

RUN RHINO RUN

Esmond and Chryssee Bradley Martin

With an Introduction by Elspeth Huxley

Photographs by Mohamed Amin

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My research led me across continents and to some places I had never previously visited. I found scholars, traders, shopkeepers, conservationists and medical practitioners more than willing to assist me in my quest to learn why the various parts of the rhino's anatomy, gram for gram, are so valuable on the world market today. Their help was invaluable, and I certainly could not have written this book without their co-operation. I am most grateful to all those who gave of their time and knowledge so generously to me. I would also like to note a very special thanks to Ian Parker for the help he gave to me right from the beginning of my research. He took particular interest in it, gave me 'clues' to several mysteries about the rhino trade, and kindly offered constructive comments during the preparation of my manuscript.

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NOTE TO THE READER

My wife, Chrysee, and I collaborated on the research for this book. Together we have written the text. However, for the sake of clarity and for simplicity of style, we decided to use throughout the first person singular (referring to myself). We also hope that in writing this way we will be able to achieve more immediacy.

Introduction

The 1970s may have been a good period for many in our consumer society, but for the rhinoceros it was a decade of disaster. In those ten years, 50 per cent of the world's rhino population disappeared.

The black rhino bore the brunt of the damage. In eastern Africa, formerly the stronghold of the species, nine out of ten of these cumbrous, vulnerable and endearing creatures were wiped out. Most of the killing was done by poachers carrying out their cruel trade to meet the demand for rhino horn in Asia and the Middle East.

In the mid 1940s, a single hunter shot just under 1,000 rhinos in an area of 200 square kilometres in eastern Kenya, to make way for African settlement. By 1980, an area 100 times as large, the adjoining Tsavo National Park, held only about 150 surviving rhinos. An animal that has inhabited the earth for some 60 million years is now reduced to a few thousands that cling onto survival in little pockets of bush and jungle set aside for their protection. And even there they are being relentlessly hunted, trapped and killed.

Despite much discussion, argument and wringing of hands, despite expressions of concern by governments, despite efforts by dedicated individuals to halt the trend towards extinction, the remarkable truth is that no investigation into the demand for rhino horn, the root cause of the trouble, was made until 1979. Then Dr Esmond Bradley Martin, sponsored by the World Wildlife Fund, travelled through much of South-East Asia in order to find out who buys the horn, in what quantities, and for what purposes. He discovered that some of the most widespread preconceptions about the trade were wrong. That rhino horn was used in aphrodisiac concoctions, in the mistaken belief that it increased sexual virility, was the generally accepted doctrine. By questioning the people who actually sold the horn, the pharmacists—nearly all Chinese—of Singapore, Hong Kong, Macao, Taipei and elsewhere, Dr Martin found out that its main use is not as an aphrodisiac after all, but as a remedy for various ailments such as high fevers, headaches, arthritis and other infirmities. In parts of India it is indeed believed to stimulate sexual performance, but throughout South-East Asia, as well as in China, it forms part of traditional Chinese medicine practiced today, much as it was 1,000 years ago, alongside modern treatments using scientifically based drugs.

From the rhino's point of view, of course, it does not really matter whether the protuberance on its nose is believed to be an aphrodisiac or a cure for fevers; in either case, the persecution of the species by the human race stems from a myth. But it is as well to establish the facts before seeking a remedy.

Dr Martin also tells us that another market hungry for the horn lies in North Yemen, where daggers with elaborately carved rhino horn handles are highly prized by young men. Until recently, very few young men could afford them, but a seven-fold rise in per capita income has put them within the reach of almost everyone. The new wealth has so greatly increased the demand that this small country, with about six million inhabitants, has become the world's largest importer of the horn—an unexpected and, for the rhino, melancholy spin-off from the soaring price of oil.

Trade in rhino products is banned by CITES—the Convention on International Trade in Endangered Species—and so every country which has ratified this agreement, and which still imports or exports the horn, does so

illegally. Nevertheless a thriving trade goes on, with a host of agents, smugglers, wholesalers, retailers and financiers involved in a loosely linked but highly effective network stretching from the Chinese pharmacist in, say, Singapore or Taipei, to the national park employee in India or Africa who may be underpaid, inadequately supervised and ill-equipped and so, not surprisingly, an easy target for bribery or intimidation. When one considers that a single horn of an Indian rhino may be worth the equivalent of three years' wages as a farm labourer or hotel waiter, the prevalence of bribery and smuggling is understandable.

Altogether it is a gloomy picture for all five existing species of rhino. The Javan species is down to an estimated 50 individuals clinging to existence in a small reserve at the western tip of that island. Probably no more than 300 of the Sumatran race exist in very small and scattered populations. The Indian species is rather better off; a population of about 1,500 dwells in national parks in India and Nepal, and vigorous measures are being taken by those governments to protect them. The one real success story concerns the white, or square-lipped, rhino of southern Africa. Hunted to the very verge of extinction, it was rescued by the Natal park authorities and, under protection, has built up its numbers to a point where populations have been established in other parts of Africa, as well as in many zoos. It is the black rhino that has been really hard hit. For any animal, there is a point of no return when numbers have so fallen that the likelihood of males and females encountering each other in the bush is virtually nil. This point has now been reached in many parts of a habitat that formerly covered most of Africa south of the Sahara.

Conservationists will tend to focus their attention on Dr Martin's final chapter, "Prospects for Rhinos". While the outlook is certainly grim, he does not think it hopeless, except possibly for the Javan and Sumatran species. Better policing and management of national parks is the first priority. It is easy enough to say this, exceedingly difficult to bring it about. As Dr Martin points out, the breakdown of law and order is a factor which no amount of support from wildlife organizations and international bodies can remedy. In Uganda, parks built up for decades to a high level of excellence, and major magnets for a lucrative tourist trade, have been utterly shattered. The animals have been slaughtered wholesale, first by Idi Amin's undisciplined soldiery, then by Tanzanian soldiers equally out of control, and by virtually anyone with a rifle who wanted a meal. In other parts of Africa as well, guerrilla warfare has made nonsense of measures to protect wild animals, and the animals have died.

Nevertheless, in most African countries the parks are being maintained, if not always with efficiency, because their value to the tourist industry is recognized. What is mainly needed is more money. There is also a need for better techniques. International wildlife bodies are often willing to supply Land Rovers, light aircraft and other forms of modern equipment, but Dr Martin believes that these may be less effective than old-fashioned foot patrols which, giving no noisy warning of their approach, can track down poachers more effectively. Not only must anti-poaching measures be stepped up and greatly improved, but penalties need to be made much more severe, and the law more honestly enforced. "The deterrent has become meaningless", Dr Martin writes. As we all know, when this happens, when villains get away with murder in fact, murder will be unrestrained.

Dr Martin looks at various other suggestions that have been made as to how to save the rhino, some perhaps way-out, such as manufacturing large quantities of artificial rhino horn so as to flood the market and bring down the price; others of a less speculative nature, such as establishing breeding herds of rhinos in suitable habitats, protected by electric fences and patrolled day and night by well-paid guards. The poaching situation in East Africa has become so serious that Dr Martin speculates as to whether a black rhino breeding herd should be established

in another continent, on the lines of "operation oryx": the few surviving Arabian oryx were assembled at a zoo in Phoenix, Arizona, where numbers have built up so satisfactorily that some of the captive-bred animals have been taken to holding grounds in Oman, in the hope that, ultimately, they can be released in their natural environment.

Finally, Dr Martin believes that a heart-felt appeal to wholesalers who import the horn, legally or illegally, into Asian countries, to cease to do so, and perhaps substitute some other horn like that of the saiga antelope, might not fall on deaf ears. Some may consider this suggestion over-optimistic, but at least it is worth a try.

This book is, so far as I know, the first attempt to present a succinct and concise account of the trade in rhino horn and other rhino products, and it is a privilege to introduce what I believe to be an important contribution to the literature of conservation. I hope that it will not only be read and digested, but acted upon. Here is the rub. Dr Martin has found out the facts, stressed the situation's urgency and suggested measures which, although they could provide no quick or complete solution to the problem, might at least halt the decline towards extinction of this fascinating species, cursed with its myth-encrusted horn. The tendency of large organizations to generate a maximum of words and a minimum of action has not passed by the world of conservation. Good intentions, like some African rivers, are apt to run into sands of reports, committees, conferences and global strategies, which keep a lot of people busy but do not halt the poacher with his gun or poisoned arrow, the smuggler in his dhow, the importer with his faked documents.

While people pass resolutions, rhinos die.

It is to be hoped that Dr Martin's study will not only interest and intrigue his readers but will also stir into vigorous action governments, societies and individuals who really want to see the rhino preserved. "Run, rhino, run"—he is approaching the brink but it is still in our power, if only just, to halt his plunge over the precipice.

Elsbeth Huxley

In the nineteenth century Ethiopians snared rhinos in spiked wheel traps.





I · Rhinos in History and Mythology

Rhinoceroses have been on earth for 60 million years; fossil forms have been found in North America, Europe, Africa and Asia. Altogether, there have been at least 30 species, including the largest mammal of all time, *Baluchitherium grangeri*, which lived in Mongolia. This gigantic, hornless creature stood six metres at the shoulder, was nine metres long and probably weighed 25 tons, or four times as much as today's African bull elephant. He wandered about the Mongolian plains, browsing on leaves and branches. In the upper Miocene Age *Baluchitherium* disappeared. During the Pliocene many other forms of the rhinoceros died out, including those in North America. In the Pleistocene yet more became extinct, probably due to climatic changes and hunting by man.

Today there are only four genera and five species of the rhinoceros left. Most are threatened with extinction; all are in conflict with man.

There are three Asian species, and their total numbers are thought to be less than 2,000. The largest is the Indian, or Greater One-Horned Rhino (*Rhinoceros unicornis*), only found in northern India and southern Nepal; there are said to be about 1,500 remaining in the wild.

The Javan, or Lesser One-Horned Rhino (*Rhinoceros sondaicus*), weighs between 1,500 and 1,900 kilos (compared with 1,600 to 2,100 kilos for the Indian species). The Javan rhino is found only at the western end of Java—where there may be as few as 50 individuals left; none are in zoos. In 1850 the Lesser One-Horned Rhino still flourished throughout West Malaysia, Thailand, Viet Nam, Burma, India and most of the area of Java and Sumatra. Demand for its horn, skin and other products resulted in its wholesale extermination.

