Africa

SOUTH AFRICA

It took me three expeditions to the dark continent to become reasonably familiar with the more important wildlife reserves in Africa and to film the rare and threatened species which live there. Each expedition took several months; I travelled through the whole of the Union of South Africa and large areas of East Africa.

It was December 1960 when Helmut Barth and I first set foot on African soil in Johannesburg. At the offices of the South African National Parks Board in Pretoria, Mr R. Knobel, Director of National Parks Administration, drew up a detailed itinerary with me for visiting the different reserves in the Union, which lie far apart from each other. In the newly established Willem Pretorius Reserve in the Orange Free State we filmed our first wild animals in Africa: white-tailed gnus. Earlier, the Boers and their descendants had decimated these animals to such an extent that a mere handful of them survived. The surviving population scattered in all directions and for a long time the animals managed to eke out a precarious existence in wild areas and on remote farm land; they were subsequently assembled by man in the reserve in the Orange Free State in order to preserve them. Today only about 800 white-tailed gnus still survive.

Black wildebeest was the name given by the Boers to the white-tailed gnu and this term is particularly appropriate. We saw them in the distance in the reserve and while we were still a long way off they galloped away ahead of us over the wide grassy plain. We had great difficulty following these large antelopes. None of the other wild animals behaved so warily when it came to filming them. They were so wild and impetuous that we were even pleased at achieving distant shots. In behaviour they resemble horses more closely than antelopes. Their general shape is distinctly reminiscent of a horse except that they have cleft hooves and a cow-like head with horns. We chased them for several days and then one morning we outwitted them at a water-hole where we had spent the night. They were obviously thirsty and came quite close. For a few minutes they remained quite still and we were at last able to film them in a less restless mood. However, they soon detected us and as nervous as ever they fled, leaving behind a huge cloud of dust.

We then drove on a straight road through the hot dried-up Karroo Desert 600 miles southwards to Cape Town. This journey was almost torture to us. There seemed no end to the monotony. For long stretches we saw only sheep; large wild animals disappeared from these areas a long time ago. The drive along the Garden route was more pleasant. There was an alternation of green fields, vineyards and orchards. Fruit and wine were available in friendly villages. In the small ancient town of Swellendam, one of the early Boer settlements, I called on the mayor, Mr Rieth; he was an elderly man who was a South African to his fingertips. He was very friendly and took us straight to the bontebok reserve, which is only $2\frac{1}{2}$ square miles in area and the smallest national park in South Africa.

In 1931 there were only 17 bontebok still surviving. Before very long the government established this small reserve in order to preserve the bonteboks which were in serious danger of being exter-

minated as a species. Today the population of bontebok has increased to over 800 and it is no longer the rarest antelope in the world. We spent three days and nights out in the reserve. Each day these uncommonly marked antelopes stood scarcely a stone's throw from our motor-car, in which we spent the night. It was comparatively easy to get pictures of them because they were not particularly shy and usually kept in our vicinity. Every morning Mr Rieth brought us good South African beer instead of coffee. He knew that we came from Munich and intended that the beer should be a special treat. We much appreciated his gesture and accepted the beer with alacrity.

The Addo Elephant National Park, which is only about 20 square miles, is not far from Port Elizabeth. It is one of the few wildlife reserves that is completely enclosed, being encircled by a unique fence which withstands even the most powerful Addo Elephant. This fence is made of old tramlines from Port Elizabeth which support very thick cables from disused lifts, making a strong but springy fence. Mr Marais, the Chief Game Warden of the Addo Elephant National Park, took considerable trouble to bring his few elephants within camera-range. In 1960, when we were there, only 29 of these pachyderms still lived in the reserve. They were the remnants of the most southerly form of elephant in Africa, which once numbered thousands. Known as Cape elephants by zoologists, they differ from those occurring farther north in being somewhat smaller. It is believed that a few more may be living a secluded life in the tropical forests of Knysna, an area which we had passed a few days earlier when driving along good roads. These animals however have not been seen for years and only occasional tracks bear witness to their presence.

The campaign against this form of elephant is a typical example of the systematic persecution of a wild animal population. It is a particularly tragic chapter in the story of wildlife extermination by the white man. In 1922 there were still about 120 to 130 Cape elephants living in the Addo bush country, an extensive and almost impenetrable area of rain-forest. However, they caused damage in the neighbouring plantations of the settlers who continued to encroach on the bush and consequently official circles decided that all the elephants should be shot. A skilled hunter was employed and in this fairly restricted hunting area he shot 100 elephants in a period of eleven months. When, however, he brought down sixteen elephants in a record time of only half a minute, public opinion changed and became opposed to any further slaughter. Only about a dozen Cape elephants survived and it is from this remnant population that the herd now living in Addo Elephant National Park is gradually being reconstituted.

When the reserve was established the game warden at the time, Mr Armstrong, decided to protect the few remaining animals by enclosing them completely. By doing so, the humans and their plantations would also be saved from further damage. After much trouble and many attempts he finally managed to construct the fence with the tramlines and cables already mentioned. With a bit of goodwill this would have been possible earlier and thus the gruesome shooting of so many animals could have been prevented.

On our first afternoon a group of eleven Addo elephants came out of the bush in brilliant sunshine and passed along in front of the thorn scrub where we could see them, as though giving us a formal

parade of welcome. 'A rare occurrence', said Mr Marais. 'You are in luck, because normally they do not come out into the clearings until dusk, where we sometimes feed them. As a result of being hunted for years, they are still continually on the alert and when they see man they become bad-tempered and aggressive.'

They formed a long procession as they walked slowly past us on the other side of the fence. One of them had lost the tip of its trunk. 'It tore it in a wire-noose trying to free itself,' explained Mr Marais. 'Some planter must have set the wire-noose many years ago when the elephants were still being hunted. That elephant must now be regarded as particularly dangerous because elephants have good memories and do not forget if man has done something harmful to them.'

The elephants then disappeared again, still in procession. It was almost as though they had made a point of showing themselves so that they could be included in the film of the world's threatened animals. After the tragic massacre to which they were subjected and from which they escaped as though by a miracle, I felt that they were certainly entitled to a place in my film.

A few days later at Doornhoeck near Cradock, Farmer Noel Micheau and his charming wife gave us just as hospitable a welcome as we had received in Mr Marais's elephant paradise. This private estate lies close beside the state Mountain Zebra National Park and here Noel Micheau preserves a few dozen offspring of the last mountain zebras which escaped extermination by the Boers. Today there are not more than 80 Cape mountain zebras in the wild.

We spent some days stalking the mountain zebras in the Micheau estate. The clatter and rattle of stones became a familiar sound as the zebras galloped fast over the gravelly slopes of the hilly terrain. The hunt was interesting even if somewhat exhausting on account of the effort of coping with the heavy film equipment. We could only approach them by easy stages. The coloured boy, a capable servant of the Micheaus, knew their habits and exactly how to approach them. We hid in the bush with our cameras ready and he managed to bring them closer to us, working on his own. We parted from Mr Micheau with many expressions of our gratitude to him and received the modest rejoinder that it had been a pleasure. I believe that the Cape mountain zebra has not been given such extensive coverage on film before.

Our journey proceeded through the native reserve of Transkei, an extensive stretch of land in which everything is preserved for the coloured population. We were aiming for the reserves of Hluhluwe and Umfolozi in Natal. In the Hluhluwe Reserve we filmed buffalo, black rhinoceros and the rare nyala antelope. The latter received our special attention.

As the sun was going down, the nyala herd appeared in the bush where we lay in wait as directed by Mr Dean, the Chief Game Warden. A troop of baboons and a sounder of warthogs accompanied them. Even the shy antelopes appeared to feel more secure under the watchful eyes of the monkeys. Completely silent, as though moving on rubber-soled hooves, these secretive antelopes of the forest stepped out along the edge of the swampy pool, one after another, testing the ground. They repeatedly broke through the soft earth and thereby startled themselves by their own clumsiness. They were exceptionally wary and each one appeared to be a bundle of nerves. They drank for a long time, with

outstretched necks, their big ears continually on the alert. Finally the leading bull arrived; females and young respectfully made way for him. It was an enchanting sight. Fortunately the baboons had not noticed us. Had they done so their alarm calls would have immediately scared the nyalas away. These crepuscular antelopes are rarely seen and scarcely ever in sunlight suitable for filming.

Some days later our luck held in the Umfolozi Sanctuary, one of the few refuges of the white rhinoceros. Colonel Vincent in Pietermaritzburg recommended his Chief Game Warden Players to us and with his help we were able to make rapid progress. Even on our very first stalking expedition through the reserve area we got a sight of the white rhinoceroses. We saw ten of them standing peacefully in a swampy hollow, grazing together by a small pool. It was like a scene from prehistory. As we started to set up the telephoto camera at a distance of about 100 yards, Players signalled to us and invited us to go up closer to the rhinos with him. The wind was favourable and the animals did not notice our approach. Soon there were only 15 to 20 yards separating us. We were standing completely unprotected in front of these powerful animals, hidden from them only by a natural screen of grass about three feet high, without a tree in the vicinity in which we could have taken refuge in an emergency.

