAZELLE This attractive gazelle, which is very similar to its relatives in Africa, lives in the desert-like steppe regions which extend from Asia Minor to western Mongolia, where it makes an important contribution to the meat supplies of the population and is even exported in considerable quantities. It is an attractive species that is hardy and easily satisfied; it is rather remarkable that it should have been bred in so few zoos in the western world. ▼







85, 86 BENNETT'S WALLABY
This marsupial was named in honour of a former Secretary of The Zoological Society of London. Wallabies are smaller relatives of the kangaroos and this species originally came from Tasmania. It quickly becomes acclimatized in Europe, where it has been released in various parks, especially in England. In its home country it was formerly much prized for its flesh and in England there was once a sudden demand for the attractive fur to make into ladies' boots. The three thousand skins at sixpence each were delivered in a very short time.





87, 88 POLAR BEAR As in the brown bear, the family life of the polar bear is entirely matriarchal. The father never dares to come anywhere near the lying-in chamber and as a rule he does not even try. In November the pregnant female separates from her mate: she wanders towards the land and he goes out to sea. The she-bear forms a small shelter of snow in a suitable place, access often being through a long tunnel in the hard, frozen snow. It is in this icy cavern that the young are born in the winter—December or January; there are usually twins, each about the size of a rat. But the whimpering polar bear cubs don't notice the cold because they are protected all the time by the soft warm pelt of the mother. They do not move out into their ice-cold habitat until they are two or three months old, by which time their coats are sufficiently developed for them to withstand the temperature. Some polar bear cubs born in zoos have recently been reared artificially in the warmth! This has happened when the mother could not or would not rear her own cubs.



89 RING-TAILED LEMUR The lemurs, of which this is one of the most attractive, are restricted to the island of Madagascar, where they are now protected. It was high time that this was done because not only was their habitat in the tropical rain-forest disappearing fast, but they themselves were being exported in large numbers. Although unsuitable as pets they were regarded as souvenirs by travelers. Thus the breeding stock to help the species survive was diminishing. In zoos where this important ancestral stock of the primate line is suitably cared for, each birth of a ring-tailed lemur is therefore a red-letter day. ▼



90-92 WOOLLY MONKEY This South American monkey has soft, woolly fur and a dexterous prehensile tail. In spite of the efforts of zoo staff it was a surprisingly long time before this animal was bred in captivity, and there were many theories, some of them rather quaint, to account for this. One of the most grotesque ideas was that the woolly monkey ought not to be given oranges. In Zurich Zoo, however, they have bred on a very mixed diet which included oranges. In North America the Baltimore Zoo has bred them successfully and they have also been bred by amateurs. It appears that the secret lies not only in giving them suitable accommodation and a good diet rich in vitamins but also in having a good animal-man relationship. Complete tameness appears to be one of the important prerequisites for breeding the woolly monkey. ►







93-95 GREATER KUDU This antelope from central and southern Africa is certainly one of the most beautiful ungulates, primarily perhaps on account of the wonderful shape of the horns, which are carried only by the males. But the females and young, illustrated in this book, have a beauty of their own. The eye in this species is certainly one of the most impressive and is in harmony with the enormous ears which, particularly in the young, are almost caricatures. Here the prominence of ears, eyes and nose is not accidental for these are the main and indispensable sense organs used in avoiding enemies. They have evolved to give early warning of the approach of hungry predators, particularly lions, leopards and hunting dogs, so that the animal can use its long, powerful legs to escape. The ornamental horns of the male are not a very suitable weapon against such enemies. In fights with rivals of their own species, the horns prove fatal more often than in any other species of antelope because the spirals become completely interlocked. This sometimes leads to a lingering death for both parties.

This young animal, well camouflaged among the branches and shadows, radiates the tranquillity and security of the zoo, in complete contrast to the dangers of life in the wild. The kudu calf standing on its own betrays the close proximity of its mother by the freshly licked hairs on its back. When suckling, the calf is protected by the body of its mother as she stands over it.









496 EAGLE OWL This is the largest owl in Europe and until recently it was regarded as an uncanny bird of the night, shrouded in a web of superstition. Nowadays the eagle owl is protected and efforts are being made in European zoos to breed it. In some places the young are being released into their original habitat after they have gradually become acclimatized to the rigours of life in the wild. As a rule, two young are reared.