The third Asian species, the Sumatran Two-Horned Rhino (*Dicerorhinus sumatrensis*), is the smallest of all extant rhinos, weighing around 850 kilos and standing 1.3 metres at the shoulder. It is distinguished by its smooth skin, covered until maturity by a long, hairy coat. Over the past century, like the Javan rhino, its numbers have been much diminished by hunting and also by the growth of human populations which have intruded on its traditional grazing grounds. One hundred years ago the Sumatran animal was at home in much of South-East Asia, including India, Burma, Thailand, Viet Nam, Cambodia, Laos, peninsular Malaysia, Sumatra and Borneo. Today there are probably under 300 in the wild (none in zoos), with most of those remaining in Sumatra and West Malaysia. There may possibly be small populations still existing in Burma, Thailand and Borneo. When I was in Thailand in 1979, I was told by Pong Leng-Ee, Chief of the Wildlife Conservation Division of the Royal Forest Department, that rangers had seen the tracks of six Sumatran rhinos within the last few years, but that no ranger had actually seen the animal itself. I did not hear of a single person in Thailand who had come across a rhino in the wild during the past four years. Markus Borner in 1977 wrote that Sumatran rhinos still existed in Borneo, but two years later the Schenkel husband and wife team of zoologists doubted whether there were any remaining. Ken Proud, a National Parks official in Malaysia, claims that there is no evidence now of rhinos in Sarawak, which until World War II was a stronghold for the Sumatran species.

Head lowered, a black rhino rushes forward to charge a Land Rover, a locomotive or maybe just a butterfly.

The other two rhino species live in Africa. The largest by far, in fact the largest of all living forms, is the White, or Square-Lipped Rhino (*Ceratotherium simum*). It can weigh up to 3,600 kilos and is the second largest land mammal, after the

elephant. It exists in two widely separated areas: one in southern Africa, with the majority in Zululand; and the other in the Guinea savannah and deciduous woodlands of south-eastern Central African Republic, the southern Sudan, northern Zaire and, until the late 1970s, north-western Uganda as far east as the Nile. The Black Rhino (*Diceros bicornis*) weighs between 1,000 and 1,350 kilos and, unlike the grass-eating white rhino, is a browser. It probably numbered hundreds of thousands in the nineteenth century; in 1981 that figure is down to somewhere between 12,000 and 18,000.

Rhinos are represented in the earliest cave drawings in Europe, dating back some 20,000 years. However, after the last Ice Age, European man had no more rhinos to hunt, and he appears to have made no further reference to rhinos until the fifth century BC. It was then when a Greek named Ctesias wrote about a creature which had a purple head and carried a horn on its forehead. This horn was used to make drinking cups to detect poison. Ctesias was the private physician to King Artaxerxes I of Persia, but it does seem that he was rather gullible and inclined to accept statements made by informants who resorted to their imaginations when facts were lacking. For instance, he mentions a people with such gigantic feet that they lay on their backs and raised them in the air to give themselves protection from the bright sun! Ctesias' horned animal sounds like an

Archaeologists have discovered remains of early rhino species in Kansas and London, but to date the most famous cave drawings of rhinos are in Dordogne; Henri Breuil (left) shows one to colleagues.



inspired combination of an Indian ass and an Indian rhino. The reference is important though, because it shows that, over a great span of time, rhino horn has been held to have special properties.

Most of the early European myths about rhinos probably originated from Chinese tales that circulated in entrepôts where rhino horn and elephant ivory were traded. Some of these were blatantly absurd, although taken for granted at the time and even elaborated upon. As an example, it was said that rhinos had no joints in their legs, and in order to sleep they propped themselves against trees in a standing position. If a rhino fell down, it could not get up, so to capture the creature all one had to do was to induce it to lean against a half-sawn-through timber which would collapse, bringing the rhino down with it. Another belief was that rhinos were fond of music and perfume. A man dressed up as a highly perfumed virgin girl was thought to be an irresistible lure to any rhino. If the disguise did not work, and instead the rhino charged, forcing the lure to climb a tree for safety, he could dissuade the beast from further attack by urinating in its ear!

Two centuries after Ctesias, Europeans were able to see live rhinos in Alexandria; these animals were probably white rhinos which may have been captured around Lake Chad. In the first century BC a Roman called Julius Maternus became the first European to cross the Sahara to the Lake Chad region. There he saw rhinos in the wild. "We can imagine the Roman watching with amazement," commented one writer, "as the huge creatures, squealing and puffing, chased each other around in the strong light of the desert moon." In 11 BC an Indian ruler presented Emperor Augustus with a Greater One-Horned Rhino, and soon afterwards Romans began sending out their own expeditions to West Africa to bring back rhinos for public exhibition. The poet Marcus Valerius Martialis commented that they were the most aggressive fighters of all the animals in the Roman arenas; sometimes, he said, they even impaled bears with their horns and tossed them over their backs.

After the collapse of the Roman Empire and later with the rise of Islam, Europe was cut off from the Middle East and the Orient and no longer had access to tropical animals. Fantasy and wild imagination ran rampant in descriptions of African and Asiatic beasts. Where rhinos were concerned, poets, historians and geographers in the Dark Ages made a distorted identification with the mythical unicorn, a legendary animal whose horn was said to be a general panacea for all types of diseases and ailments.

The unicorn entered European mythology at an early date; both Aristotle and Pliny were convinced of its existence. The creature was usually believed to be the size of a small horse with a beard and a pointed horn of one metre or more in length protruding from its forehead. Like the rhino, the unicorn was endowed with enormous strength, but this was concentrated in its single horn. The unicorn was said to precede other animals to water and to render it pure by dipping the tip of its horn into it. Here is an obvious analogy to rhino horn which was believed capable of rendering some poisons harmless. There is also another link between conceptions of the rhino and conceptions of the unicorn: at the mythical level both seem to exist only in the male form. One Roman writer adamantly declared that all rhinos were males (engendered by rocks!). The unicorn, for its part, was 'known' to be irresistibly attracted to virgin girls. Leonardo da Vinci believed that only a young virgin could capture a unicorn, and then only momentarily. To do so, she had to sit in a forest, quietly by herself, with one breast bared. A unicorn would come to her and place his head in her lap long enough to allow her to pluck the horn from his forehead.

'Unicorn horn' could once be purchased from dealers in Europe. It had two quite different sources. The first came from the frozen waters of the north, passing

through the hands of many traders who had never seen the animal from which it was taken, for not even the Greeks had ventured to the Arctic, the home of the narwhal. The males of this whale species sport a long spirally tooth, a kind of ivory tusk which does indeed look like a horn and was readily accepted as the unicorn's horn. The second source was in fact rhino horn, from Africa and Asia and vaguely associated with the memories of the exotic beasts about which the Romans had written. Although there were no similarities between the appearance of these two horns, both were thought to have the same qualities. It also seems that later on rhino horn became more prevalent on the European markets and that rhinos, for a while, were synonymous with unicorns. In 1298 the celebrated Venetian traveller, Marco Polo, accepted the rhinos on the island of Sumatra as unicorns, despite their ungainly appearance:

There are wild elephants in the country, and numerous unicorns, which are very nearly as big. They have hair like that of a buffalo, feet like those of an elephant, and a horn in the middle of the forehead, which is black and very thick . . . They delight much to abide in mire and mud. 'Tis a passing ugly beast to look upon, and is not in the least like that which our stories tell of being caught in the lap of a virgin; in fact, 'tis altogether different from what we fancy.

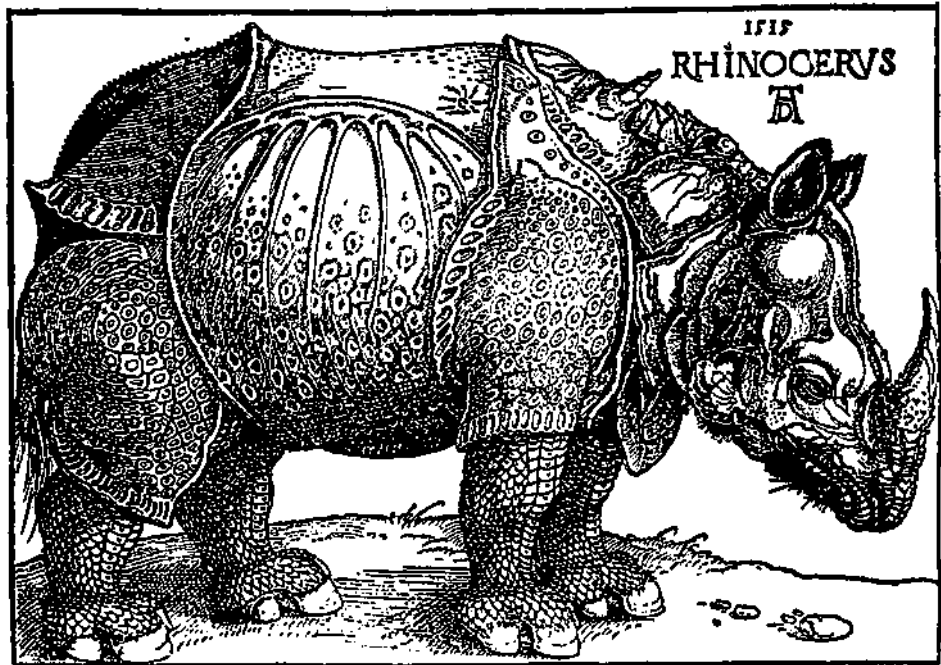
Arab traders, realizing the value of rhino horns in Europe, acted as middlemen to procure many Indian rhino horns from Asia. The Arabs claimed them as unicorn horns when they sold them to respected and influential European importers. Retail pharmacists then made fortunes by attesting to the medicinal powers of the supposed unicorn horn. The pharmacists ground the horn into a powder that went into a pomade used to treat a variety of ailments. Craftsmen also purchased the horn from the importers for making drinking cups, salt-cellars and spoons.

The 'unicorn horn' was an important drug for hundreds of years in Europe; both the rich and the poor consumed it. Many churches and wealthy men possessed an entire horn: Queen Elizabeth I had one in her bedroom at Windsor, which was one of her most valuable possessions. In 1741 unicorn horn was still an officially recognized drug in England, and as late as 1789 the French court was still using 'unicorn horns' to test the royal food to see if poison had been added. All these were rhino horns, and even a Pope had one: in 1591 Pope Gregory XIV, on his deathbed, was offered a horn from an Indian rhino. The tip of the horn was ground down into a powder and fed to him, but the desired effect did not take place. Shortly after consuming the potion, he died. This particular horn has been preserved for posterity and is presently in the Museum of Natural History in New York.

The alleged power of the unicorn horn led to its adoption as the symbol of the apothecary trade in Western Europe. Even today, Burroughs Wellcome, one of the world's largest pharmaceutical companies, uses a unicorn as its trademark. A friend of mine was recently given an electric toaster by Wellcome Trust Research Laboratories in Nairobi—with a unicorn emblazoned on it.

The first live rhino in Europe after the Fall of the Roman Empire appeared in 1515 when King Muzaffar of Cambay in western India sent one as a gift to King Manuel of Portugal. After a few months the Portuguese monarch decided to send the creature on to Pope Leo X; and, in order to make the present even more spectacular, he harnessed the rhino in a green velvet collar, studded with gold roses and carnations, attached to a gilt iron chain. When the ship carrying the wondrous animal put into Marseilles, Francis I happened to be there and instructed the captain, with the help of a bribe of 5,000 gold crowns, to take the rhino off and display it to the populace. Later, when the rhino was safely aboard again, the ship left for Rome, but a storm blew up and the ship was wrecked off

Albrecht Dürer never saw the Indian rhino on which he based his famous woodcut in 1515; at this time rhinos were confused with the mythical unicorn, hence the small spiral horn on the rhino's shoulder.