Then they went for a bathe. They moved into the water one after the other, calmly and without any sign of haste. I was so excited that I could no longer count how many of them were already lying down in the water, how many were stuck in the mud on the banks, or how many were still standing in the shade of the bushes which fringed the pond. I filmed while Helmut took still photographs. In a herd of white rhinoceros there is plenty of activity and every aspect of this unique spectacle was worth recording.

Then I suddenly felt the wind on the back of my neck. Simultaneously all the rhinos stood up and came out on land. Rhinoceroses have poor vision but their hearing is good and their sense of smell excellent. With loud rumbling noises they came even closer to us, trampling on everything. In spite of their clumsy shape their agility astounded me. They could easily have overrun us and trampled us underfoot—each of these animals weighs two tons. Players lifted up his hands and shouted something at them. He knew his animals, their habits, their weaknesses and naturally also their strength, but he was also quite certain that in this situation there was nothing to be afraid of. The animals appeared surprised but in no way frightened. All wild animals take special guard when young are present but as there was none in this group there was no reason for them to attack. Black rhinos would probably have charged but white rhinos are not so aggressive.

The whole herd then moved off. We followed them in the Land-Rover and overtook them; we were able to film them again before they hurried off. We spent four days among these huge animals of which there are now only about 4000 in existence. Whenever we encountered them they were in open country with scattered bushes and undergrowth. We often stood only a few yards from them, even closer than on the first occasion at the pool, but Players urged caution on two occasions only: once when a mother with a calf showed no sign of giving way to us and the other occasion was when two

bulls were fighting for the favours of a cow. After the fight, we were able to film the victor mating with the cow.

We travelled on through Swaziland to the largest national park in South Africa, the world-renowned Kruger National Park where we spent over two weeks. Dr Brynard had give us free access to all parts, including those which at that time were not accessible to other visitors. From Pretorius Kop we drove through Skukuza to Letaba, Oliphant's River and Shingwitzi, 150 miles to the north and back again.

Every day we came into contact with animals of all kinds; almost all the African big game occurs in the Kruger National Park which is 7500 square miles in area. During the dry season they can be found in large numbers at the water-holes. At one of these places, the Leu Pan, the Park authorities built an observation tower for us. From this we were able to work in complete peace without disturbing the animals and without being in any danger ourselves. Impala, roan and sassaby antelope, kudu, waterbuck, brindled gnu, zebras, klipspringer, warthog, giraffe, elephant, buffalo, hippopotamus, baboons and other monkeys, many kinds of birds and, of course, lions and leopards—all these came our way day after day. We exposed several rolls of film in this densely populated animal paradise. Only the rare sable antelopes remained invisible until the last afternoon. Finally we caught sight of them in the tree savannah, coal-black and with sabre-like horns. Shortly afterwards we succeeded in filming them.

We then travelled westwards, up to the border of south-west Africa. By this time we were pretty tired and rather run down after our long journey through the South African nature reserves. Also I was suffering from another attack of malaria, a legacy from New Guinea. However Mr Knobel strongly recommended a visit to the Kalahari Gemsbok National Park and so we decided to push on.

Beyond Kuruman we were forced to take roads which were in the worst possible condition. Our car sank deeper and deeper into the sand the nearer we came to the Kalahari Desert. We were often completely stuck and only got free again after a great deal of trouble. After three adventurous days we finally reached the 'entrance' to the remote park; this is a completely dried-out river bed on the edge of which stands the ranger's house.

The Kalahari Gemsbok National Park was established for the protection and conservation of the gemsbok or South African oryx, an antelope with long pointed horns which has become very scarce. The present total population is about 1000, perhaps even 1200, but it was formerly much more widely distributed. Here, too, things are no different from what they are in the north, the south and the east of this continent: everywhere the European has settled he has brought death and extermination to the animal world.

The ranger drove us at breath-taking speed over the red dunes. We crossed the high crests of the sand-hills, which divide up the desert like giant waves, by putting on sudden bursts of speed. The oryx fled before us as we breasted the dunes and disappeared behind another crest where they paused for a brief rest. There is no cover in this bare terrain except for a few miserable bushes and the oryx obviously felt they were hidden from view when standing in a dip behind a crest. They only stood still for a few minutes, however, and we had to take our pictures during this short period.

Springbok continually crossed our path. Bushmen, looking as primitive as the desert itself, crept after them with bow and poison arrows. They too are protected in the Kalahari Gemsbok National Park just as the oryx and the other animals. The park offers a last asylum to these primitive people, a small paradise for one of the oldest human races of Africa. Here they can hunt with bow and arrows and obtain the modest essentials for their simple way of life. They do this in the old traditional way, as their ancestors did hundreds of years ago, long before the white settler came and drove them back into this sun-drenched, waterless waste. During the greater part of the year man and animals can only satisfy their requirements for water by obtaining moisture from the juices of tuberous plants.

The bushmen showed us how to hunt with poison arrows and we were able to film these primitive hunters bringing down a springbok in record time. They creep up to the wild herds like cats; then the arrow speeds from the bowstring. The stricken antelope leaps high into the air and soon dies from the action of the poison. The bushmen then squeeze the green stomach juices from the paunch, and drink this fluid which has a high vitamin content. While we were filming them they talked to each other, making peculiar clicking sounds; they were probably discussing us or speaking about the successful hunt. They only hunt to supply themselves with food. A native population has never been known to exterminate an animal species yet. It is only the foreign intruder who goes mad with his modern weapons in an immoderate and irresponsible way, either for profit or for the sheer pleasure of killing.

EAST AFRICA

In February 1961 we left South Africa and flew to the eastern part of the continent. Our first stop was Nairobi. This bustling but beautiful capital city was the point of departure for most of our safaris in the National Parks of Kenya, Tanzania and Uganda. The best known nature reserves in these three East African states are Nairobi National Park, Tsavo National Park, Amboseli Game Reserve, Ngorongoro Crater Reserve, Meru Game Reserve, Manyara National Park, Serengeti National Park, Queen Elizabeth National Park and Murchison Falls National Park. In the course of the year we visited all of these reserves and went in search of the rare animals living in them. In South Africa I had tended to concentrate on individual animals species, whereas here in East Africa I was more keen on filming big herds. Nowhere else in the world today can one find such enormous congregations of big game of various species as in the wild life reserves of East Africa. I visualised shots of these huge herds of animals as providing a particularly impressive closing sequence for my entire film.

During my first expedition I did not see any herds of sufficient size for my purpose as the time of year was not suitable. This first tour in East Africa, therefore, served more as a preliminary reconnaissance in which I was able to get to know a world full of animals that was still new to me. One cannot hurry through these reserves and it takes more than one expedition to get the feel of the place and to sort out the endless opportunities which these areas offer to a maker of wildlife films.

In September 1963 I flew for the second time to East Africa. During this journey I was accompanied

by my wife who had already been with me in Australia, New Guinea, the United States and Canada. I got to know new areas such as Tsavo National Park, the Uaso Nyiro Reserve and Lake Magadi. As well as seeing a number of species which we had already filmed, we were always coming across species that were new to us. The animal life of Africa with its wealth of species is still almost inexhaustible even today. I believe that one could spend a lifetime and still not manage to find and film everything that lives there. For an animal photographer elephants, rhinos, hippopotamus, buffalo, zebras, gnus, giraffes, lions and leopards are wonderful subjects. They repeatedly appear in different surroundings and there always seems to be some fresh aspect of behaviour to film. One of the things which impressed us most was the way in which the animals reacted to our presence on their own home ground: they seemed to be quite undisturbed and to have regained a sense of security in the reserve areas.

During my second African visit I added several species to my film, including the gerenuk, the reticulated giraffe, Grévy's zebra, the Cape hunting dog and a fantastic assembly of flamingoes.

The gerenuk's characteristic method of feeding makes a particularly charming sight. When browsing it stands on its hind legs and rests its front hooves on the branches of the bush as it nibbles the leaves and buds. The long neck, which resembles that of the giraffe, enables the gerenuk to browse high up in the foliage. This slender animal can remain balanced in this position at the same bush for several minutes at a time without becoming tired. No other ungulate shows such elegance and adroitness when feeding as the gerenuk. Previously I had often tried to film them in this unique pose but they had always run a long way off; they can leap and run very fast.

I filmed the reticulated giraffe in the Uaso Nyiro Reserve in northern Kenya. It has a more restricted distribution than the other giraffes of Africa. White lines form a delicate network over the whole of its large body. When standing motionless against the background of the bush, it is very difficult to spot a reticulated giraffe; the patterning on its body provides excellent camouflage. Giraffes are inquisitive and a herd of seventeen reticulated giraffes rapidly gathered around while I was filming the animal standing closest to me. Then when they started to move, it seemed as though the whole landscape had come alive. They sprang out of the bushes all around me and when they reached open country they lapsed into their typical method of progression. Giraffes are amblers, the legs on one side of the body are both moved forward simultaneously, which helps them to attain great speeds. Even a car finds it difficult to overtake a fleeing giraffe.

In the Uaso Nyiro Reserve I also found Grévy's zebras in considerable numbers. This species is distinguished from the other zebras by the stripes and the form of the body; it looks more like an ass than a horse, and has striking goblet-shaped ears. They live in herds of up to twenty animals in open country. There was no cover at all where we found them and as we walked straight towards them, they did not run away but gazed inquisitively at us as we advanced slowly. My friend Wolfgang Bell of Dar-es-Salaam and I went closer and closer, taking film shots of these handsomely striped animals every few yards; we got to within about fifty yards of them before they started to trot slowly away and even then they soon stopped again and kept looking back at us. They appeared to be surprised that we did not follow them any farther.