97 WHITE-HANDED GIBBON The gibbons of south-east Asia are regarded by some zoologists as anthropoid apes, by others as closely related monkeys. In any case they have a very human-like appearance, particularly when young. This two-day-old gibbon peers out timidly from the bosom of its mother at the strange world around it. From the very first day a gibbon has to hang on to the fur of its mother and when she is swinging from branch to branch it is given additional support by being held against her body with her knees. Gibbons sometimes undergo surprising changes in colour in the course of their life; when newly born, they are usually very pale, regardless of whether the parents are jet-black or silvery-grey, and as they grow up they may become completely or only comparatively dark. The complexity shown in their coloration has not yet been satisfactorily sorted out by zoologists. ▶







100-103 RHEA Not many people have witnessed the process of hatching in the rhea, the ostrich-like bird of South America. The eggs weigh more than a pound and when the chicks hatch they are similar in colour to the striped chicks of the Australian emu. In both the rhea and the emu incubation is carried out entirely by the male, who also rears the young. In the rhea the incubation period is about 42 days and the male leaves the nest for only a brief period each day. The female is not allowed near the chicks; her cannibalistic tendencies might endanger them. In the African ostrich the black and white ornamental plumes are made into expensive boas for ladies to wear, whereas the grey rhea feathers have a less pretentious use and are bundled together to make feather dusters.





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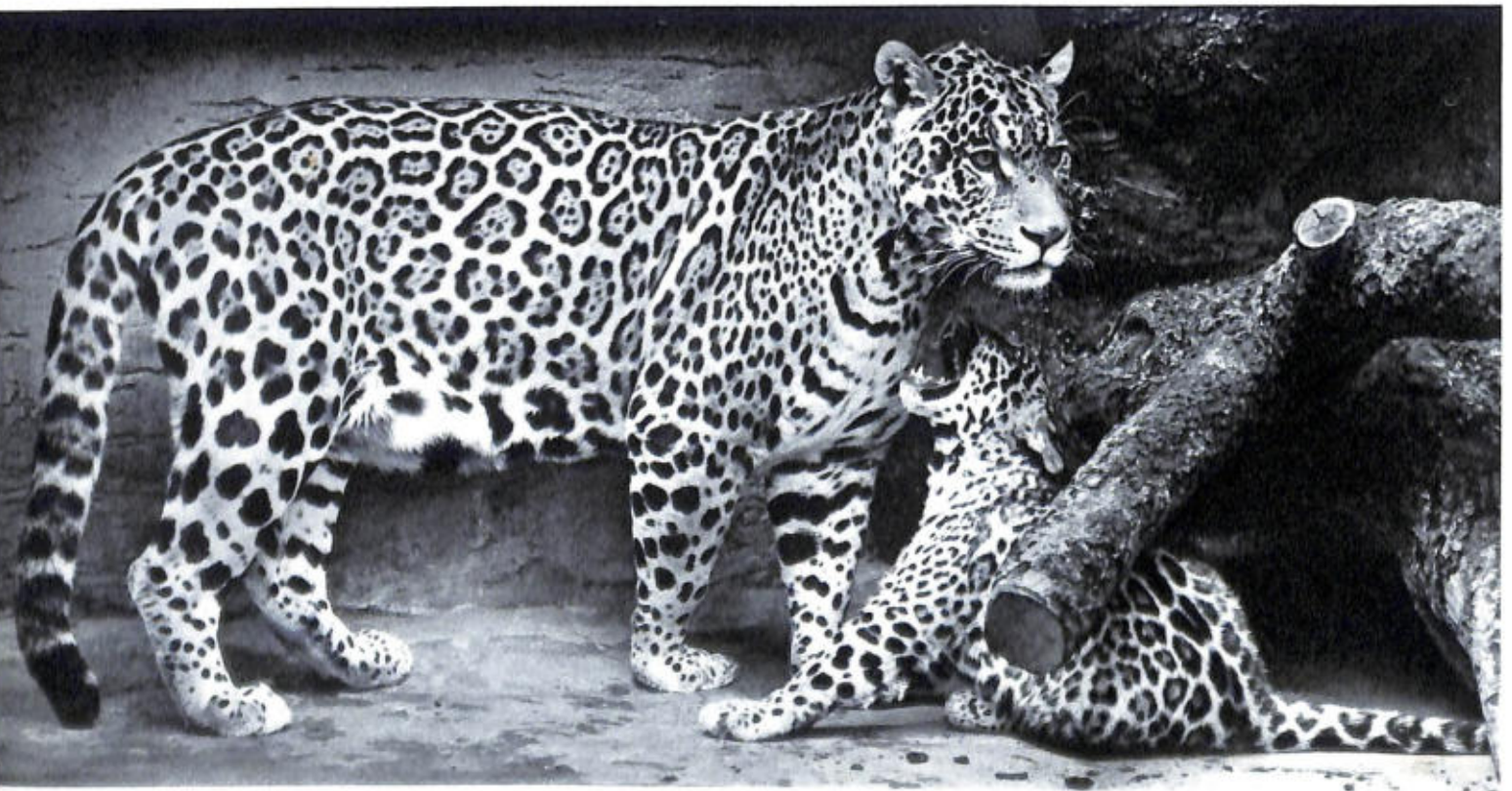