Genoa, resulting in the loss of all lives. The carcass of the rhino drifted ashore, where it was picked up, skinned, stuffed and forwarded anyway to Rome for the Pope to see.

Whilst this Indian rhino had been in Lisbon, an artist sketched it and his drawing later found its way to Augsburg and into the hands of the painter Albrecht Dürer, who also obtained a first-hand description of the rhino in a letter sent to him. In turn, Dürer produced his famous woodcut in 1515 of a rhinoceros; even though it was not very accurate, it remained the standard representation of the Indian rhino for more than 200 years and was copied many times by lesser masters.

In the eighteenth century another Indian rhino appeared with fanfare on the European scene, causing a tremendous sensation. An enterprising Dutchman named Douvemont van der Meer imported it and toured it around the capital cities in the 1740s. Besides feeding the rhino a regular diet of hay, van der Meer also gave his pet large quantities of beer and wine. The high point of the tour was when the rhino was led into Vienna with a full honour guard. Christian Gellert wrote a poem about this animal, Oudry painted it, Charpentier engraved it and Casanova included it in an episode of his memoirs. Louis XV tried to purchase the rhino after it was exhibited at Versailles in a specially built cage on wheels drawn by eight horses. However, van der Meer wanted 100,000 écus for his prodigious beast, and such a sum was too exorbitant even for the King's menagerie. So, Madame de Pompadour contented herself with tossing orange peels into its mouth during the short visit, and praised its facial features.

Although the Indian rhino became known once again to the European aristocracy during the Renaissance and several had been exhibited by the end of the eighteenth century, neither of the African species became familiar specimens until much later. One did come in 1868, however, a black rhino purchased by the 40-year-old Regent's Park Zoo. It was studied by the great zoologist Sclater and drawn by Joseph Wolf. It is a curious historical note that when the West's first modern zoological gardens were opened in the nineteenth century, the African rhino was much more of a rarity than the Indian one. Today a pair of Indian rhinos

can change hands for \$150,000—more than three times the amount that zoos now pay for black rhinos.

The Indian rhinos of old have a much more colourful history than their African counterparts. Aside from the pharmaceutical uses to which rhinos have been put for thousands of years in Asia, there are wondrous chronicles about rhinos as beasts of warfare. Indian rhinos with iron tridents attached to their horns were put in the front lines of the Indian armies to disperse enemy troops. When the notorious Tamerlane conquered Delhi in 1398, he was met by King Mohamed Nassir ed Din's twelve tame rhinos, which all lowered their heads in respect to the great Mongol warrior. This magnificent gesture had no effect on Tamerlane, for soon afterwards he massacred 100,000 prisoners in the city.

Tame Indian rhinos were also used in circuses and kept as pets by the influential and the wealthy. In Assam domesticated rhinos were trained to pull ploughs. There was once even a rhino that carried laundry around the town of Gauhati in the late nineteenth century.

The only reference I have found pertaining to any kind of a rhino cult comes from Dillon Ripley, Secretary of the Smithsonian Institution:

There is even said to be an obscure Indian religious rite, a sort of purge, performed by squatting inside the body cavity of a freshly killed rhino after it has been eviscerated. Certain prayers are recited and the severed rhino horn is used as a cup to hold the rhino blood offered to the gods.

Some Africans also believed that rhino blood had magical properties. Captain C.R.S. Pitman, describing a trip in the 1920s along the Kerio river in East Africa, wrote:

A particularly unsavoury custom to which I was introduced by some of my voluntary assistants in the course of this trip was that of bathing in rhinoceros blood! It is even more disgusting than it sounds. . . Two natives indulged in this luxury, so I was told, to acquire unlimited courage and strength. As soon as the rhinoceros had breathed its last the throat was cut and the jugular severed, the skin below the gash being pulled outwards to leave a capacious hollow, which was speedily filled with blood—foul-smelling, evil-looking, and black, more viscid than fluid. Having stripped themselves of their scanty body adornments, these two savages, with evident delight, smeared themselves from head to toe with the filthy slime till they reeked with offensiveness and literally shone in the brilliant sunshine.

People living in longhouses in inland Borneo revere dried rhino penises alongside sacred stones and bones in religious fertility ceremonies. The Sumatran rhino penis has a crossbar, known locally as a *palang*, ten centimetres below the tip; the crossbar extends five centimetres on either side. Traditionally, and until quite recently, Kenyah and Kelabit tribesmen in Borneo pierced their own penises in order to insert a piece of bamboo, bone or wood as a crossbar. At the ends of the crossbar they attached knobs of various types. Could it possibly be that this bizarre practice originated from the men copying what they saw in the male Sumatran rhino? Certainly, their belief in the supernatural power of rhinos was responsible for some other curious practices. For example, they used to hang a rhino's tail in a room where a woman was in labour, thinking that it would ease the pains of childbirth. In severe cases they held a rhino's penis over the woman's head and poured water through it. The alleged magic of the Sumatran rhino has obviously not helped its own survival.

When it is available, water attracts black rhinos, perhaps more for wallowing than drinking. Black rhinos can go for extended periods without free water, obtaining their requirements from plants.





One of the most famous animal trappers of all time, Carl Hagenbeck, sold this black rhino to the London zoo in 1868 for \$5,000. Joseph Wolf painted it in 1872. Sclater, the secretary to the Royal Zoological Society, believed this rhino to be the first of its species to arrive alive in Europe since the days of the Roman Empire.

This Indian rhino, bought in Calcutta for the London zoo in 1864, was painted by Joseph Wolf in 1872. Its Latin name, *unicornis*, ascribed by the founder of modern taxonomy, Linnaeus, reveals the age-old mythical connection between the rhino and the unicorn.





RHINOCERUS SONDAICUS.

The subject of this drawing by Joseph Wolf was a Javan rhino that had been kept in a tea garden in Djakarta before being purchased by the London zoo in 1874. The Javan rhino is closely related to the Indian species, and did in fact exist in Bengal until the twentieth century. It is also very fond of water and has been seen wading into the ocean to feed on mangroves.

In 1872 the London zoo purchased a Sumatran rhino for \$3,000, which Joseph Wolf immediately painted, using poetic licence in that he showed two of the species in his water-colour. It was somewhat ironical: the animal, an elderly female with no lower incisors, died six weeks after arrival.





2 · The Anti-Social Rhino

Black rhinos seek sandy or dusty depressions for lying down to rest during the heat of the day. They often lie on their brisket with their legs curled under them.

Of the five rhino species, zoologists have only studied the Indian, black and white in the wild. The Javan and Sumatran rhinos have proved too difficult to get close enough to observe their behaviour. A Swiss scientist, Markus Borner, recently completed three years of research in Gunung Leuser trying to study the Sumatran rhinos. During his entire stay, he saw only one rhino for fifteen seconds, totally unexpectedly when the creature passed by his campsite.

In this chapter I will discuss just two of the rhino species, the Indian and the black, on which some of the most interesting research has been carried out. I have chosen these two to illustrate rhino behaviour also because they are the ones I have personally observed in India and East Africa.

The most detailed work on the Greater One-Horned Rhinoceros was carried out by Andrew Laurie from 1972 to 1976 in the Chitawan valley of southern Nepal. Dr Laurie's resultant dissertation for Cambridge University is of excellent scholarship, and much of what follows here on the Indian rhino comes from this unpublished source.

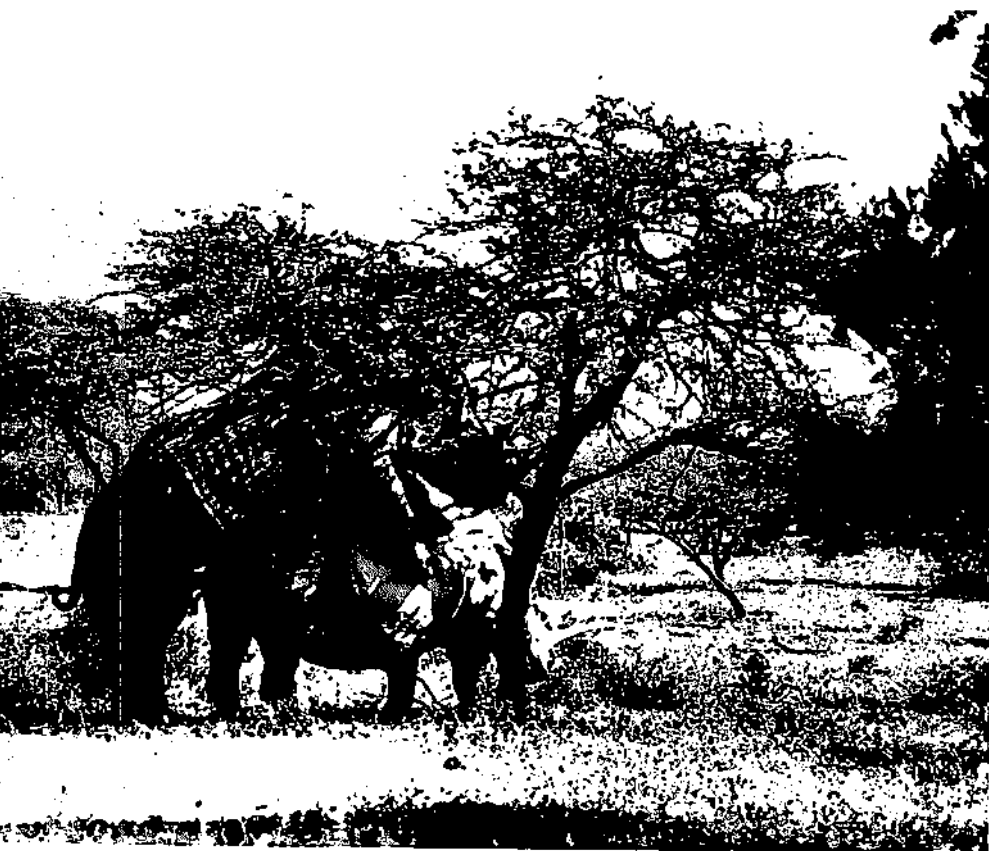
The massive Indian rhinoceros has a thick skin which has several folds on the neck, forequarters and in front of the hindquarters, giving the impression that the animal is covered in some sort of armour. The bellicose appearance is further enhanced by the presence of tubercles looking like iron rivets. In fact, until the twentieth century many people believed that the Greater One-Horned Rhino was bullet-proof. During the Indian Mutiny a soldier was faced with a court martial for killing a tame rhinoceros captured by his regiment; the soldier's defence was that he shot the rhino to see if it really was impervious to gunshot since he had been told that it was.