One morning we were returning tired and hungry after a reconnaissance trip through the Nairobi National Park. Even our guide, Kilonso, no longer showed the typical alertness of an African game warden when taking someone out with him on safari. Some vultures in the sky, however, suddenly made him aware that there was something going on. They were circling high in the sky and then gradually losing height. I turned the car across country, following the hand signals made by our guide. We soon discovered a large pack of Cape hunting dogs. Most of them lay sleeping in the grass while five youngsters romped about among the adults. They allowed us to approach them in the car to within about twenty yards without getting up. One of them occasionally looked across at us briefly but had we stepped out of the car, they would all have been off. These animals are not accustomed to humans walking on foot and it is only possible to approach them in a car without alarming them or, indeed, being frightened oneself.

The Cape hunting dogs had full bellies; they had eaten a gnu and the remains were still lying in the grass. The vultures which Kilonso had noticed circling in the sky were attracted to these remains. I had always been on the lookout for hunting dogs but had never been able to locate them. Now I had a whole pack spread out in front of me, including youngsters playing quite happily.

Cape hunting dogs are sociable animals. They usually hunt in packs according to a well-defined plan, which one is tempted to regard as a tactically planned campaign. Once they have selected their prey by sight, they do not kill it as quickly and painlessly as lions and leopards. They chase it to the point of exhaustion and slowly overpower the tired animal. Then the pack feeds to satiety. All Cape hunting dogs have the same colours, but in spite of this the actual patterning is very variable and no two animals are exactly the same in external appearance. Only the tip of the tail is white in every individual. Like wolves these wild dogs are restless wanderers, they are here today but by the morrow they may be dozens of miles away. So I was glad, therefore, to have them in view on this occasion in such large numbers and for such a long time.

On Lake Magadi, one of the salt and soda lakes in the Rift Valley, we found the largest assembly of flamingoes that I have ever seen in my life. There are only a few places in the world where one can see these elegant birds in such numbers—possibly still in India, South America and the West Indies. We could only estimate the numbers approximately in this vast assembly, an exact count would have been virtually impossible. There must have been hundreds of thousands of birds.

We arrived at Lake Magadi in the middle of the day when the temperature was at its maximum. The heat was almost unbearable as we left the car. There was a little shade, provided by some bushes about the height of a man but it was totally inadequate. The glaring rays of the sun glittered over the wide, shallow basin of the lake which was covered with a hard crust of soda in many places. The light colour of the shores and the mudflats glistening with salt helped to reflect the heat. Wherever the eye rested on the lake there were flamingoes standing or walking about, so densely packed that there was scarcely a foot's breadth between them. There were also thousands on the wing, and their pinkish-red plumage made bands of colour in the sky like flying banners. There was constant activity, birds coming and going all the time. In this 'city of flamingoes' one could no longer distinguish individual

voices, the calls mingled into a single murmur which came in waves of sound across the glittering landscape.

The water of a flamingo lake must contain an incredibly rich food supply for the birds; how otherwise could it satisfy the hundreds of thousands that are there every day? In the mud of the saline water there live tiny invertebrate animals and blue-green algae which the flamingoes eat. They continually stamp and trample in the shallow water and in this way loosen the food which they take from the water, scooping it up in their bills. The finer particles of food are caught in the hair-like lamellae on the inside of the bill which serve as a sieve, the water being expelled by muscular movements of the tongue and throat.

The drinking water required by flamingoes must be fresh. Although we were in the vicinity, thirst made them forget all shyness. It seems that in the heat of midday they find it more important to slake their thirst than to feed. They collected in their thousands at a shallow channel in which fresh spring water flowed into the lake from the slopes of the shore. We made use of some cover provided by tall elephant grass in a small hollow to creep a bit closer. There was not a breath of air moving across the bay and the heat was almost stifling. The film equipment was so hot to touch that I could handle it only with a handkerchief. We managed to remain in the hollow for half an hour but were then driven out by the fierce heat. On the way back we found a completely fresh spoor of a lion in the sand which had not been there previously. Had the lion been following us or had it also wanted to get to the fresh water for a drink? We decided not to investigate any further but to beat a hasty retreat as thirsty lions can turn unpleasant.

My third journey to East Africa took place in the period March to May 1965. Once again Peter Höser was my companion. We worked first in Kenya, then in Tanzania and flew back later to Uganda. There I wanted to pay a visit to the Murchison Falls National Park, with which I was still unfamiliar. During this journey I was looking principally for large herds of game which I eventually found in the numbers I wanted.

It was a very hot day in March when we drove from Nairobi to the Tsavo National Park. Mr Mervyn Cowie, Director of National Parks in Kenya, had already warned the park authorities that we were coming. Two hundred miles of the poorly surfaced road from Nairobi to Mombasa lay ahead of us. Although our equipment was placed on the upholstered rear seat of the Land-Rover, we did not dare to drive fast. We reached Voi late in the afternoon and turned off the main road here; two hours later we were at Aruba Lodge in the eastern part of the Tsavo National Park. This park is one of the three largest protected areas in the world and is well-known for the wealth of its big game. A particularly large number of elephants live here; their population is estimated at 16,000 head. No African reserve has as many pachyderms as this National Park.

A large dam has been constructed in front of the comfortable lodge. It was built as a freshwater reservoir. During the dry season many elephants come to this lake every day to drink. However the rainy season was just starting, rain had already fallen in the neighbourhood when we arrived and we had no time to lose if we were to film the large herds of elephants before they moved off.

Next morning we had everything ready. We did not have to wait long before the first group of elephants appeared at the lake. While I was still filming them a second group moved down into the water and then a third. By the time that half an hour had gone by, there were 65 elephants assembled at the water, an unforgettable sight. They soon moved off, and this was the last big elephant herd to appear at the Aruba Dam for this season. During the following days only individual stragglers came to the lake. All around the rains set in. The clouds released downpours of bluish-black rain, or so it looked, which cascaded down on the parched land and blotted out the horizon. Overnight the elephants had moved off, re-distributing themselves in the boundless space of the National Park, which is more than 7500 square miles in area. They would soon find water and fresh grazing everywhere.

We also filmed a large herd of buffaloes which came to drink and a flock of white storks which were probably on their return journey to their European nesting sites; we also took sequences of pelicans and other aquatic birds which are not driven away from this inviting spot during the rainy season. Later, we were able to film another family group of elephants at a small watering place near the Mudanda Rock and we also filmed a herd of eland.

We spent a few days in the Amboseli Game Reserve where Kilimanjaro reveals its most beautiful aspect. Although I had seen Kilimanjaro before, its summit had always been enveloped in cloud; it is the highest mountain in Africa (19,340 feet) and the peak is perpetually covered in snow. On this occasion I was able to see it in all its glory, with elephants and rhinoceroses in the foreground.

We drove through Arusha to the Manyara National Park. We only stayed two days, just long enough to be able to film some of the lions which habitually rest there in trees; I had not met this unusual type of behaviour in these big cats before. As we climbed up the slopes to the Ngorongoro Crater it was pouring with rain. The highest point of the crater edge is about 8000 feet above sea level; a fresh wind blew in our faces. When we arrived at the top the cloud cover parted and the sun shone all over the wide basin of the crater which is 2500 square miles in area and one of the largest volcanic craters in the world. It is full of wild animals of all kinds. The sun also shone as we drove on into the Serengeti National Park. One can leave the rainy season behind quite fast in East Africa and find the sunshine which is nearly always present in these regions.

Mr J. S. Owen, Director of National Parks in Tanzania had informed the authorities in Seronera, the Park's headquarters, that we were coming and the staff did all they could to help us. The annual migration of the herds of gnu, in search of fresh pasture, was in full swing when we arrived. The movements of the migrating herds extended for several hundred miles. We followed them on the ground and also by air, and Mr Turner repeatedly piloted his little Cessna to places where the plains were dotted with gnus, migrating and resting. They were brindled gnus, which are still much more common than the white-tailed gnus of South Africa. It was an extraordinary sight. Thousands and thousands moved forwards beneath us, tens of thousands or probably even hundreds of thousands. '367,000 animals in search of a home,' writes Professor Bernhard Grzimek in one of his books, and by this he meant the gnus, the zebras, the Thomson's and Grant's gazelles, hartebeest, giraffes, rhinos, buffaloes, lions, leopards and many others which live in the Serengeti National Park.

Before flying on to Uganda we spent a few more days in the Nairobi National Park. This small wildlife reserve lying close to the gates of Nairobi provides a home for numerous animal species. It was the cheetah that I was particularly interested in. I had never been able to film these spotted big cats and so we did everything possible to find them on this occasion. Mervyn Cowie and Mr Dennes, the Chief Game warden, kindly sent out their most experienced ranger to look for them, and a report soon came in that a female with three young cubs had been sighted in Section 18.