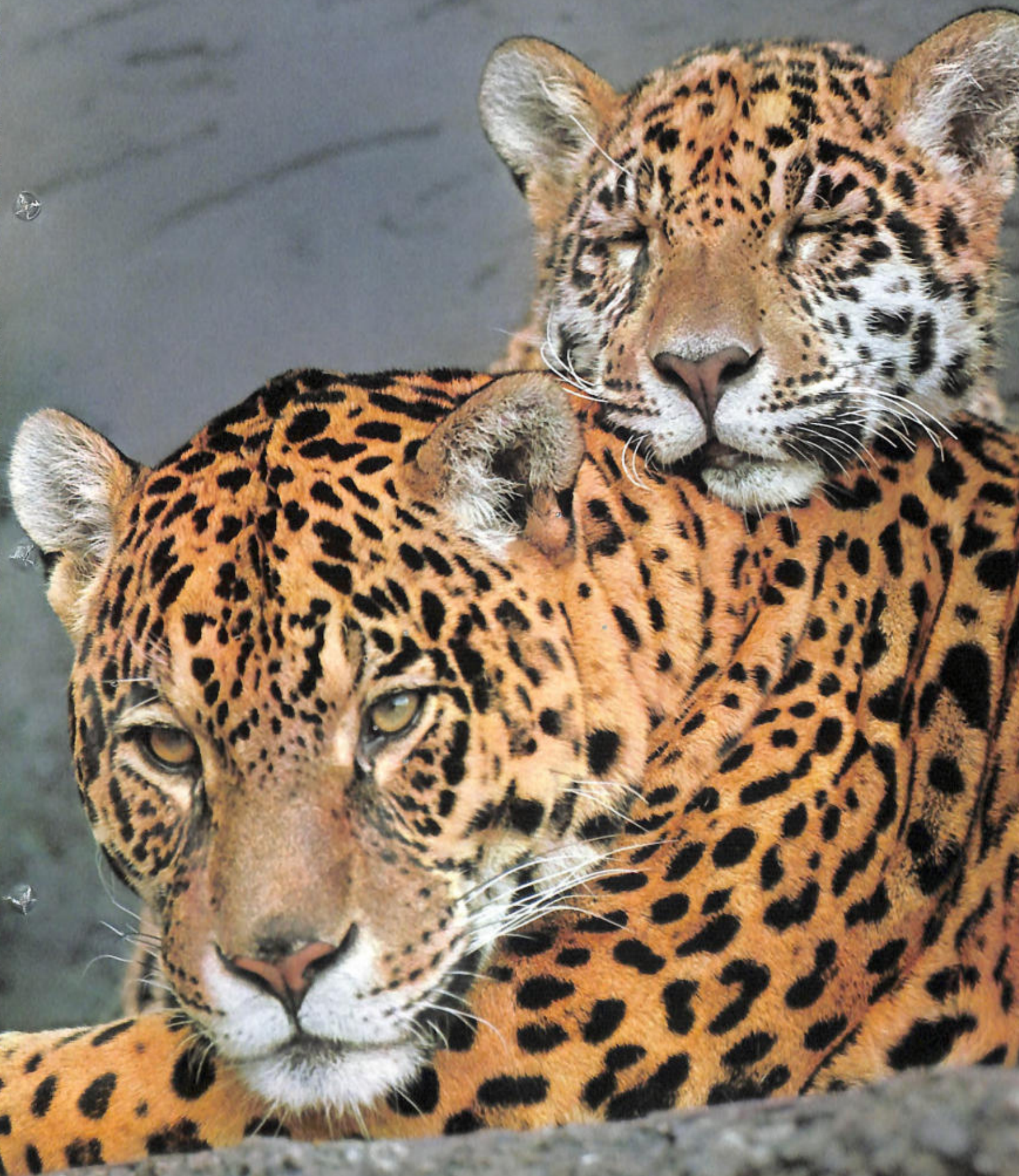


104, 105 RHEA In most animals we expect the parent which cares for the young to be the female; in the rhea however it is the male with his grey plumage which provides the chicks with shelter and warmth for a number of weeks. He patiently allows the chicks to scramble about among his feathers; and suddenly one of them even succeeds in getting on to his back, evidently to the surprise of all concerned.