Some twentieth-century zoologists and conservationists have surmised that the warlike appearance of the Indian rhino is highly deceptive and that the animal is timid, shy and inoffensive; but Andrew Laurie's study has shown that this species is not at all placid. Because the Indian rhino prefers solitude (90 per cent of those Laurie observed were alone, aside from cow-calf pairs), many encounters between individuals are very aggressive. Whilst fights are not ordinarily lethal, they can result in serious injury. The Indian rhinos display and posture, stare and wheel, curl their lips and display their tushes (long and pointed incisor teeth). These displays usually lead to one giving way and fleeing. The victor, particularly if a male, may pursue the vanquished. If neither gives way, a real fight develops. There can be a clash between the two animals' horns or a horn and a flank. More often than not, however, no horn contact is made at all: the most dangerous part of the conflict is instead the forward and sideway rushes made with tushes bared and aimed at the opponent's head, although sometimes striking his rump or sides. The confrontations are accompanied by honks, bleats and roars, for the species is very vocal.

Courtship is also marked by violence. A female becomes sexually mature when she is seven years old. In most instances when a male approaches a female, even if she is in oestrus, she will try to drive him away, and will often succeed in repelling him. However, when she does not, horn-to-horn encounters result, from which the female will finally flee, with the male giving chase over long distances, squeaking and panting all the way. When they meet again they often turn and face each other and attempt to push each other backward, roaring between lunges and tush displays. After a while, they both take a break. Generally it is the male who

The rhino on the left in this nineteenth-century etching depicts the way Indian rhinos bare their tushes in display.





During copulation the female white rhino walks about and the male has to keep up with her. In this case, she has walked under a tree that the male cannot negotiate and he is about to fall off.

gets things going again so that, eventually, exhausted from all the activity, the female just lies down submissively. This being achieved, the male either lies down next to her himself, or stands over her, biting the air. Once Dr Laurie saw a male place his head under a female's neck and push her over onto her back; she remained still and the male stood looking at her for a minute and then turned and walked away.

Finally, the aggressive nature of both animals in courtship gives way to a more peaceful acceptance. Prior to mating the male rests his chin on the female's rump and tries to keep it there even if she begins to walk away. Both urinate frequently, and sometimes the female becomes quite excited, squeaking and panting and even forcing her head between the male's hind legs to sniff his penis.

The mounting by the male is extremely awkward and takes a long time to complete successfully. In trying to get into position he has to launch himself forward on his hind feet and get his front feet on her back. When he does not manage to raise himself sufficiently, he ends up bumping his neck on her rump, but the main problem appears to be the male's difficulty in keeping on top of the female once he is there. Often she moves forward, and he shuffles along behind her on two feet, trying to stay in step with her. His efforts may unbalance him, causing an ignominious belly flop.

Copulation, once started, may last for an hour or more. The male's ears flap and he grunts between spasms which occur every minute or so; the female, in Laurie's words, "gasps like a fish". It is fairly well known that the act of copulation lasts a relatively long time (elephants copulate for only a matter of seconds), which has given rise to the belief that the rhino possesses a tremendous sexual strength. The

idea that has developed from this is that because of the sexual activity of the rhino, its somewhat phallic-shaped horn can be used as a sexual stimulant for humans when it is ground down into a powder. What this does not take account of is how monumentally clumsy and inept the male is in making love to his mate; if the facts were better known perhaps some of the myths would disappear.

The rhino calf is born after a gestation period of about sixteen months. The mother stays with her calf for three to four years and steers clear of other rhinos during this time, except for brief encounters at wallowing pools. Soon after birth the calf is able to stand and it moves towards its mother for milk. Calves are quite active and interested in their surroundings, sniffing at different plants and occasionally picking up sticks in their mouths. Sometimes they approach other rhinos, whom the mothers are quick to chase away. At one year the infant calves have been weaned, a stage at which they are in real danger of being attacked by adult males. Male juveniles are particularly prone to attack, perhaps because they are looked upon by the adults as potential rivals. The result is that male juveniles tend to stay with their mothers longer than females.

Passing from adolescence to adulthood, the male rhino increasingly likes to be on his own, only occasionally meeting up with his fellows at wallows and feeding grounds. Indian rhinos are not really territorial animals. Dr Laurie believes that because of the animal's poor eyesight and the tendency of males to roam vast ranges in search of females and food, efforts to defend a specific area are impractical.

Adult Indian rhinos are both grazers and browsers. Grass makes up about four-fifths of their diet; the rest consists of fruits, leaves, branches, shrubs, aquatic plants and agricultural crops. On average, Indian rhinos spend about 45 per cent of their time feeding, almost 30 per cent resting, and the remaining 25 per cent in such activities as wallowing, getting to know other rhinos, standing alert to danger and moving around. Night-time is popular for feeding. Resting usually occupies the morning hours from 8 am until noon.

Indian rhinos love water, but they have rather messy habits in it. Unlike elephants who always face upstream, rhinos pay no attention to which way the water is flowing, and urinate and defecate at the same time as they drink. The percentage of time spent in water of course varies between the cold winter season when wallowing goes somewhat out of fashion and the hot monsoon months from June to September when rain is frequent and lakes build up.

Watching rhinos wallow is a hilarious sight; they abandon themselves wholly to the fun, rolling over and thrashing about with their legs in the air. When they want to move from one side to the other, they stand up first, gaze about and then lie down again. Depending on the weather and his mood, a rhino can spend as little as a few minutes or as long as seven hours in the water at any one time. A favourite pastime of every rhino is to rub his rump in the mud, sitting in dog-like fashion as he does so.

Wallowing serves several purposes: the water lowers the rhino's body temperature; prevents fly-bites to some extent; and, since wallowing places are popular, sociable, even friendly meetings can occur. Fights are not so common at water-holes as they are when rhinos suddenly meet up with one another in the bush.

The possible lifespan of an Indian rhino in the wild is not known. Of the six dead rhinos that Dr Laurie examined in Chitawan, the oldest was estimated to be 26 years. However, there are records of Indian rhinos living in captivity for much longer periods. For instance, I saw in the Trivandrum zoo in southern India a male rhino that the authorities claimed they had had for 49 years.

The major causes of death to Indian rhinos in Nepal in the 1970s were poaching, fighting among themselves, abandonment of calves by their mothers and killing of



Although this rhino seemingly enjoys solitary comfort at his wallow, as many as nine Indian rhinos may sometimes be seen together at the same wallow.

calves by tigers. Between 1970 and 1972 poachers took seventeen rhinos in Chitawan Park, but the rhinos themselves sometimes take revenge on people. In the mid 1970s five villagers lost their lives to rhinos on the borders of Chitawan. At night rhinos come out of the park and graze on the adjoining fields of wheat, maize and rice. Farmers have been forced to employ nightwatchmen to patrol their land; they stand on platforms overlooking the fields and sound the alarm whenever a rhino appears. To frighten away the rhinos they wave flame torches, make a lot of noise and sometimes they resort to trying to push a rhino out of a field. Often a rhino will leave only to wander onto another nearby farm where the guard happens to be asleep. The damage caused by raiding rhinos is considerable: as much as 20 per cent of the rice crop grown near the park boundaries is lost to them every year.

Despite the problems of poaching and other risks, the number of Indian rhinos in Nepal and India has recently been on the increase: possibly six per cent a year in Chitawan alone. Barring unforeseen political changes, the Indian rhinoceros should continue to prosper in reserves and parks.

Unfortunately, the outlook for the black rhino in Africa is not so encouraging. Although it is the most common and most numerous rhino species in the world, it has been hardest hit by indiscriminate killing. Around 90 per cent of all black rhinos in East Africa (the region with the largest populations) died between 1970 and 1980. Moreover, today, breeding in the wild is very much on the decline. Research is desperately needed to try to discover why, and to work out what should be done to render conditions more favourable for natural increase.

Having lived in East Africa for the past eighteen years, I am far more familiar with the black rhino than other species. With my wife, Chryssee, an Honorary Warden for Kenya National Parks from 1971 to 1976, I have made many trips to national parks and reserves in the region, and in those days we used to come across rhinos regularly.

Undoubtedly, the most endearing rhino we ever knew was Rufus, an orphaned

male who was brought up by the Kearneys, and later by Daphne Sheldrick, in Tsavo East National Park. Rufus first appeared inside the Kearneys' cook's hut, a tiny calf who had obviously lost his mother and was looking for company. He was given a milk formula, to which he readily took, and soon also began munching lucerne. When Daphne Sheldrick took him over from the Kearneys, who were transferred to Nairobi Park, she decided that in Rufus' own interest he should be introduced to natural vegetation so that he could eventually be returned to the wild, although she did not prohibit the special titbits that he favoured.

One of Rufus' greatest pleasures in life was his daily bath; he very much enjoyed wallowing in mud and having his back scrubbed by humans. Another treat for Rufus was eating sweets. When Chryssee and I drove down to the coast we would always go shopping for Rufus beforehand. On arrival at Voi, we would find out where Rufus was from a ranger on duty at the park gate, and then we would drive on to see him. He would be with a herd of other orphaned wild animals, and as soon as we caught a glimpse of him, Chryssee would jump out of the Land Rover and call to him. Leaving his companions, he would trot right up to her and let her hand feed him candy and fruit. He was very gentle and would show affection by leaning slightly and rubbing his head or flank against his friend, the bearer of gifts. After consuming a pound-box of imported English chocolates and several oranges, off he would wander back to the other orphans. In the late afternoon, when the sun was going down, it was an extraordinary sight to watch a couple of rangers herding in single file a group of partly tame animals back to stables at the park's headquarters: Rufus the rhino, a zebra, two ostriches, several buffaloes and an elephant.

Orphaned black rhinos readily make friends with other animals. This one has not charged his zebra playmate, but has taken advantage of its recumbent position to rub his chin on it.

Rufus' demise is a sad story. Daphne Sheldrick has written that Rufus was "the most docile and placid animal I have ever known, and children could ride him and handle him with safety"; but one day he turned on one of his keepers. A substitute man, hired to look after the animals during the day when they grazed in the park,



disliked Rufus for some reason and often beat him with a stick. One afternoon when this man was sharing duty with an old Turkana who knew and treated the wild animals very well, Rufus attacked. The man screamed for assistance and the old Turkana came over to help. We can only surmise that Rufus had become so enraged with the constant beatings that he failed to notice that the old man had come between him and his adversary; in his attempt to get at his enemy he instead caught his horn in the thigh of the old Turkana. The old man was rushed to hospital at Voi but bled to death that night. Rufus was consequently banished to a forlorn corner of the park to try to survive on his own.

The inevitable occurred.

A few days later he probably just walked up to play with some wild animals, having become accustomed to several unlikely companions. Unfortunately, he chose a pride of lions which, in their astonishment, attacked him fiercely, savagely lacerating his body. Rufus died a slow and agonizing death.

This is not an unusual tale: wild animals brought up by humans are often unable to defend themselves from predators. Rufus should probably not have been released into an area of the park that he did not know without some sort of protection or supervision.

Despite its ungainly appearance, the black rhino is a power-house of muscles. As part of his anatomical study of rhinos, Jonathan Kingdon has produced many drawings of the remarkable muscle structure of this animal which enables it to execute abrupt turns even when charging at speeds up to 50 kilometres an hour.

Tales are legendary about black rhinos charging at anything—even butterflies. Kingdon suggests (and the number of wrecked Land Rovers supports this view point) that rhinos will go out of their way to seek contact with large moving vehicles. They also often head for camp fires and curiously scatter burning logs with their horns.