We went in search of them and spent the whole day trying to find them without success. It was as though they had vanished into thin air. The next day it was raining. In spite of this we again drove off with our keen-sighted ranger in search of the cheetahs. About noon he spotted them behind a small rock in the middle of the savannah. They were lying indolently in the grass, a big handsome female and three half-grown young. The cheetahs were soaking wet and when they shook themselves drops of water flew off their fur like a fine spray. It was obvious that, like the true cats, they definitely disliked the rain. Peter drove the Land-Rover slowly backwards towards the cheetahs while I filmed them through the rear window. The animals appeared to take little notice of our approach. Then a few feeble rays of sunshine broke through the cloud cover, and I got to work with the camera.

We stayed near them for three hours. Then they slowly got up and walked one behind the other over a small hill, the mother leading the way with her nose raised in the air. Perhaps they were driven by hunger to move on. There is no lack of prey in the Nairobi National Park. Food is plentiful in nature reserves, though the animals have to find it for themselves.

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voices, the calls mingled into a single murmur which came in waves of sound across the glittering landscape.

The water of a flamingo lake must contain an incredibly rich food supply for the birds; how otherwise could it satisfy the hundreds of thousands that are there every day? In the mud of the saline water there live tiny invertebrate animals and blue-green algae which the flamingoes eat. They continually stamp and trample in the shallow water and in this way loosen the food which they take from the water, scooping it up in their bills. The finer particles of food are caught in the hair-like lamellae on the inside of the bill which serve as a sieve, the water being expelled by muscular movements of the tongue and throat.

The drinking water required by flamingoes must be fresh. Although we were in the vicinity, thirst made them forget all shyness. It seems that in the heat of midday they find it more important to slake their thirst than to feed. They collected in their thousands at a shallow channel in which fresh spring water flowed into the lake from the slopes of the shore. We made use of some cover provided by tall elephant grass in a small hollow to creep a bit closer. There was not a breath of air moving across the bay and the heat was almost stifling. The film equipment was so hot to touch that I could handle it only with a handkerchief. We managed to remain in the hollow for half an hour but were then driven out by the fierce heat. On the way back we found a completely fresh spoor of a lion in the sand which had not been there previously. Had the lion been following us or had it also wanted to get to the fresh water for a drink? We decided not to investigate any further but to beat a hasty retreat as thirsty lions can turn unpleasant.

My third journey to East Africa took place in the period March to May 1965. Once again Peter Höser was my companion. We worked first in Kenya, then in Tanzania and flew back later to Uganda. There I wanted to pay a visit to the Murchison Falls National Park, with which I was still unfamiliar. During this journey I was looking principally for large herds of game which I eventually found in the numbers I wanted.

It was a very hot day in March when we drove from Nairobi to the Tsavo National Park. Mr Mervyn Cowie, Director of National Parks in Kenya, had already warned the park authorities that we were coming. Two hundred miles of the poorly surfaced road from Nairobi to Mombasa lay ahead of us. Although our equipment was placed on the upholstered rear seat of the Land-Rover, we did not dare to drive fast. We reached Voi late in the afternoon and turned off the main road here; two hours later we were at Aruba Lodge in the eastern part of the Tsavo National Park. This park is one of the three largest protected areas in the world and is well-known for the wealth of its big game. A particularly large number of elephants live here; their population is estimated at 16,000 head. No African reserve has as many pachyderms as this National Park.

A large dam has been constructed in front of the comfortable lodge. It was built as a freshwater reservoir. During the dry season many elephants come to this lake every day to drink. However the rainy season was just starting, rain had already fallen in the neighbourhood when we arrived and we had no time to lose if we were to film the large herds of elephants before they moved off.

Next morning we had everything ready. We did not have to wait long before the first group of elephants appeared at the lake. While I was still filming them a second group moved down into the water and then a third. By the time that half an hour had gone by, there were 65 elephants assembled at the water, an unforgettable sight. They soon moved off, and this was the last big elephant herd to appear at the Aruba Dam for this season. During the following days only individual stragglers came to the lake. All around the rains set in. The clouds released downpours of bluish-black rain, or so it looked, which cascaded down on the parched land and blotted out the horizon. Overnight the elephants had moved off, re-distributing themselves in the boundless space of the National Park, which is more than 7500 square miles in area. They would soon find water and fresh grazing everywhere.

We also filmed a large herd of buffaloes which came to drink and a flock of white storks which were probably on their return journey to their European nesting sites; we also took sequences of pelicans and other aquatic birds which are not driven away from this inviting spot during the rainy season. Later, we were able to film another family group of elephants at a small watering place near the Mudanda Rock and we also filmed a herd of eland.

We spent a few days in the Amboseli Game Reserve where Kilimanjaro reveals its most beautiful aspect. Although I had seen Kilimanjaro before, its summit had always been enveloped in cloud; it is the highest mountain in Africa (19,340 feet) and the peak is perpetually covered in snow. On this occasion I was able to see it in all its glory, with elephants and rhinoceroses in the foreground.

We drove through Arusha to the Manyara National Park. We only stayed two days, just long enough to be able to film some of the lions which habitually rest there in trees; I had not met this unusual type of behaviour in these big cats before. As we climbed up the slopes to the Ngorongoro Crater it was pouring with rain. The highest point of the crater edge is about 8000 feet above sea level; a fresh wind blew in our faces. When we arrived at the top the cloud cover parted and the sun shone all over the wide basin of the crater which is 2500 square miles in area and one of the largest volcanic craters in the world. It is full of wild animals of all kinds. The sun also shone as we drove on into the Serengeti National Park. One can leave the rainy season behind quite fast in East Africa and find the sunshine which is nearly always present in these regions.

Mr J. S. Owen, Director of National Parks in Tanzania had informed the authorities in Seronera, the Park's headquarters, that we were coming and the staff did all they could to help us. The annual migration of the herds of gnu, in search of fresh pasture, was in full swing when we arrived. The movements of the migrating herds extended for several hundred miles. We followed them on the ground and also by air, and Mr Turner repeatedly piloted his little Cessna to places where the plains were dotted with gnus, migrating and resting. They were brindled gnus, which are still much more common than the white-tailed gnus of South Africa. It was an extraordinary sight. Thousands and thousands moved forwards beneath us, tens of thousands or probably even hundreds of thousands. '367,000 animals in search of a home,' writes Professor Bernhard Grzimek in one of his books, and by this he meant the gnus, the zebras, the Thomson's and Grant's gazelles, hartebeest, giraffes, rhinos, buffaloes, lions, leopards and many others which live in the Serengeti National Park.

Before flying on to Uganda we spent a few more days in the Nairobi National Park. This small wildlife reserve lying close to the gates of Nairobi provides a home for numerous animal species. It was the cheetah that I was particularly interested in. I had never been able to film these spotted big cats and so we did everything possible to find them on this occasion. Mervyn Cowie and Mr Dennes, the Chief Game warden, kindly sent out their most experienced ranger to look for them, and a report soon came in that a female with three young cubs had been sighted in Section 18.

We went in search of them and spent the whole day trying to find them without success. It was as though they had vanished into thin air. The next day it was raining. In spite of this we again drove off with our keen-sighted ranger in search of the cheetahs. About noon he spotted them behind a small rock in the middle of the savannah. They were lying indolently in the grass, a big handsome female and three half-grown young. The cheetahs were soaking wet and when they shook themselves drops of water flew off their fur like a fine spray. It was obvious that, like the true cats, they definitely disliked the rain. Peter drove the Land-Rover slowly backwards towards the cheetahs while I filmed them through the rear window. The animals appeared to take little notice of our approach. Then a few feeble rays of sunshine broke through the cloud cover, and I got to work with the camera.

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was as though one had been transported into a veritable tropical paradise as the boat glided by the banks, lingered under spreading trees which fringe the river, or entered small bays. Everywhere was teeming with wildlife and none of the animals took flight at our intrusion. They had long since learnt that the boats passing by, holding motionless humans, constituted no danger. Here nobody hunted them and every living creature felt secure.

Large numbers of hippopotamus lay in the water. When the boat came too close to them they dived without a sound; they soon surfaced again, puffing and blowing. Elephants stood on the banks, buffaloes and waterbuck grazed close by. On the sandbanks or on trees and bushes stood African fish eagles, goliath herons, open-bill storks and saddle-bill storks, pelicans, African skimmers, marabous, cormorants, bee-eaters and others. Colobus monkeys leapt through the trees, from which came the calls of many birds.

Most impressive of all, however, were the numerous crocodiles which were to be seen everywhere, as the boat glided past. Singly, in pairs and even in dozens, they rested on the land and on the sandbanks in the middle of the river, which in many places is up to 900 feet wide. Like stranded tree-trunks they lay motionless on the mud, in among reeds or foliage, lapped by the water, half covered by grasses or even right out in the open, revealed in all their dangerous magnitude. They looked even more menacing when they opened their mouths wide, showing their formidable rows of teeth, and remained for minutes on end in this position without moving a muscle. Only the bluish third eyelid—the nictitating membrane—which they sometimes drew across the eye showed that these huge armoured reptiles were still alive. But this position is deceptive. According to a legend that goes back to Herodotus a crocodile with its jaws open is said to be inviting small birds to enter its mouth, to pick leeches from the soft skin of the jaws or remove scraps of meat from between the teeth. To us this seems an odd invitation and although it makes a nice little story, it has never been confirmed by serious naturalists, although many have tried to do so.