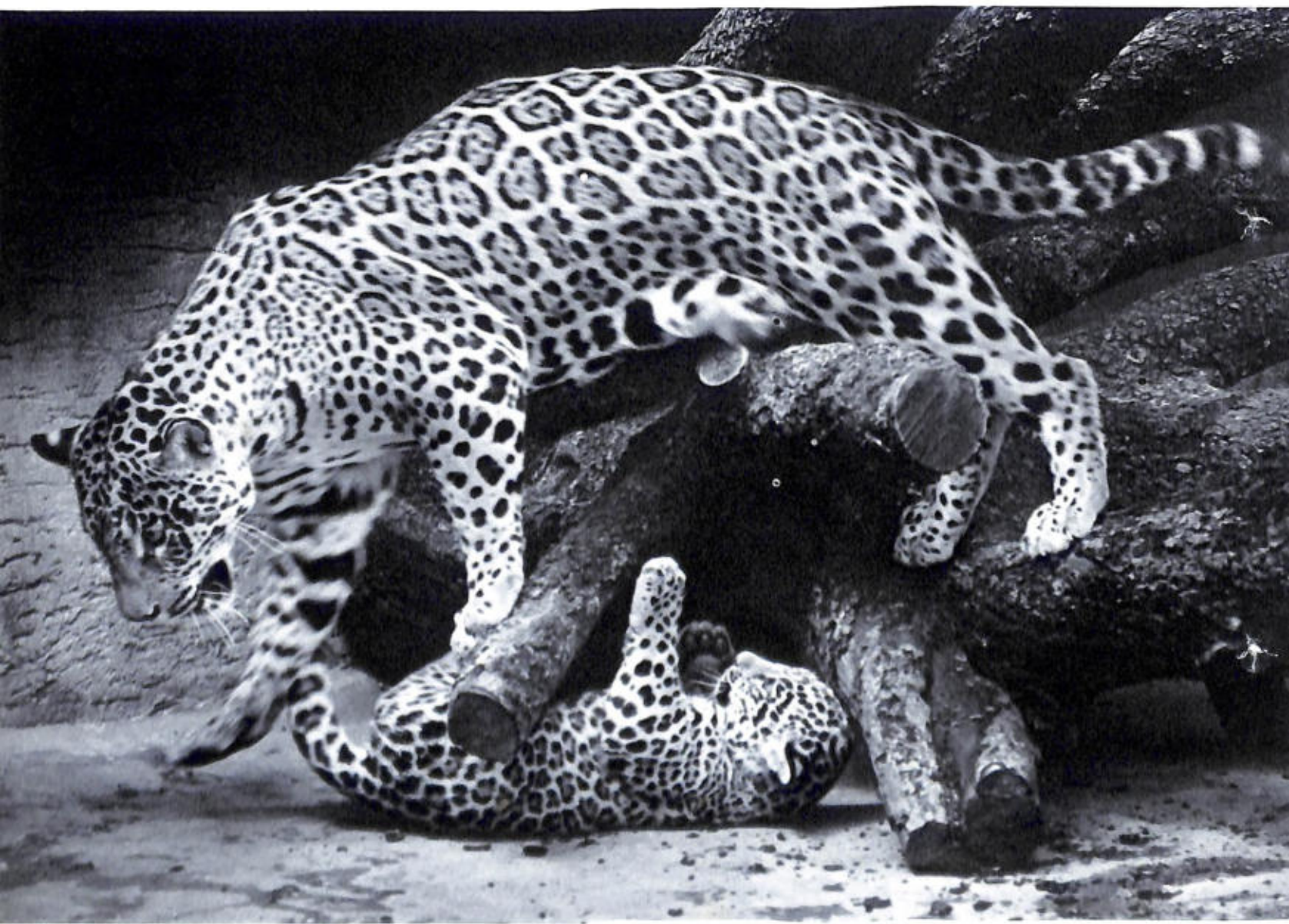


106, 107 JAGUAR In contrast to the leopard of Asia and Africa this handsome spotted cat of South America has a relatively short tail and a rather squat form, and the black rosettes on the flanks are filled with small spots. Something seems to have upset this particular youngster, but the mother ignores the sharp milk teeth at her throat and evidently takes no notice of the incident. Harmony is soon restored and the cub goes to sleep on the soft but powerful shoulders of its mother while she keeps watch, her head resting on her paws.