The work of the best known popularizer of elephant behaviour, Iain Douglas-Hamilton, was almost cut short by a charging rhino in Lake Manyara Park in 1967. He was following on foot the spoor of a group of elephants when suddenly a female rhino came crashing through the undergrowth towards him, accompanied by her very large calf. Iain turned and ran as fast as he could through the bushes, swerving sharply in an attempt to get the rhinos off his trail, but to no avail; his sandal broke and he fell to the ground, face downwards. The mother rhino rushed at him and kicked him hard in the back, producing a massive haemorrhage. At that point Iain lost consciousness and can only guess that the rhinos soon lost interest in his inert body and moved away.

The black rhino does have some peculiar habits. He tends to defecate in only certain spots in his home range. Since any other rhino passing by will make use of the same place, it is not truly a territorial marking. Tremendous mounds build up. When a rhino finishes defecating, he spreads the droppings around by treading through them with his hind feet. Some Africans told A.T. Ritchie, Chief Game Warden of Kenya from 1923 to 1948, that the reason rhinos disperse their dung is that elephants do not like to see droppings lying about similar to their own. A more scientific explanation, given by John Goddard, is that because the rhino has poor eyesight he might well use the droppings as a scent trail. It is apparent that the middens have special significance to rhinos; perhaps their purpose is to give individuals the choice of seeking or avoiding contact with one another.

Urinating, where males are concerned, also seems to have special meaning. In the presence of his fellows, a male 'shows off' by thrusting his penis backwards between his hind legs and letting loose a burst of urine with such force as to send it spraying for three or four metres. When he is alone, the male urinates in a more downward fashion and often onto bushes or shrubs that he backs up to; sometimes he even attacks the bush and tramples it afterwards. Ritchie reported that in



This white rhino cow shares a dung heap with a sub-adult male; scientists are still uncertain why some rhinos tend to defecate in the same place.

certain dry areas of Kenya and Somalia rhinos have favourite stones on which they urinate, rather like a dog that has a favourite tree.

Much has been said by the few scientists who have observed rhinos eating wildebeest dung. They think that the rhino does this because there may be some sort of mineral in it that appeals to him; but Jonathan Kingdon's anatomy study probably provides a better answer. The black rhino has a prehensile upper lip that helps him to gather twigs into his mouth, but it is disadvantageous for cropping short grass; consuming wildebeest dung could provide him with the bulk that he needs in the dry season when tall grass is just not available.

In studying rhinos in Ngorongoro Crater, Olduvai Gorge and Tsavo, Goddard established that the population in each place was falling. The seven to ten per cent additional young each year did not compensate for the high death rate. And, of course, at the time when Goddard was carrying out his research, poaching was not as serious a threat as it was later to become.

Many rhino deaths are caused by other wild animals. Hyenas are the major predators of young rhino calves, and lions take their toll, too. Actually, the black rhino calf is much more vulnerable than the square-lipped one which walks in front of his mother, thus staying within her view. The black, instead, always follows his mother, and a predator can more easily carry out its attack before the mother realizes what is happening. Often, she is alerted to the danger only after her calf has fallen prey and begins to squeal.

Hippos and buffaloes have occasionally been known to kill adult rhinos, and, in

periods of drought, rhinos almost always lose out to elephants. In fact, elephants are generally a menace to rhinos. Sometimes they appear to harass rhinos just for the fun of doing so, as Philip Keller described in *Africa's Wild Glory*. Four young bull elephants that Keller had been watching found an old rhino enjoying a dust bath. They had seen him drive away a cow with a calf from the coveted spot and waited until he had settled in comfortably. The elephants then slowly moved up towards him, almost forming a circle around the area. As if the rhino predicted what would happen, he began snorting violently in protest. In unison the elephants began kicking up the dust with their gigantic feet, drawing in more with their trunks and squirting it all over the unfortunate prostrate creature. Finally, with a roar he got up and ran away from the suffocating cloud. Shortly afterwards, the elephants moved off, and Keller wrote that "the way the elephants dangled their tails back and forth as they minced away convinced me that they had enjoyed the prank immensely and were only laughing up their trunks at the truculent old 'sobersides'".

At other times elephants show a more vehement dislike for rhinos. In 1979 at the Ark Lodge, which faces a water-hole favoured by many species in the Aberdare National Park and which has become a kind of 'second Treetops', a dramatic fight took place. The incident started one evening around midnight, when sixteen elephants came to the water-hole for a drink. They noticed an adult male rhino already drinking there and gave chase to him. Soon afterwards a female rhino with a calf arrived. The calf began to play with one of the young elephants which annoyed an already petulant mother elephant who picked up the rhino calf with her trunk and literally threw the creature into the forest. Still not satisfied, the elephant attempted to impale it with her tusks, but at that moment the rhino mother charged the elephant, distracting her and permitting the calf to escape. As soon as she realized that it was safe she turned and ran off as well. Meanwhile, all the commotion had attracted the male rhino back to the water-hole. The mother elephant was not about to tolerate any interference from him again, so she charged him at great speed and succeeded in tossing him three metres into the air and finishing him off when he landed by kneeling on him and thrusting one of her tusks through his chest. Her rage continued until she had pushed the rhino's body into the water-hole, whereupon she calmly walked away. The next morning twenty men and a tractor were required to move the rhino carcass from the water.

Such hunting scenes were recorded by many of the early European explorers to Africa and may have accounted for the onset of the rhinos' demise.



3 · The Slaughter of Rhinos

I The Asian Species

Westerners have been amused, awed, amazed and often embarrassed by the friendship shown by the people of Asia to their animals. Perhaps this friendship was born of necessity; certainly, the elephant and the camel have traditionally played a much more important role in Eastern civilizations than the horse has in the West. Moreover, Hindus, Buddhists, and Muslims often treat their animals with a kindness which is much greater than their respect for them. Westerners do not truly understand this; and the concept that gods, dragons, animals and men may be united in a marvellous world where fantasy and reality are entwined is very Eastern. Westerners may have derived literary inspiration from ideas like this, but they are alien to Western culture.

Whatever mystic link may have existed between animal and man in the West was defiantly broken at the time of the Reformation, when saints with their birds and lions were pushed aside to give man his unique and dominant place in Creation. The Age of Reason went so far as to proclaim that animals were bereft of soul and consequently incapable of feeling pain, desire or pleasure.

Of course, in the East, despite beliefs that man should do no harm to beast or bug, there has always been some hunting; unfortunately, the Indian rhino was never endowed with characteristics which gave it immunity from the hunt. It served no domestic purpose nor held any particular religious significance, although among Hindus and Buddhists the elephant reached the celestial realm. Even among the less anthropomorphic Muslims, animals accomplished miraculous feats. But the rhino was denied all this; for example, unlike the camel, it had no hope of learning Mohamed's hundredth name for Allah.

When the first great marauders of Indian wildlife came along, the foreign Mongols, rhinos immediately became targets. Tamerlane massacred rhinos on the present Kashmir border. Babur, the conqueror of northern India, took great delight in describing his rhino hunts in 1525, close to the Khyber Pass. He also tried to get a tame elephant to fight a rhino and was sorely disappointed when the latter ran off into the bush without even so much as an attempt to charge the elephant. Babur's son, Humayun, liked chasing rhinos from horseback, shooting arrows into them.

At the time of Emperor Babur, the Indian rhino was still widespread, from the Indus river in the west to Burma in the east. But already in the sixteenth century human populations were increasing and the rhino had to give way to new settlements in fertile flood plains and lowland grass areas, which he so favoured. Then, from the middle of the nineteenth century to the year 1900, there was such a slaughter of Indian rhinos by sportsmen that their numbers were reduced to only a few hundred. As early as 1850 no rhinos were left in the Rajmahal hills of Bihar, and, in 1878, the last rhino was shot in Uttar Pradesh. By 1890 Indian rhinos had vanished from most areas except southern Nepal, the Bhutan Duars, parts of West Bengal and the Brahmaputra valley of Assam. As late as 1896, the government of Bengal was paying a bounty of 20 rupees for every rhino killed.

It was the introduction of modern fire-arms by British military officers which was the rhino's undoing. Great sport (and prestige amongst one's peers) was to be had from the back of an elephant trained to stand its ground when face to face with a rhino. One method was quietly to track a rhino to his lair, shooting him dead

when he was standing quite unconscious of any danger. Another technique involved "beating him out of the jungle with a line of elephants, the guns being stationed at the points where he is most likely to break cover", which General Kinloch seemed to prefer. One drawback of this strategy was that it was necessary "to have reliable men with the beaters, who can exercise authority and keep them in order, for both mahouts and elephants have the greatest dread of the huge brute, who appears to be much more formidable than he really is". Many of the British military officers belittled the rhino, calling him a stupid beast, and it seems surprising that they enjoyed hunting him so much. Colonel Fitzwilliam Thomas Pollok, who wrote three books on hunting in India, admitted, "I waged war against those pachyderms, why, I don't know". According to his own count, he killed at least 47 rhinos in Assam and Bengal. He also left uncounted numbers of wounded ones, as the following excerpt from his *Incidents of Foreign Sport and Travel* illustrates:

... when passing a strip of long elephant grass J. [Jackson, Pollok's fellow officer in the Indian Army and hunting companion] caught sight of a rhino and fired. It began to spin round and round, and to emit the sounds elephants dread so much, and to our amazement, from a patch of long grass close at hand, fully a dozen more rhino joined the chorus! I never heard such a pandemonium in my life! If the inmates of a lunatic asylum and a dozen menageries had been let loose and intermingled the row could not have been more deafening. Not an elephant with us would stir a step forward, the grass was dense and high, and so full of brutes in a state of frenzy that I did not like to force our mounts forward. After the row ceased, they were willing to enter the cover, but I was afraid of getting them cut. We tried to set the grass on fire, but the dew was still on it, and it would not burn.

Not to be outdone by the British, the Maharajah of Cooch Behar shot 207 rhinos between 1871 and 1907 in West Bengal and Assam. In his book, *Thirty-seven Years of Big Game Shooting*, this Maharajah proudly recalls "a magnificent day's sport" near Rossik Bheel and Cheughtimari, "when we bagged five rhinos before luncheon. I do not think that this record has been beaten."

Aside from hunting for sport, which undoubtedly was the main cause of the demise of Indian rhino populations in the nineteenth century, the luckless creature was also threatened by another and more subtle foe: tea. The British had acquired their taste for tea in the middle of the eighteenth century. By 1783 they were importing three million kilos of it, and just two years later the amount jumped to seven million kilos; it was almost 14 million kilos in 1800. The East India Company found tea its most profitable import into Britain and was comforted by the thought that it did not adversely affect the development of industry at home.

Wild tea plants had been discovered growing in Assam, but there was some doubt as to whether or not they constituted 'real' tea, so at first the East India Company imported Chinese plants to Assam. There was, however, considerable difficulty in trying to clear the land of Indian tea to make space for the Chinese. The local variety would not be easily ousted, and finally the E.I.C. decided to cultivate Indian tea for export. It proved popular and the trade flourished as never imagined. By 1900 Britain was importing 62 million kilos of black tea from India as against 11 million kilos of green tea from China.