Crocodiles several feet in length are by no means harmless reptiles. They should always be treated with respect; many people have been attacked by them and badly lacerated or even killed. The idea of falling out of the boat into the midst of these lurking monsters was a terrifying thought. There is no other place in the world today where there are so many crocodiles as on the Victoria Nile below Murchison Falls. It is a crocodile's version of Utopia. The high cliff over which the river flows, forced through a channel that is only about twenty feet wide at the place of the falls, provides an insurmountable barrier for all fish; they remain trapped in the gorge below in their thousands and the crocodiles have only to open their mouths when they are hungry.

The final stage of our expedition was spent in the vast papyrus swamps on the north shores of Lake Victoria. With the help of game rangers and fishermen we went in search of the shoebill, a rare bird that is very difficult to find. Lake Victoria is the largest lake in Africa; its waters alone cover an area of 24,000 square miles, but the swamps and reed-beds along the edges extend much farther and are well-nigh impenetrable. Myriads of mosquitoes, huge numbers of crocodiles and bottomless swamps prevent entry into this completely unknown world.

First we made an air reconnaissance. Flying in a small aeroplane, we circled over the wooded islands which are dotted about in the many square miles of the swamp area. On three occasions we put up shoebills. We marked the places at which they had gone into the reeds as well as we could, which was not easy in view of the monotonous nature of the swampy country beneath us. We then took to a narrow flat punt and attempted to reach the places where, according to our reckoning, the birds should be. In spite of a good crew we made but slow progress in this confusion of reeds, water-lilies and mud; the papyrus swamps are full of animals which live undisturbed year in year out.

After a lot of wearisome poling, the punt stuck fast. It took us hours before we were once again out of this green, swampy hell. During the night the mosquitoes almost devoured us, there was no thought of sleep. They seemed to know just how to get under the mosquito nets without being noticed and we fought a losing battle with them for hours.

The boat journey gradually took on the character of a completely hopeless undertaking. Our spirits flagged and the willingness of the fishermen showed signs of diminishing. Urged on by Pat Martin and Lawrence Tennent, we carried on and tried to follow out our original plans. At last we were confronted by an odd-looking bird with a big head and a large, somewhat misshapen bill to which the shoebill owes its name. It is sometimes known as the shoe-billed stork or the whale-headed stork.

It moved slowly ahead of us. The shoebill is unfamiliar with man as its habitat is seldom penetrated by humans; in fact, we found that it was not particularly shy. At the next hillock it stood quite still, only about 20 yards from us. It prefers islands of 'floating' vegetation and avoids the deep water which offers it no firm footing and which teems with crocodiles. The shoebill is thought by some authorities to be related to the storks. It likes to stand for hours at a time on the same grassy islet and sun itself. When it shakes its feathers one can hear the rustle from a distance. The shoebill needs to be constantly on the alert and to keep an eye on its surroundings. This is why it prefers elevated ground.

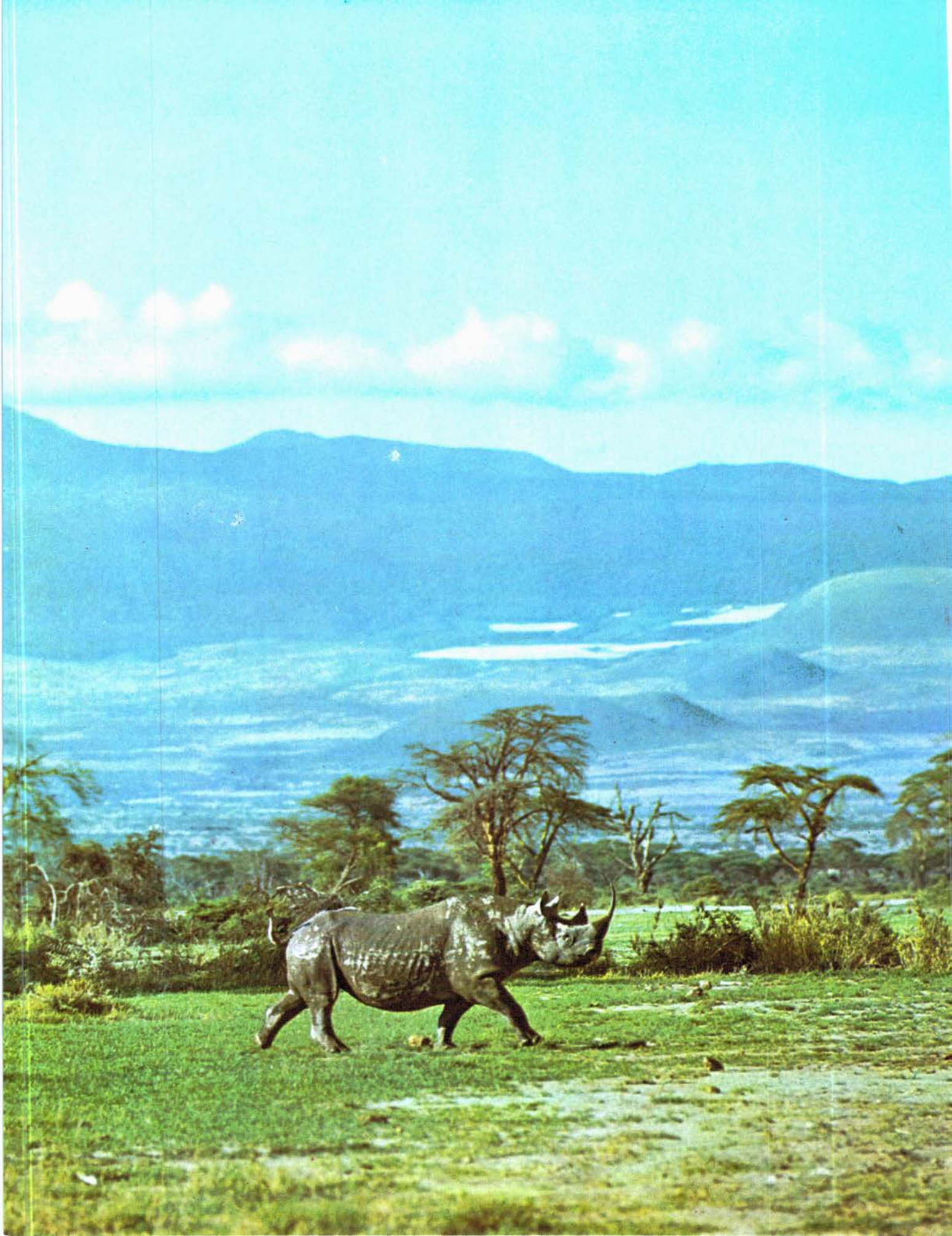
Many years ago the Swedish animal photographer Bengt Berg wrote a book about this species in which he referred to it under its Arabic name: *abu markub*. He found it farther north in the Sudan; these immeasurable swamps extend right up to the Sudan. Since then very little has been published on this peculiar bird.

The shoebill virtually protects itself by its retiring habits and its restriction to inaccessible swamps. It has never been photographed at the nest and we still do not know exactly where and when it nests; it probably builds in dense reed thickets or possibly even in trees, like storks and egrets. The fishermen firmly declared that they had once found a tree-nest on one of the wooded islands.

There can be no shortage of suitable food as the water was alive with fish and frogs all over the place. The shoebill scoops them out with its great bill when they come close to the surface. There appears to be an abundance of food throughout the year not only for the shoebill but for all the other animals living in this habitat. There are thousands of pools and as far as the shoebill is concerned,

when it has exhausted one pool it has only to move on a short distance to the next. We could not help envying the ease with which the shoebill moved around in its habitat. Our progress in the boat was very slow despite all our efforts.

Having spent seven years searching for rare and threatened animals all over the world, I reckon that the most unpleasant and exacting expedition of them all was to the mosquito-ridden and crocodile-infested swamps of Lake Victoria.



There are only 4000 head of white or square-lipped rhinoceros remaining alive in Africa. Like the black rhino this species also has two horns. The horns are not supported by any part of the bony skeleton, but consist of long horny filaments firmly fused together and anchored only in the skin.

Left. The black rhinoceros is the commoner of the two African species of rhinoceros but even its population is steadily decreasing. Outside the reserves these animals are mercilessly hunted by big game poachers because the powdered horn is still in great demand, especially in China, as an aphrodisiac.

Description of the species illustrated

the continued survival of the prey species. This process of nature is very effective in practical terms, even though it makes no allowance for sentiment as expressed in terms of the human approach to survival.

Great Bustard

Otis tarda pp. 36, 37

The great bustard is a long-legged bird about the size of a swan, which runs like an ostrich but can also fly well and whose head resembles that of an outsize domestic fowl. However, it is neither an ostrich nor a fowl, but is classified in a group related to the cranes and rails.

There are some 22 species of bustard in the world, the majority of which live on the plains, savannahs and semi-deserts of Africa, a few on the same kind of open country in Europe and Asia, and there is one species in Australia. In Western Europe the great bustard has a scattered distribution. For example in Germany there is a small, gradually decreasing population in Saxony and a large one of a few thousand in the Mark of Brandenburg. The western outlier of the bustard population of Hungary and south-east Europe extends into the Burgenland of Austria.