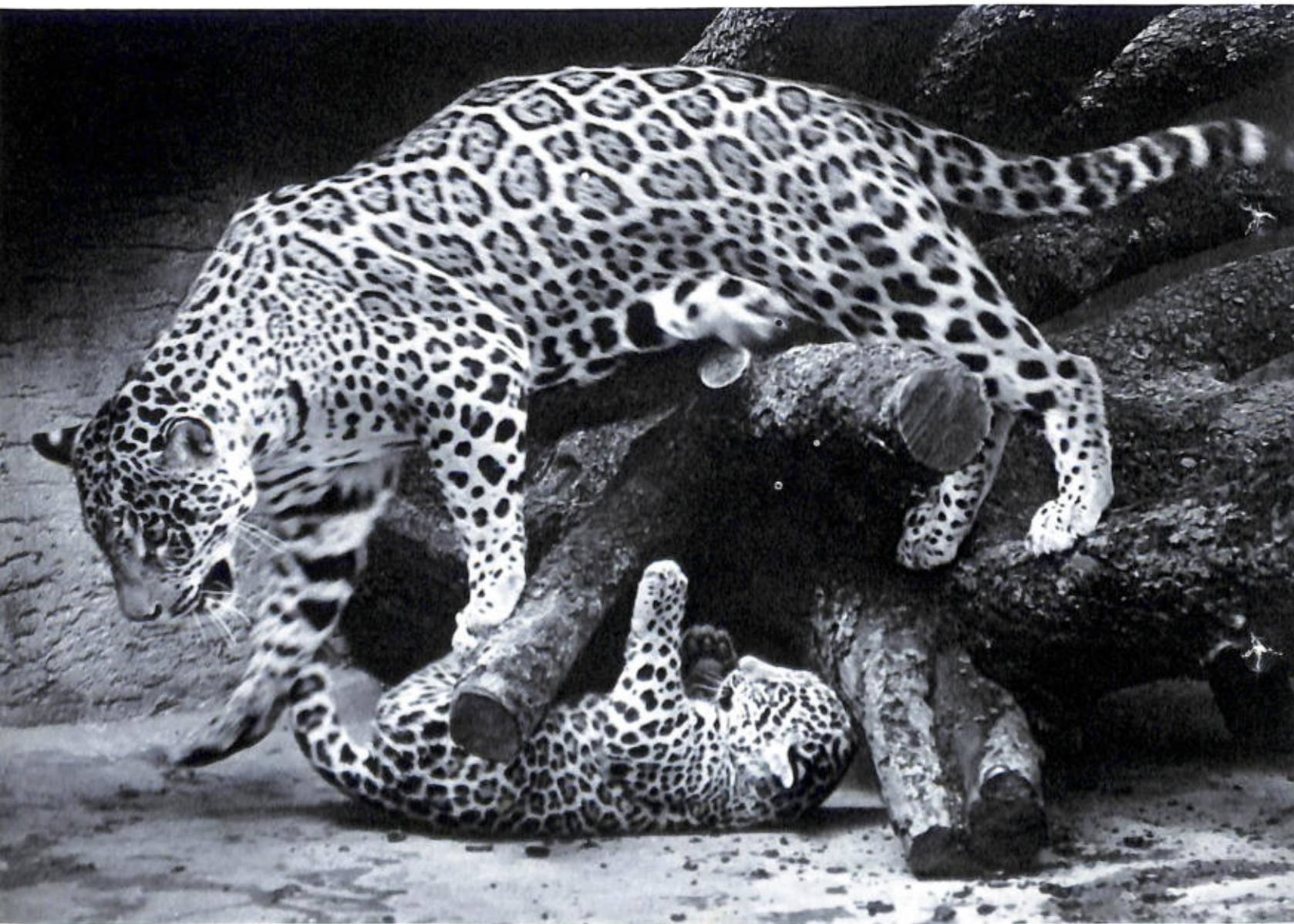




108, 109 JAGUAR Even the jaguar, the largest cat in the New World, which has a reputation for ferocity, enjoys a peaceful family life when it has the chance. It must indeed be fun for the youngster when its mother becomes a patient playmate. Boulders and branches offer a welcome chance for a game and time does not matter; in the zoo there is no urge to hunt tapirs and capybaras or to risk breaking into guarded cattle ranches. There is no need to leave the young in insecure hiding-places where other predators, dogs and giant snakes can track them down. The rosette-patterned mother makes a wonderful sight as she glides over the tree trunks and hugs the surprised cub with both her velvety paws.



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110 LOWLANDS NYALA Like the gorilla, the nyala has two races: the lowlands and the mountain. The mountain form is somewhat the larger. Both the nyalas are related to the bushbuck. The stripes on the flanks are reminiscent of those in the kudu, which also have two forms, the greater and the lesser; the nyalas look rather like them and they too have horns only in the male. In the nyalas however there is a mane which extends from the neck to the tail and there are also long fringes of hair on the neck and undersides which give the animal an imposing appearance. The ears are also large and very mobile, but not such a dominating feature as in the greater kudu. This beautiful antelope from south-eastern Africa has been bred very successfully in the Bronx Zoo, where there were 63 births between 1939 and 1963. Some individuals attain an age of fifteen years. In the wild their expectancy of life is less. In Zululand for example the nyala is one of the animals which has been completely exterminated (except in the reserves). As in many other cases the veterinary authorities have subscribed to the naive illusion that with the extermination of the nyalas the disease-carrying tsetse flies would also be destroyed. This has been shown to be completely false because there are many small animals, like rodents, which provide the tsetse fly with the opportunity to suck blood.