To grow tea commercially, vast tracts of land are needed for plantations. Assam has an ideal climate for tea and the advantage of being one of the more sparsely populated areas of India. The result was that towards the middle of the nineteenth century speculators were frantically bidding for tea estates in the unmapped jungle. Later, when the first tea was ready to be picked, labour had to be found.

In a rhino fight organized by the Maharajah in Baroda, India, for entertainment, the European artist mistakenly gave the rhinos two horns each. It was not an uncommon error; differentiating rhino species was quite a problem until this century.



Great numbers of Biharis, Madrassis and Bengalis were imported to Assam, where they were kept in concentration camp conditions. In one 18-month period 18,000 out of 150,000 'coolies' died or vanished in the wilds of Assam.

Conditions did gradually improve for the labourers, but day by day worsened for the rhino. The transformation of his habitat, the tremendous influx of people and, finally, a railway linking Assam with other parts of India left little chance for his continued survival. By 1908 there were only twelve rhinos left alive in the Kaziranga area of central Assam, which had once had the greatest concentration of these animals.

In Nepal, the Indian rhino populations did not approach extinction until the middle of the twentieth century. Then, during winter seasons, members of the Rana family, the hereditary prime ministers of Nepal, began to make a practice of going into the Chitawan valley to hunt rhinos and tigers. As hunting became a more popular sport, these Maharajahs occasionally invited British V.I.P.s to accompany them. The scale of the operation grew and sometimes hundreds of domestic elephants were used in these hunts. In the 1937/8 season alone, 38 rhinos and 120 tigers were shot.

In 1939, the late Armand Denis, world-renowned wildlife film-maker, visited the Maharajah in Kathmandu. The Maharajah eagerly showed him his trophy room inside the palace. This consisted of a hall some 40 feet long. On one of the walls was a gigantic mural, painted by a Frenchman, depicting the Maharajah hunting rhinos. On each side of the hall were 20 marble pillars, on top each of which rested the stuffed head of a rhino—40 rhinos in all! Repulsed by this sight, Armand Denis turned to the Maharajah and said: "You are aware, of course, Your Highness, that there are very, very few of these animals left". The Maharajah took a little time to answer, then turned to his guest, winked and replied: "I think you will find that there will be just enough to last me my lifetime".

In 1951 the Rana regime, after deposing the King, fell, leaving in its wake administrative chaos. Poaching began on a grand scale; lesser men took revenge on their former masters by slaughtering 'royal game'. At least 75 rhinos were killed by poachers in 1959 and similar numbers were taken in the previous few years. In 1960, E.P. Gee estimated that another 75 Indian rhinos were illegally killed in Chitawan; by 1961 he believed that there were no more than 160 left alive there. Moreover, because of the lack of control in the country, farmers from the hills descended into the fertile Chitawan valley to settle. Between 1950 and 1960 the human population of the valley rose from 36,000 to 100,000, and 70 per cent of the forests and grasslands were cleared for cultivation, destroying much of the rhino's natural environment.

Finally, in the mid 1960s when the government had stabilized under the restored leadership of a king, action was taken against the widespread destruction of the wildlife habitat. Some of the human settlements in the Chitawan valley were removed and part of the area became a reserve; however, some poaching still went on. A helicopter census in 1968 estimated the Chitawan rhino population to be between 81 and 108 individuals. In the early 1970s this population began to show an increase. It was thought to number 210 animals by 1973, the year when the Nepalese government established the Royal Chitawan National Park, covering 546 square kilometres. With the help of several international organizations, including the World Wildlife Fund and the Fauna Preservation Society, adequate manpower was trained and equipped to administer the park. In 1976 the Royal Nepalese Army began patrolling it, and poaching virtually stopped. The following year the park was extended to 907 square kilometres, and it is today one of the main tourist attractions of Nepal and one of the most important rhino reserves in the world.

In India, official action to conserve rhinos took place earlier. Rhino hunting was



abolished in 1910, and soon afterwards state governments began to protect a few of the areas where rhinos still remained. In 1908 Kaziranga had been declared a forest reserve; it became a game sanctuary eight years later and was closed to the public until 1938. Laokhowa, 80 kilometres west of Kaziranga, was established as a forest reserve around 1929. In the neighbouring state of West Bengal, Jaldapara was unofficially recognized as a reserve in 1936 and officially became a sanctuary primarily for rhinos in 1941. Today it has West Bengal's largest rhino population.

Despite the efforts to protect rhinos and their habitats in India, poaching still continues. Kaziranga, with the world's largest Indian rhino population, has always been plagued by poachers. At the time when it was a forest reserve, one forest officer came across 40 rhino carcasses, all without horns. The poachers then were Mikirs, a tribal people living in the hills just to the south of Kaziranga.

When Kaziranga was opened to the public, poaching declined. By the late 1960s an average of eleven rhinos were killed each year. This dropped to only three per year during the 1970s when the permanent staff of the park was increased to around 200, allowing for continuous patrols in vehicles, on the backs of elephants and on foot. The 425 square kilometres of Kaziranga are divided into forty different blocks, each of which has its own camp for the forest guards who start their day looking for vultures, which may indicate a rhino carcass.

In 1968 a poacher shot dead one of the park's men and then made his escape. Immediately afterwards the highest ranking official of the park, Range Officer R.N. Sonowal, arranged for many more guns for his guards and gave them authority to shoot at poachers whenever there was a possible threat to their own lives. From 1969 to 1978 at least four poachers were killed by forest guards on their patrols at Kaziranga; several others were wounded seriously. The poachers soon realized that they really were risking their lives when they went after rhinos.

Another deterrent for the would-be poacher is that the prison sentence for killing a rhino has increased from three to six months. This doubling of the term occurred for the first time in Assam in early 1980. In years past the forest authorities have had difficulties in getting poachers convicted of their crime because the courts wanted absolute proof, with witnesses, that the accused had carried out the killing. A lone poacher caught standing by a carcass of a rhino sometimes escaped jail because the Forest Department was unable to prove that the man had personally been responsible for the animal's death. Times are changing now. Magistrates have learnt that the poachers are being paid ever higher sums for rhino horns, and that poachers come from all walks of life—not only tribal men but also Assamese and even Nepalese. Furthermore, rhinos are being killed specifically because of the increased value of horn on the black market, and not simply because the poachers are hungry and want the meat. It has taken some time for the courts to realize how things stand, but they do now agree with the park authorities that stricter measures must be taken against poaching.

Still, it is the Mikirs who are the most frequent poachers and they both shoot and trap rhinos. Shooting has certain disadvantages: to be caught in the park carrying a gun is sure to mean a prosecution which, even if it does not lead to a conviction, can be quite inconvenient. And, if a poacher does shoot a rhino, he has to be very wary of the possibility of being heard by a patrolman. Moreover, poachers do not usually own their own guns and have to make arrangements to hire one from somebody. They generally deal with farmers who have licences to possess shotguns; heavy bore rifles are impossible to obtain. Farmers demand between 200 rupees (\$25) and 500 rupees (\$65) from a poacher who wants to borrow a gun for two to three days. The poacher then makes his own, special heavy bullets and backs them with extra gun powder. Thus armed, he enters the park at night, when the risk of detection is least. At first light the poacher makes his way to a mud-hole favoured by rhinos, or to a recently burnt area. Forest guards regularly



Indian rhinos can be seen in many zoos in Europe and America, but recently the Indian government has put severe restrictions on the export of these animals and a breeding pair is now worth \$150,000.



set fire to the tall grasses from January to March to prevent the growth of trees, which rhinos do not like. The fresh, new grasses that come up afterwards are especially palatable to rhinos, and such areas are ideal for the poacher, who can lie in ambush in the surrounding tall grass and bide his time until a rhino comes along to graze, hopefully when it is still very early in the morning.

If the poacher is lucky and kills his prey, he rushes up to it and hastily removes the horn with a knife. Although a rhino's skin is also valuable (worth \$500 a kilo wholesale in South-East Asia in 1979), the poacher usually does not dare to take the extra time needed to remove it. Even if the chances of escape are good, the raw hide is very heavy to carry and must later be dried out in the open. So, the general rule for the poacher is to grab the horn and run. He makes his way out of the park as quickly as possible and heads for a nearby village to make contact with a middleman and to negotiate a quick sale.

None of the three rhinos found poached in Kaziranga between January and March 1980 had been shot. They were all killed in pits. Pit building is done at night. Two or three poachers join forces to dig a series of holes two metres deep, one and a half metres wide and four metres long. Each hole is then camouflaged with grass. The poachers check the pits only after two or three days have passed. If they have caught a rhino he is usually already dead from the exhaustion of thrashing about trying to get out. If he is still alive he is speared.

An average Indian rhino horn weighs 720 grams and in early 1980 a poacher could expect to receive 7,000 rupees (\$875) for one. The wholesale value in South-East Asia and the Far East ranged in mid 1980 between \$6,000 and \$9,000 per kilo, a considerable rise from the \$4,200 wholesale price in 1979. It is because the price keeps on going up that poaching, despite all the risks, seemed to be on the increase again in 1980. After all, an honest man working as a farm labourer or as a waiter in a Gauhati hotel would need to work three years to earn as much money as a poacher makes from a single rhino horn. The middleman who buys the horn from him sells it, with his own profit on the undertaking, to a trader who in turn transports it to a rendezvous to hand it over to another person for export. There is a whole chain of people involved, which is typical in India where syndicates operate in most illegal enterprises in order to ensure that if one person is caught by the authorities he will not identify the others. The syndicate will usually pay whatever fine is assessed and will also help support the family if an offender is sent to jail. Conversely, should an arraigned poacher give information that leads to some of his colleagues being caught, other members of the syndicate will certainly take revenge on him.

The park authorities have tried to break up poaching gangs by paying informers, but so far these people have only disclosed the names of poachers, not the more important and shadowy figures further up the chain. The poachers, for their part seem to prefer prison and the knowledge that their dependents will be cared for, than to face the penalties that the syndicate imposes on those who talk too freely.

Poachers only operate in the dry months when the rhinos are relatively easy to find. During the heavy monsoon rain in July and August, Kaziranga becomes flooded and many rhinos come out of the park to search for food, often cultivated rice and other agricultural crops. It is rather ironic that at the time of the year when rhinos wreak havoc on the farmers their lives are least at risk. The reason is that out in the open there are too many potential witnesses to the killing of a rhino and too much jealousy over the prospect of easy money from a horn.

Horn is sold legally as well as illegally in India. Forest guards in Kaziranga and Manas Sanctuary, also in Assam, are encouraged to collect horns of rhinos that have died naturally and also those pieces of horn broken off during rhino fights. In their eagerness, the rangers dig through mud wallows and dive into deep pools to retrieve such trophies. Range Officer Sonowal believes that almost all of the horns

from dead animals are collected by his patrolmen. When rhino horn is received at Kaziranga headquarters it is weighed, marked and locked into a safe in Mr Sonowal's office. Later it is auctioned at Gauhati, a town 220 kilometres away, where all legally acquired rhino horn from the state of Assam is sold.