The great bustard was at one time valued as a game bird. Nowadays, however, it is protected throughout the year in most countries. Experience with other large birds might lead one to suppose that the great bustard would only be found in remote areas and that any encroachment of civilisation would quickly result in its being driven away completely. This is only partially true. Although the bustard is shy and wary, the opening up of the original forest country of central Europe has, in fact, favoured its spread. The bustard is primarily adapted to living in arable country but the area must be spacious and as free as possible from disturbance. Great bustards like to be able to wander daily over several miles of their territory and they do not like fences.

The courtship display of the great bustard is well known. This remarkable spectacle puts in the shade anything else of its kind that the European bird world can produce. Looking out at dawn over bustard country at the time of year when the display reaches its height, it is difficult to believe that the patches of white—which agitate slightly, move about, disappear and reappear again suddenly—are in fact birds at all. The shape of the bird is transformed to such an extent during the display that it no longer looks like a bird but a billowing mass of white. A written description of this transformation is as mystifying as actually observing the display. It is scarcely 40 years since careful observations have clarified the type of display and the sequence of events.

First of all the cock bird turns up the non-fanned tail in a sharp bend over the back, so that the loose feathers on the pure white underside are revealed. Then it fills the throat sac in its thick neck with air so that it is distended to the size of a child's balloon; this misshapen, swollen structure shows bluish stripes on the skin. Its head is sunk into the neck and the erect bristly feathers round the chin look like white whiskers. The really startling effect, however, is produced by the wings. These are normally folded but during the display they droop. With a jerk the elbow is extended so that the upper and lower arm point backwards; the wrist remains flexed. The large primary feathers which are folded now lie on the back; the wing-coverts are raised and brought forwards and the inner secondary feathers are also erected so that they almost meet behind the head. Broadly speaking, these are the most important details of the display which has been likened to the unfurling of the petals of giant white flowers, simulated by the movement of the white feathers. The display arouses the interest of the female bustard and undeniably causes astonishment in the human observer.

Great Indian Rhinoceros

Rhinoceros unicornis pp. 182, 183

Like the elephants, the five species of rhinoceros still living on the earth (great Indian, Sumatran, Javan, white and black) are the last survivors of a group of ungulates which was once rich in species; it was represented by about 30 genera and many more species in Europe, Asia, Africa and North America.

In the Early Tertiary period, over 60 million years ago, this group evolved into small forms which were only the size of a pig, including horned and hornless forms, short-legged forms and barrel-shaped forms like hippos; there were also representatives which were the size of elephants. Among them was the world's largest ever land mammal: the hornless *Baluchitherium osborni*, which was 15 feet tall and which lived in Mongolia during the Oligocene period. Out of all the wealth of species only the five rhinos mentioned survived the Ice Age.

Together with the African white rhinoceros, the great Indian rhinoceros is the most powerful and most impressive of the rhino group. About 200 years ago it was still common from West Punjab along the great river valleys south of the Himalayas to Burma and Siam. Today there are only about 500 animals left; these live in eight Indian reserve areas and in the Rapti Valley in Nepal. It is not absolutely certain that they can be preserved for the future. It is well-nigh impossible to teach the great mass of uneducated natives about the irreplaceable value of such primitive large animals and to get over to them that their belief in the magical properties of rhino horn is only a myth. The equivalent of about £35 is paid for a pound of the alleged

magical horn and to people who earn only a few pence per day, the incentive to poach is very great indeed. Even armed guards and the threat of severe penalties are insufficient deterrents. In addition there is the difficulty of effective supervision of animals in jungle swamps that can only be penetrated with riding elephants.

The outlook for the great Indian rhino is indeed a gloomy one but there is one ray of hope in that these animals can now be kept in paddocks without too much difficulty. In captivity they live to a good age, up to 20 years. Moreover, since 1956, young have been born in captivity on four occasions. All those born in the zoos at Basle and Whipsnade were reared successfully and from these a breeding pair was established at Milwaukee Zoo in the United States. It is therefore to be hoped that the species will at least be preserved in zoos, even if it becomes extinct in the wild.

Great White Egret

Egretta alba p. 38

The elegant great white egret is slightly smaller than the grey or common heron (*Ardea cinerea*) but it has a more slender neck and longer legs. It is a bird of the open countryside.

Looking at a map of the geographical distribution of the great white egret one might come to the conclusion that this species is common: it has the widest distribution of all the species of heron—of which there are about 60 in the world. The great white egret is represented by various races, which differ only slightly, on all the continents and broadly speaking is only absent from the northern half of the northern continents. It is primarily at home in the warmer countries. In Europe its north-western nesting place is on the Neusiedler Lake in Austria.

The map however is deceptive. In reality the great white egret is nowhere common, on the contrary in most places it is rather a rarity. There are several reasons for this. First, it only breeds in very extensive areas where water is present and today these areas are becoming increasingly scarce. Secondly, the great white egret has suffered a lot of persecution; it has been ruthlessly hunted for a long time for its feathers.

During the breeding season most species of heron carry ornamental plumes on the head, neck and shoulders. These are very finely constructed, the feathers are narrow and the barbs are long and free, giving a filigree effect. The ornamental plumes of the great white egret are more handsome than those of other species and they attain a length of 18 inches. For hundreds of years these plumes were highly valued among eastern European and Asiatic peoples as adornments for civil and military head-gear. Only noblemen and persons of rank were permitted to wear them.

Just as the hunter in Upper Bavaria wears a chamois-beard in his hat, so in former times the Hungarian grandee used to wear a spray of egret plumes. Plumes of egrets were expensive: even before the First World War. Plumes from several birds were needed to make up a really handsome spray and, decorated with diamonds, the spray cost as much as a mink coat today. They were valued accordingly and were among the gifts by which princes expressed the bestowal of favours. Thus after the Battle of Aboukir Bay, Admiral Nelson received handsome egret plumes as acknowledgment from the Sultan of Egypt. At one time European ladies' fashions also demanded egret feathers. The result was that the great white egret was ruthlessly hunted throughout the world.

The fully developed ornamental plumes are at their best at the beginning of the breeding season and later they become abraded and bedraggled; the adult egrets were therefore killed at their nesting sites. As a result whole colonies were destroyed. Today we are faced with the problem of how to preserve the few remaining great white egrets. Those on Neusiedler Lake, numbering about 260 pairs, have been put under strict protection.

GRÉVY'S ZEBRA see Zebras

GRIZZLY BEAR see Brown Bear

GUANACO see South American Camels

GUILLEMOT see Common Guillemot

Hawaiian Goose

Branta sandvicensis pp. 104, 105

The Hawaiian goose or ne-ne, as it is called in the islands where it occurs, is a peculiar offshoot of the Canada and Brent goose. Its distribution has always been restricted to some of the Hawaiian Islands, where it occurred mainly on Hawaii and Maui.

The ne-ne has given up a life associated with water and swamp such as is led by most other geese. Their habitat is the crevassed surface of old lava fields of the big island volcanoes. The lava region where these geese live provides an almost completely dry habitat, although there are some small ponds where they occasionally swim. They are good swimmers but are seldom seen on the ponds. They also fly well but do not undertake large-scale migrations like so many of their relatives. They usually live at high altitudes where the forest on the volcanic slopes is

From there it extends over the whole of the wooded steppe country of south Russia and central Asia, where even today the imperial eagle is not considered to be rare in many places. However the Balkan population has already dwindled considerably due to the increasing development and opening up of these countries. The imperial eagle of eastern Europe feeds almost exclusively on susliks and is largely dependent upon the distribution of this small steppe rodent. The Spanish imperial eagle on the other hand usually has a more varied diet at its disposal which includes rabbits, rodents, birds and reptiles.

The Spanish area which is isolated from the rest of the European breeding range is inhabited by a special geographical race. These eagles have never been very common here and today they are regarded as considerable rarities in most places. The relatively few eyries are found in the pine and cork forests of the Coto Donana, the coastal stretch bordering the estuary of the Guadalquivir. Most of the trees grow to only a low height and the nests are readily accessible, with the result that the population of eagles is seriously threatened. The future preservation of this handsome eagle can only be ensured if the breeding areas in the present nature reserve are given effective protection and if steps are taken to prevent the eagles being shot outside the reserve.

Indian Wild Ass

Equus hemionus khur p. 187

The ghorkar of the Indians is known to us as the Indian wild ass. Together with the onager, kulan and kiang it forms a large species which stands intermediate between the horses and the African wild asses. After the Ice Age the wild horse occurred from the Iberian Peninsula, France and Britain eastwards to Mongolia; the wild asses of Africa lived in the north and north-east of that continent. Between these two groups lay the range of the Asiatic wild asses, which extended from north-west India through Mesopotamia, Anatolia, Afghanistan, Persia and Turkmenistan to Tibet and Mongolia.

Excluding specimens in captivity, the wild horses are now represented by a few dozen Przewalski's horses living free in Mongolia. The African wild asses have disappeared from the whole of north Africa and only scanty remnants occur in Somaliland and possibly also in Nubia. The position of the wild asses of Asia is not much better. Of the kulan or Mongolian wild ass which once occurred in large herds from Mongolia to the Kirgiz Steppes, there are only about 750 animals surviving. The onager or Persian wild ass, which roamed the desert plains of Persia and north-west Afghanistan in herds of several hundred head some centuries ago, has now been reduced to 200–300 animals. The Syrian wild ass of Mesopotamia has been completely exterminated. The Anatolian wild ass had been already exterminated during the early ages of history. It is only the kiang or Tibetan wild ass of north Ladakh, Nepal, Sikkim and Tibet to the Kukunor area of Chinese Turkestan which is fairly secure in some parts of its range, although it has disappeared in others.