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III, 112 ORANGUTAN Of all the anthropoid apes the red-haired orang utan has been the most ruthlessly persecuted by man. Much of the blame for this must rest on those collectors who have killed pregnant females without restraint, in order to obtain embryological material, and also on the hunters who want to sell these animals to unimportant zoos. Nowadays the orang utan has acquired an enthusiastic and knowledgeable advocate in Barbara Harrisson (*Orang utan*, London, 1962). Her reports have led zoo directors to refuse nowadays to buy oranges that have been caught illegally.





113 OKAPI The secretive okapi of the Congo was not discovered until the present century. Living specimens did not arrive in Europe until after the First World War and the species was first bred in Paris in 1957. This and subsequent breeding successes in other zoos are of considerable importance because in its original home, the former Belgian Congo, this interesting animal faces a very doubtful future. The okapi is the only living relative of the giraffe. It lives deep in the tropical rain-forest, either solitarily or in pairs, but little is known of its habits in the wild. It feeds on leaves and the gestation period is about 426 days. ▼

114 GIRAFFE There is a high mortality in the wild among young giraffes. Various large predators try to separate the spindly-legged youngsters from the main herd and then kill them. When newly born, a giraffe is as tall as a man. No other land mammal reaches this size at birth. Well protected in the zoo, this youngster, like the young okapi, is shown close by its enormous mother. ▶

115 STRIPED SKUNK The dazzling black-and-white pattern of the skunk serves as a warning signal not to it disturb. The effect on an enemy of a shot from the stink gland is devastating. No predator or human will expose himself a second time to this powerful chemical weapon. Nevertheless the soft silky fur of the skunk is used as an article of fashion. This picture shows a female carrying her young by the scruff of the neck. ▶▶







The pictures were taken in the Zoological Gardens of
Zurich, Basle, Hanover, Frankfurt, Munich, Rotterdam, Antwerp,
and in the Children's Zoo at Rapperswil, Switzerland