Technically, the horns from Kaziranga are offered for 'tender', which means that the Chief Conservator of Forests does not necessarily have to accept the highest offer. In practice, however, the person who bids highest gets all the horns under auction. Auctions usually take place annually and the Forest Department puts a lot of effort into organizing them.

From the 1972/3 financial year to 1979/80, 283 horns weighing a total of 205 kilos were put for tender in Gauhati by the Forest Department. The Forest Department grades the horns into three qualities according to their condition: new horns without any defects such as cracks and holes command the highest prices. From 1972/3 to 1978/9 the price for the best quality horn climbed quite gradually from \$1,800 a kilo to \$1,950. Then there was a sudden jump. For the 39.5 kilos offered for sale in 1979/80 the highest tender was \$7,800 a kilo.

The sharp increase in price is not due to a drop in supply. In fact, the amount of horns at auctions has risen during the past decade, from seven and a half kilos in 1972/3 to a record amount of 45.5 kilos in 1978/9. This is due to the overall growth in the rhino population of Assam and to efficient collection of horns from dead animals in Kaziranga.

Most of the bidders for rhino horns at the Gauhati auctions are traders from Calcutta, but not a single one of them has tendered the highest bid since 1965/6. From that financial year until 1975/6 a Nepalese from Kathmandu bought all the horn. In 1978/9, and again in 1979/80, he was outbid by a merchant from Manipur, a small Indian state south-east of Assam.

The only other Indian state which has rhinos is West Bengal, but none of the rhino horn held by the authorities there has ever been sold. It remains in the safe-keeping of the Forest Department, except for a few horns that have been given to museums. There is not very much anyway. The rhino populations in both Jaldapara and Garumara, a tiny reserve of only eight square kilometres, are very small. In 1964 the Forest Department carried out its first official census of the rhinos in Jaldapara: a total of 72 individuals. Only two years later Juan Spillert made a census of all the major animal species in that sanctuary and estimated that the total rhino population was between 50 and 60. In 1978 another Forest Department census recorded less than half this number.

Most of the deaths of rhinos in Jaldapara are attributed to poaching; the Forest Department estimates that between 1967 and 1972 some 38 rhinos were illegally killed in Jaldapara and Garumara. Officials say that one single gang is responsible for almost all of the poaching in Jaldapara, but its syndicate is so well organized that despite searches of the houses near the reserve (in which rhino horn has been discovered), not one member has been convicted of rhino poaching. This syndicate has refined its operations which are in a different league from those of the gangs of Kaziranga. When a poacher kills a rhino in Jaldapara he does not remove the horn. Instead he immediately leaves the reserve and tells another person where the rhino is. Then someone else again is sent to collect the horn. With each member playing a very limited role in the syndicate, it is an almost hopeless situation for the authorities to handle.

The number of Indian rhinos killed in the early months of 1980 was small, but it was up on the same period in 1979 to an alarming degree. This is a result of the prices paid for the horn, illegally both in West Bengal and in Assam, where the price at the legal auction was almost four times higher than a year before. In 1980 there were only 24 rhinos left in Jaldapara, a barely viable breeding group; and there were only six rhinos left in Garumara. Even in Assam, with 950 rhinos in

Sir Samuel Baker is shown with Hamran Arabs of the Sudan in this engraving of rhino hunt.



Kaziranga and approximately 200 in other sanctuaries, there is no complacency among the officials who fear the consequences of the very high demand for rhino horn in South-East Asia and the Far East.

II The African Species

In 1820, before European explorers penetrated the more remote parts of Africa, black rhinos were especially abundant. There were probably around 400,000 of them, perhaps as many as a million, and they may have outnumbered the white rhinos four to one. They lived in a wide belt of territory from Mali in the west almost straight across Africa into Somalia in the east. They were also found as far north as Ethiopia and down through East Africa, Zambia, Malawi, Angola, Botswana, Mozambique and South Africa in very large numbers. The white rhino on the other hand was limited to two areas: northern Zaire, Chad, the Central African Republic, southern Sudan and Uganda; and the whole of southern Africa, including Angola, Botswana, Zimbabwe, Mozambique and South Africa. In other words, rhinos either white or black were to be found everywhere south of the Sahara except in Africa's tropical rain forests.

Most European explorers who travelled in the interior of the continent commented on the tremendous numbers of rhinos. Richard Burton, one of the first explorers of the East African hinterland, wrote in 1856 that in Tanganyika, "the black rhinoceros with a double horn is as common as the elephant". In southern Africa the early adventurers who moved up from the Cape made similar observations. Cornwallis Harris wrote in the 1830s that he had met with the white rhinoceros "in almost incredible numbers". The great hunter, Frederick Selous, believed that at this time the white rhino in the north-west of the Transvaal had increased "almost to the limit of its food supply". During a single day's march with bullock waggons Sir Andrew Smith encountered between 100 and 150 rhinos, both black and white. This idyllic situation did not last. Some 40 years later Frederick Selous noted that "thousands upon thousands of these huge creatures were killed by white hunters and natives armed with the white man's weapons, and the species [white] has become practically extinct".

The story of the massacre of the white rhinos of southern Africa is almost identical to that of the Indian rhinos. Technical improvements to fire-arms in the nineteenth century made hunting easy. The new guns were accurate and had a fire-power that made shooting big game a possibility for many who had never before hunted. Moreover, the white rhino is a docile creature; sportsmen were able to approach these animals with little danger. An additional incentive was that rhino horns sold well on the market, and Europeans as well as Africans enjoyed eating rhino meat. One Boer trader in South Africa with an eye for the main chance supplied guns to 400 natives for the sole purpose of killing rhinos.

In the nineteenth century there was no protection whatsoever for the wild animals of Africa. The idea of setting up game reserves or national parks sounded ludicrous in this land of plenty until it was almost too late. Even game laws and hunting licences seemed superfluous until the late 1880s, and by then almost all the rhinos between Salisbury and the Zambezi river had been killed. By 1900 there were probably only 50 to 100 white rhinos in South Africa.

Nor was the slaughter restricted to southern Africa—it was even greater in Ethiopia and central Sudan, where the commercial value of rhino horn had been known long before Europeans came onto the scene. The magnificent seventeenth-



and eighteenth-century rhino horn vessels of China were possibly made from horns imported from the Red Sea dhow ports.

Rhinos were populous in central Sudan and Ethiopia, and it is unlikely that hunting had much impact on their numbers until after 1800. It was arduous work to prepare the kind of trap that the Abyssinians used, and it led to a most cruel death for the rhino. Sir Samuel Baker, who was in the north-west of Abyssinia in the early 1860s, described in detail the making of a rhino trap. To begin, the Abyssinians dug a hole in the ground about a metre deep and half a metre in diameter next to a rhino dung heap. Into the hole they placed a flat, circular piece of wood studded with bamboo spikes which would retain the foot of an animal should it step on it. Across the top of the hole they laid a noose constructed from a very strong rope and at the end of the noose a log of wood weighing between 100 and 150 kilos was attached and buried nearby. The Abyssinians camouflaged the trap with earth and dung. The unfortunate rhino that approached would, according to habit, scratch around the dung heap and inevitably one of his feet would sink into the trap; the noose would tighten around the rhino's leg as he struggled to free himself from the bamboo spikes. In intense pain from the spikes penetrating his foot like horse-shoe nails, the rhino would jerk about furiously and pull the log out of its trench. He would usually gallop away from the spot, trailing behind him the enormous log which would catch in every bush, leaving an unmistakable trail. The next morning the hunters would have no trouble locating the miserable animal. By then he often had become entangled in an attempt to turn around. Stilled and in agony, the rhino would then have to bear the wounds inflicted by the Abyssinians' spears which, Baker said, were not sharp enough to cut through the rhino's hide without considerable difficulty. On a few occasions a thoroughly enraged rhino was able to charge his attackers, but usually he was too exhausted to do anything. Death would come as a relief to the tortured animal.

The Hamran Arabs of the Sudan went after rhinos on horseback. They would look for tracks near streams and follow them when they appeared to lead through open country. Once the rhino spotted the hunters he would gallop away. The hunters would follow until he was exhausted, then one Arab would distract him while the others closed in on him from behind and plunged their spears into him. Baker took part in a rhino hunt with Taher and Roder Sheriff, "the most renowned of all the sword-hunters of the Hamrans". Baker rode his own horse, Tetel, and declared: "I believe he never went so well as upon that day, for, although an Abyssinian horse, I had a pair of English spurs, which worked like missionaries, but with a more decided result". It was Taher who first caught sight of two rhinos and, with his sword drawn and his long hair flying wildly behind him, he led the way towards the creatures. The going was treacherous in the extreme, first over rough ground, then through clumps of mimosa trees, the branches of which were "armed with fish-hook thorns", and later over very sandy ground. The hunters galloped at full speed and lost four of their party of seven along the way. With Baker close behind the two brothers, the rhinos finally made towards a *nabuk* jungle, which was impenetrable for man and mount. To give encouragement to Taher to try to get at the rhinos before they entered the jungle, Baker shouted at him to move forward faster:

Away he went—he was close to the very heels of the beasts; but his horse could do no more than his present pace; still he gained upon the nearest; he leaned forward with his sword ready for the blow—another moment, and the jungle would be reached! One effort more, and the sword flashed in the sunshine. . . his blow. . . marvelously delivered at an extremely long reach, as he was nearly out of the saddle when he sprang forward to enable the blade to obtain a cut at the last moment.



The Indian rhino has only one horn, and it is usually very short. Because Indian rhino horn is so much smaller than that from either of the African species, many Asians believe that its curative powers are more concentrated and they will pay up to 15 times as much for it.

On following pages Meru is the only national park or reserve in East Africa where there are white rhinos, and these are guarded night and day by armed rangers.

Completely at ease in water, the Indian rhino may spend several hours at a time immersed, cooling off and getting relief from flies. The Indian rhino is probably the best swimmer of the five extant rhino species and has been known to cross the Brahmaputra river.









Taher only managed to make a gash about a foot long upon the rhino's hind-quarters and the rhino disappeared into the jungle, but Baker was not at all disappointed:

Although we had failed, I never enjoyed a hunt so much either before or since; it was a *magnificent* run, and still more magnificent was the idea that a man, with no weapon but a sword, could attack and generally vanquish every huge animal of creation. I felt inclined to discard all my rifles, and to adopt a sabre . . .

That the Hamran Arabs were generally successful in their rhino hunts is evident from the number of rhino horns exported from Ethiopia and Sudan. At the end of the nineteenth century the Somali ports of Mogadishu, Merca and Brava were annually shipping out hundreds of horns, most of which came from Ethiopia and Sudan. One European from the British legation in Addis Ababa, P. P. C. Zaphiro, wrote that the even smaller town of Lugh exported "1,000 or more horns in 1905/6", and estimated that 1,200 horns were exported from Borana, the southern part of Ethiopia, in 1907. By the time of World War I rhinos were rare indeed, and by the late 1970s it was thought that they were all but extinct in central Sudan and Ethiopia. Steve Stephenson told me that when he was wildlife adviser to the Ethiopian government from 1975 to 1978 he looked carefully for rhinos but did not find even one. He did, however, hear that someone had seen rhino tracks in the Omo valley, in the extreme south-west of Ethiopia.