At one time the ghorkar lived throughout the desert and dry plains of north-west India. Nowadays there are less than a thousand in the saltmarsh desert of the Little Rann of Kutch.

The blame for the almost complete disappearance of the wild Equidae rests entirely on man, who has hunted them indiscriminately from the Middle Ages up to the present time. Their flesh was always regarded as a delicacy. So long as man only had horses available for hunting and pursuing them, there was always the possibility that these animals could escape into the desert where they were excellently adapted to the harsh conditions. Man found it very difficult to follow them into the desert wastes. But when long-range breech-loading weapons were introduced into the home ranges of the wild Equidae, their chances of survival became less and less. And after the replacement of the horse by the cross-country jeep they had no chance at all. Finally, the people who live in the range of the wild Equidae do not know the meaning of the term animal conservation and it will not be many years before the last onager of Persia and the last ghorkar of India has gone the way of all flesh —in spite of all the efforts of the international nature conservation organisations to save wildlife.

Javan Rhinoceros

Rhinoceros sondaicus p. 193

The Javan rhinoceros has folds of skin between the head and neck and where the limbs are joined to the body, similar to those in the great Indian rhino. The folds give the impression that the surface of the body is covered with armour plating. In addition the skin has a granular or scaly appearance with small bumps on it which are arranged as in a mosaic.

Whereas the Indian rhino reaches a shoulder height of about 65–68 inches the Javan species is somewhat smaller in stature with a height of 62–65 inches. Its head, however, is considerably smaller than that of its Indian relative. Both these rhinos carry only one horn in contrast to the other three species which are two-horned (Sumatran, white and black).

The Javan rhinoceros likes a terrain with dense vegetation and with plenty of places with water for wallowing. It does not matter whether the water is clear or muddy, nor whether the watering places are in the lowlands or at altitudes over 6000 feet. In spite of their heavy build these animals can climb well. A daily bath is an absolute necessity for them. In places where

muddy wallows are used, the trees and bushes are spattered with mud as the rhinos like to chafe themselves after a wallow.

The Javan rhinoceros normally lives solitarily; they are only found in pairs when the bulls are mating with the cows or when the mother is looking after her calf. The calf is suckled for at least two years and becomes sexually mature at the earliest at four years of age. Since a female is pregnant for about 16 months and suckles for two years, she can produce a calf at the most every third year; usually it is only every four years. In view of this slow rate of reproduction, it is not surprising that man can bring about the extermination of this species with comparative ease and, as the numbers decline, the process of extermination is accelerated. This armoured animal has scarcely any natural enemies, except perhaps the tiger which may occasionally kill a calf when the mother is not on the alert.

The Javan rhinoceros was formerly distributed from Upper Burma over the whole of south-east Asia including the Malayan Peninsula to Sumatra and Java, and it occurred in all suitable habitats. The high price paid for the horn, particularly by Chinese apothecaries, is due to the damnable legend that in pulverised form it works wonders as an aphrodisiac. This belief led automatically to intensive hunting first of the Asiatic species of rhinoceros (Indian, Javan and Sumatran) and when these were almost exterminated, to the hunting of the African species (white and black rhinoceros).

Thus the Javan rhinoceros has been reduced to two dozen head at the most, which live in the reserve area of Udjong Kulon in the extreme west of Java. It is possible that there are still half a dozen individual animals scattered on the mainland, presumably looking for mates. The reproduction rate is also thought to be very low in Udjong Kulon. Unfortunately there is not a single individual of this animal species in any zoo—hitherto only seven Javan rhinos have been kept in zoos for any length of time—so the last instalment of the story of Javan rhinos on this planet will soon be finished.

Kakapo or Owl Parrot

Strigops habroptilus p. 148

There are more than 300 species of parrot, among which the kakapo is the most peculiar and one of the most interesting. It lives in New Zealand, a country which has many remarkable and ancient bird forms.

The kakapo's short, rounded wings look like two fans when spread out. They are not used for proper flight but assist the bird's progress as it climbs about in trees or glides down to the ground; the wings are also slightly extended and used as balancing organs, as they run fast along the ground. The long feathers which radiate like the facial disk of a barn owl have earned them the popular name of owl parrots, although these birds have no other similarity to an owl and are of course quite unrelated to the owls.

In the moss-festooned southern beechwoods of the mountain gorges in which the kakapo occurs, one does not normally see it during the day, although one may come across characteristic signs of its presence, as for example well-trodden paths in dense undergrowth which are reminiscent of mammal runs. During the day the kakapos remain hidden in holes among the stilt-like roots of the forest trees; they are principally active at night.

Their food consists almost entirely of the shoots and leaves of plants, particularly ferns and grasses, but also berries. The bird does not swallow the green parts whole but chews them in the bill breaking them up so that one never finds fibres in the stomach or intestine. The masticated fibres become lumped together and are left lying around. This bird is not easy to track down but the lumps of chewed fibres and the trampled paths provide signs of its presence.

The two to three white eggs, which are small for the imposing size of the bird are laid in a hole beneath a tree root. Apparently never more than two young are reared, often only one.

The kakapo was not discovered until the middle of the last century. At that time it still occurred in North and South Islands of New Zealand and in places it was even comparatively common. But within a few decades it had disappeared from North Island and had become very rare on South Island. Today there are possibly not more than 20 individuals living in a secluded valley on the south-west coast of South Island.

The kakapo must now be regarded as one of the rarest birds in the world. How has this situation arisen? For a long time it was considered that the white colonisers of New Zealand should bear the sole responsibility for the disappearance of the kakapo from the greater part of its former range. Today, however, scientists who have been engaged on intensive studies concerning the decline of so many species in the Old New Zealand fauna, believe that the matter is not so simple and the reasons for the decline of the kakapo may date back still farther. There is no conclusive evidence as yet and probably many factors are involved in the decline. Nevertheless, there are impressive eye-witness accounts from older naturalists who saw dogs pulling the kakapos out of holes and killing them and doubtless, if one is to believe these stories, the white man's dogs may well have been responsible for the extermination of kakapos in many valleys. This cannot be the sole reason for their disappearance, however, as there are many secluded valleys in the thinly populated South Island which are practically never disturbed and these areas could provide the kakapo with a suitable habitat.

It is about 9 feet in length and weighs 700–900 lb. The underparts are more strongly marked, with irregular yellowish-white flecks, than the upperparts. The young are much paler at first, almost whitish-grey.

Weddell seals hunt small fish and squid, which they can swallow easily. They keep their blow-holes free by constantly breaking the new ice as it forms. For most of the year they live in small groups or even singly; however, about a week before pupping, the females collect together on the edge of the ice in loose groups, of up to several dozen. The pups are born in September and October, after a gestation period of 310 days; at birth they are about half the length of the adult females and weigh about 70 lb. The mother's milk is extremely rich in fat and very nutritious. The young grow fast and by the time weaning takes place, when they are 2 months old, they have already quadrupled their weight. The mother does not leave her resting place from one week before to one week after the birth of the pup and by the end of the suckling period she will have lost 2½ cwt.; after this period, however, she soon puts on weight again. Two weeks after the birth of the young, the mother entices it into shallow pools, first of all, to accustom it to water; she then takes it into deeper water gradually, until it can swim and dive properly.

The population of Weddell seals in the Antarctic numbers several hundreds of thousands and at the moment this species is not threatened. It is not often hunted by man. Leopard seals prey upon the young Weddell seals and killer whales on the adults, but these losses are of no real significance.

White or Square-lipped Rhinoceros
Ceratotherium simum
and
Black or Narrow-lipped Rhinoceros
Diceros bicornis pp. 228, 229

Nowadays rhinoceroses are only to be found in south Asia and Africa, although earlier in the world's history they also occurred in Europe and North America. Of the five species still living, three are Asiatic: Sumatran, Javan and great Indian rhinoceroses. The black and the white rhinoceroses, on the other hand, are African. Like the Sumatran rhino they carry two horns on the front of the head.

The horns have no bony skeleton but are purely dermal structures formed by the fusion of horny filaments which are long, narrow and parallel to each other; the filaments are anchored in the skin itself. The horns are used as weapons and for digging out favourite roots, etc., rubbing against trees, termites' nests and so on. The horns become very sharp in the process and can be dangerous. On the average the white rhino has a longer anterior horn than the black rhino, but in the latter the posterior horn is longer than the front one. The longest front horn so far recorded in the black rhinoceros is 53 inches long, and of the white rhinoceros 62 inches, the posterior horns being 32 and 29 inches respectively.

Of the two African species the black rhino is the smaller and lighter. It attains a shoulder height of about 62 inches, a total length of approximately 155 inches and a weight of about 2 tons. The white rhinoceros, on the other hand, stands about 78 inches tall at the shoulders, is about 190 inches long and reaches a weight of about 2½ tons. Thus, after the elephant, the white rhinoceros is the largest living land mammal in the world. These figures suggest that the rhino is a heavy and cumbersome animal but in fact it is astonishingly active and can move fast. In a gallop, which admittedly cannot be kept up for long, they reach a speed of 30 miles per hour. It is not surprising that these colossi have no natural enemies in their home in Africa. Only a young calf unprotected by its mother might perhaps be taken by a lion or by a pack of hunting dogs. All quadrupeds move about with care in the vicinity of adult rhinos. Rhinos, particularly the black species, may become aggressive quite suddenly; they have poor sight and when they are suspicious and upset, they charge blindly at anything in front of them.

The black rhino is also known as the narrow-lipped from the elongated, pointed and finger-like upper lip which it uses in a prehensile manner when browsing on twigs and leaves. The white or square-lipped rhino, on the other hand, has a broad upper lip with which it grazes on grass and herbs. Since the latter holds its head lowered when grazing it needs a particularly powerful neck musculature to support the heavy head which is over 28 inches long. This musculature makes it look somewhat humped at the nape.

Both species live in grassy and bushy plains of the savannahs, singly or in pairs, sometimes a few join together in loosely-knit groups. They feed in the morning and evening, and in the heat of midday they rest in the shade. They like to wallow in mud. Their hide is undoubtedly thick but it is not insensitive and wallowing appears to be beneficial; it helps to keep down the ticks. These pests are also eaten by oxpeckers, small birds which look somewhat like starlings; they land on the rhinos' backs, perch and run about on them, pecking and nibbling at the ticks, searching in all the folds and cracks of the hide. They also do good service as sentinels. They give warning of anything suspicious by flying off and calling.

Young rhino calves can be seen at all times of the year. The gestation period of the white rhinoceros is 510–540 days, and 530–550 days in the black rhino. Only one calf is born which is suckled and tended for over two years. Therefore the cows only produce offspring every three to four years; they are sexually mature at three years at the earliest. Rhinos can live to be 35 years old.

The black rhino has already disappeared from several areas where it was once distributed, owing to the human settlement of many habitats and to poaching for its horn. The total population is still about 12,000 animals. This is alarmingly small for a huge continent such as Africa. Fortunately it does well in captivity and also breeds there. At the moment there are about 120 animals in the zoos of the world and so far over a dozen calves have been born in captivity.

The white rhinoceros, which occurs as a northern and a southern subspecies, is still rarer. At one time the southern subspecies survived only in the Umfolozi and Hluhluwe Game Reserves. In recent years, however, 150 of them have been transferred to other reserves in South Africa and Rhodesia. All in all there are not more than 3000 to 4000 white rhinos. They were first kept in zoos in about 1946 and there are now about 30 in captivity.

Whooping Crane

Grus americana p. 103

In 1834 the ornithologist Thomas Nuttall wrote the following eye-witness account of whooping cranes:

'In the month of December, 1811, while leisurely descending on the bosom of the Mississippi, in one of the trading boats of that period, I had an opportunity of witnessing one of these vast migrations of the Whooping Cranes, assembled by many thousands from all the marshes and impassable swamps of the north and west. The whole continent seemed as if giving up its quota of the species to swell the mighty host. . . . The clangor of these numerous legions, passing along, high in the air, seemed almost deafening.'

In 1952 R. P. Allen published a book giving the results of his investigations on this species of crane: he estimated that during the middle of the 19th century the total population for the whole of the North American continent was only 1300–1400 individuals. The decline in numbers took place of its own accord and the population continued to decrease steadily. In the spring of 1922 the last nest to be found for decades was located in a swamp in Saskatchewan. The population in the steadily shrinking winter quarters on the Gulf Coast were counted year by year and soon reached a 'low' of 21 specimens. The end appeared to be inevitable. Since then, however, the tiny remnant of the huge flocks which were once seen on migration has remained at approximately the same size. The population has even shown a slight increase in recent years. In 1963 thirty-three birds, of which six were immature, were counted in the winter quarters. Six specimens were living in captivity, to which they had mostly been taken owing to some accident.

The success of the protective measures for the sadly reduced relict of this outstanding bird species of the North American continent has been somewhat surprising. Over 2000 miles separate the last known breeding ground, right on the northern edge of the former range on Great Slave Lake in Canada, from the regular winter quarters in the Aransas National Wildlife Refuge on the coast of Texas. This unbelievably conspicuous snow-white giant bird undertakes a flight of 2000 miles twice a year, through areas full of hunters who would be only too glad to turn their guns on them if they could. Naturally there are individuals among them whose conscience would not be unduly troubled by shooting a whooping crane.

An annual publicity campaign is mounted in the press and on the radio. People in all areas which might be touched by the migrating cranes are told that this rare bird, the last of its race, must be protected. When the birds are sighted anywhere, there is usually at least one person who has heard of the importance of the cranes and can spread the news around. Naturally, however, it sometimes happens that a crane is shot or meets with an accident. If it is not fatally injured it usually ends up in a zoo where it is looked after. Even the remains of a dead specimen are of value and these are made available for scientific investigation. All this is the result of a tireless campaign to keep the public informed.

Naturally the cranes are also carefully guarded every year in their known winter quarters where they are easiest to control. If only it were possible, the birds would also be guarded everywhere they went but their present breeding grounds are only partly known. These lie in lonely areas, difficult of access, which still occur in the 'wide open spaces of Canada'.

How long will it be possible to preserve a population of 20–30 birds under these conditions? The rate of reproduction is low, the clutch normally consists of two eggs, of which usually only one is reared and it takes several years to reach sexual maturity. What are the chances of building up a large population from such a low level, even assuming that losses from human intervention can be avoided?

One characteristic of the whooping crane which works to its advantage is its exceptional shyness and secretiveness. Many of the older reports mention this characteristic. At a time when the whooping cranes were already rare and the finding of a nest created something of a sensation, many reports ended with an uninhibited account of an attempt at stealing the eggs, the collector expressing pride at his success or regret at his failure.

WILD CATTLE see Banteng; Bison; Cape Buffalo; Wisent

WILD HORSE see Tarpan

sentative of the common zebra was the quagga (now extinct), which also lived near the Cape. It was first made known to science in 1788 by Gmelin. Grévy's zebra, on the other hand, was not described until 1882; the French zoologist Oustalet named it after the then ruling President of the French Republic.

All three species of zebra differ not only in build and coloration but also in habits. The noticeably large-headed and big-eared Grévy's zebra has the narrowest and most densely arranged pattern of stripes; it also has a distinctive patterning on the rump, the stripes becoming even finer and closer on this part of the body. The mountain zebra also has narrow stripes but on the rump they are fewer, the individual stripes being broader. This species is also characterised by a small but distinct dewlap and steeply angled hard hooves. In the broad-striped common zebra the vividness of the pattern decreases from north to south, so that in the most southerly subspecies—the quagga—the back and the rump showed an overall shade of brown with no stripes visible in this area of the body.

Within its restricted range, Grévy's zebra has not developed any subspecies. The mountain zebras of western south Africa however have a somewhat narrower striping than the Cape mountain zebra and are known as Hartmann's zebra. In its enormous range the common zebra forms several subspecies, which from north to south bear the names Grant's or Boehm's, Burchell's and quagga, with Damaraland or Chapman's zebra in the west. Grant, Boehm and Burchell were explorers in the areas concerned; quagga is the hottentot word *kwucha*, bowdlerised by the Boers, from the neighing of this animal.

Grévy's zebra lives in small herds in semi-open country with scattered trees and bushes. The mountain zebra also lives in small herds; the terrain is rough in the mountainous and rocky country where it lives and is not suitable for large herds. The common zebra on the other hand lives in large to enormous herds, which are either widely scattered over the plains or densely congregated. They often move in long columns from one grazing ground to the next. When alarmed, the plains resound with the thudding of hooves as they gallop off.

So far Grévy's zebra has scarcely lost any of its population. Hartmann's zebra is still present in considerable numbers in south-west Africa and Angola, although it has had to vacate some areas owing to the pressure of human settlement. On the other hand, the Cape mountain zebra was never very numerous and has almost been exterminated: after the British took over Cape Colony in 1806, there was a relaxation of the hunting laws and this zebra was ruthlessly persecuted. Thanks to the foresight of some landowners it enjoyed protection on their large farms but in spite of full government protection, its population sank to 47 animals between 1910 and 1937. Today there are about 100 specimens but they breed slowly as the gestation period is one year and the mares only produce one foal every second year. At present they are distributed partly in the Mountain Zebra National Park at Cradock, partly on private farms in the vicinity of the Park, and also at Oudtshoorn, Jansenville and George.

Of the common zebras the two most southerly subspecies, the quagga and Burchell's zebra, were ruthlessly hunted and are now extinct. The quagga used to be present all over the plains of Cape Province up to the Orange River in hundreds of thousands, while Burchell's zebra occupied the Orange Free State and southern Bechuanaland. The last quagga died in 1875 in Berlin Zoo, the last Burchell's in 1910 in London Zoo. At the present time the other subspecies of common zebra are not threatened, even though they have had to vacate many areas on account of human settlement. It is only in the Serengeti that one can now see the larger herds which were such a common sight in former times.

The contributions on birds are by Dr G. Diesselhorst, on mammals by Dr T. Haltenorth, on reptiles and amphibians by Professor W. Hellmich. The articles on giant tortoises and marine iguana are by Dr I. Eibl-Eibesfeldt.

SOURCE OF PHOTOGRAPHS

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