One of the most intense periods of rhino slaughter took place between 1927 and 1931 in French Equatorial Africa, around Lake Chad. Marcus Daly, who wrote *Big Game Hunting and Adventure: 1897-1936*, was shocked by the French hunters who armed local gangs with cap-and-powder guns and with more modern rifles and set out for months at a time in order to kill as many white rhinos as possible and to make fortunes from selling the horn. Some of the Frenchmen's gangs consisted of as many as fifty armed Africans and would return "with anything between half a ton and three tons of horns". Considering that a ton of white rhino horn represents the death of approximately 300 animals and that there were "many dozens of such parties actively engaged in different parts of the country", Daly's estimate that "there must have been well over 10,000 white rhinos shot" does not appear to be exaggerated.

Daly noted that the natural habitat of these rhinos was the open bush country, where the hunters would find them in small groups of up to a dozen and shoot the lot. As a result of the massacres, many rhinos took to the great *matteti* reeds, but they were only in safe cover there during the wet season, for the Frenchmen set huge fires in the reeds at other times of the year, driving the rhinos out by the hundreds for massive slaughter. Daly believed that the surviving rhinos changed their habits entirely by moving into the thickest jungle areas, "where this class of hunter dare not follow".

Only very few scientists have ever seen the desert black rhinos of South West Africa. In 1981 only 57 were still alive; at least six were killed for their horns in that year alone. Their rocky habitat affords little shade, hardly any water and only sparse vegetation; these rhinos consequently travel vast distances in search of food.

Partly because Victorian sensibilities were outraged by missionary tales of the slave trade, colonialism quickly followed the wake of exploration in East Africa; the law and order subsequently imposed upon Uganda, Kenya and Tanzania did not encourage the type of hunting that was practiced elsewhere in Africa. In general, wildlife continued to hold its own during the first half of the twentieth century. There was, however, one startling exception to this rule: J.A. Hunter's record of having killed in one area more rhinos than any other man has ever claimed to have shot in an entire lifetime. Unbelievable as it may seem today, the colonial game department of Kenya employed Hunter to rid the land of all rhino in Makueni, Machakos District, south-east of Nairobi. From 29 August to 28 November 1944 Hunter shot 165 rhinos, 15 elephants and three buffaloes. Between 29 June and 31 December 1945 he killed 221 more rhinos, and from the

beginning of the following year until 31 October 1946 he shot a further 610 rhinos.

The 996 rhinos were killed so that 50,000 acres of Kamba country could be opened up for agricultural development. Hunter queried in his autobiography:

Is it worth killing off these strange and marvellous animals [rhinos] just to clear a few more acres for a people that are ever on the increase? I don't know. But I know this. The time will come when there is no more land to be cleared. What will be done then?

The agricultural plan for Makueni was ill-conceived and impossible to carry out. The land was poor, the rains infrequent and undependable. Rhinos thrived in this harsh environment, but crops could not. The Kambas, an agricultural people, were much more aware of this than the government officers who tried to force them to plant cash crops and invested about \$750,000 in the project over fourteen years. In the end only a few subsistence crops were ever grown there, and the whole scheme was an unmitigated failure.

Yet, on the whole, the wildlife of East Africa remained reasonably secure during the 1950s and early 1960s, despite a human population growth of two and a half per cent per annum. Hunting safaris were allowed, but the cost of outfitting one was so high that many visitors began to opt instead for photographic safaris, first popularized by Martin and Osa Johnson in the 1920s. Where big game was concerned, no overseas visitor could hunt unless accompanied by a registered professional hunter.

There had, in fact, been a hue and cry for national parks in East Africa since the early part of the century. They probably would have come into existence earlier than they did, had it not been for the two World Wars. Kenya, at any rate, led the way in their formation, thanks to the dauntless efforts of Mervyn Cowie who battled governors and governments for the creation of Nairobi Park which he used as a "shop-window for other sanctuary proposals". In an interview before his retirement as Director of Kenya National Parks on 31 March 1966, he said:

We bumped regulations quickly through the ministries concerned and established a National Parks Fund of £125,000 development money. It helped set up roads, small lodges, and purchased some equipment. Meanwhile, I copied every idea in Stevenson-Hamilton's book, *South African Eden* [the author was the Director of Kruger Park for more than twenty years], and went to the United States to draw on the fund of experience there . . . The common complaint from Kenyan farmers was that the Park laws were so strict, you could not even go into the area and blow your nose.

It was not only the farmers who protested about Nairobi Park; there were Somali tribesmen who used the area for grazing their cattle, and there was an irate horse-riding community that used the forested section of the park for their morning and evening rides. The horse-riders' representative, a formidable woman, went to the Governor's office to protest and thumped his desk with her fists until the inkwell jumped out of its socket—but to no avail. Even her petition to the Queen was rejected.

The time for national parks in East Africa had indeed come and, during Mervyn's Cowie's directorship, Tsavo, Aberdares, Mount Kenya and Nakuru were also gazetted. Then, in the early 1950s, Uganda and Tanzania followed suit with their own national park systems. Many of the major areas where the prospects were good for game became parks and reserves under European wardens who generally kept poachers at bay.

Uganda boasted three magnificent parks and a dozen reserves and sanctuaries by the 1960s. Of the latter there were four established in West Nile Province for

the protection of white rhinos. The gross tourist revenue from Uganda's parks was estimated at \$1,879 per square kilometre for 1970, one of the highest returns for any country in Africa. Moreover, poaching was not a serious problem. On the contrary, reduction cropping was believed to be a necessary conservation strategy: in Murchison Falls Park, Ian Parker culled 2,000 elephants and 3,000 hippos between 1965 and 1967 because of the damage they were causing to the vegetation. There were simply too many animals for the habitat to support.

But the halcyon days when game was so plentiful were numbered. In the early 1970s a serious drought brought disaster to many parts of Kenya and Tanzania. In Tsavo, where there had also been talk of "too many elephants", rhinos starved by the hundreds because during the previous fifteen years the elephants had demolished many of the commiphora trees which encouraged the growth of lower bush so favourable to rhinos. Open grasslands superseded much of the woodland; when the drought came, the elephants, in need of more protein than the parched grass could supply, competed with the rhinos for the remaining bush. Neither the elephants nor the rhinos would give way. The fate of the elephants is well known since journalists from all over the world cashed in on the tragedy. But rhinos were also severely affected, as were dikdiks and lesser kudus and other animals dependent upon bush and thicket.

Some conservationists blamed the situation on lack of park management and thought that the worst aspects could have been averted had the elephants been culled. At least the transition from woodland into grassland would not have been so dramatic or sudden. Others saw what happened as a sort of 'act of God', regarding the terrible loss of animal life as 'Nature's way' of cutting down the rhino and elephant populations without man's interference. The controversy that ensued to some extent diverted attention from the even more serious threat to wildlife posed by developments in Uganda at that time.

The coup d'état which brought in Idi Amin as Uganda's head of state in 1971 led to a breakdown in law and order throughout the country; many of the most able people in the game and national parks departments left their jobs, and corrupt and incompetent men took their places. Furthermore, Uganda's monetary economy collapsed, and this encouraged smuggling of both coffee and ivory by those in desperate need of cash. What foreign exchange the government was able to earn through the export of coffee, tea, copper and cotton was largely spent on perks for government officials, the military and the police; the maintenance of parks and reserves held very low priority. When trucks, four-wheel-drive vehicles, airplanes and radio equipment broke down they were usually not repaired because of lack of spare parts. Poaching became more and more difficult to combat at the same time as more and more people were being forced to poach wildlife in order to avoid starvation. President Amin's men in the military, police and civil service took part in the wildlife slaughter which they regarded both as a commercial venture and as a sport.

The decline of elephants was especially severe. The elephant population of Kabalega Falls (formerly Murchison) dropped 84 per cent from 14,309 in 1973 to 2,246 in 1975. In Ruwenzori National Park (formerly Queen Elizabeth), the losses were similar: in 1973 there were 2,731 elephants; by 1975 there were only 1,047. There are no statistics for Uganda's rhino populations during these years; however, as every poacher knows, it is easier to kill a rhino than an elephant and there is big money in rhino horn. It seems certain that large numbers of rhinos must have been killed off.

In April 1979, when Idi Amin's regime collapsed after the Tanzanian invasion, thousands of his troops retreated northwards to the safety of Sudan. On their way they passed through Kabalega where they looted the park's stores and slaughtered almost any wild creature that crossed their path, including tame white rhinos that

had earlier been introduced from West Nile Province. The fleeing troops still had one helicopter in working order, and this was used for the wholesale slaughter of elephant and buffalo. When word came that the Tanzanian army was not far behind, Amin's forces fled yet again with their stolen vehicles, ivory, rhino horn, meat and ammunition. They also carried along typewriters, beds and other furnishings from park lodges.

After the Ugandan troops had left Kabalega, but before the Tanzanians arrived, civilians living on the park's borders had their turn at looting. There was absolutely no control or authority over the situation; people were more or less free to pillage whatever they could until they were stopped by the Tanzanians. The Tanzanians, too, quickly realized that there was a demand for meat from game animals, so after a short break they continued the slaughter for their own profit. It is believed that more than 75 per cent of all the game in Kabalega was killed in 1979.

Farther south, in the Ruwenzori National Park, Tanzanian troops were similarly involved in large-scale massacres of wild animals for food and personal profit. An American scientist, Karl von Orsdol, witnessed the butchery:

April 27: Woken up before dawn by machine-gun fire. It turns out to be Tanzanian troops hunting for hippo. Sporadic fire through most of the morning, and the result is four hippos dead and butchered on the spot. Apparently the meat is going across Lake Edward to Zaire as well as to local markets. Several hippo have been hit, but not followed up and killed. These will slowly bleed to death . . .

April 29: The Park was left with only three vehicles by the retreating Amin forces. Then the Tanzanians commandeered one of these, returning it today with its engine wrecked. They said they needed it to supply the troops in the Park with food and water. But, as the Senior Warden pointed out to them, they'd used it to transport poached meat.

June 18: A truck arrives, open-backed and full of about fifteen Tanzanian soldiers. They go for a herd of about four hundred topi, blazing away as they crash and bump along—missing more than they hit. They keep up the chase for several miles, then slowly pick up the corpses strewn around the battlefield. They ignore the winged and wounded.

July 6: I'm told that more than fifty civilian poachers have been arrested in the past two weeks . . . The Police released all of them on orders from the Tanzanian Army.

In March and April 1980 Dr Iain Douglas-Hamilton counted elephants in Uganda. He found that only 1,360 elephants remained in Kabalega National Park and that there were only 150 elephants left alive in the whole of Ruwenzori National Park. He did not see a single rhino in Kabalega and his view was that most of those in Ajaï Sanctuary had also been killed. There had been under 40 black rhinos and probably 15 white in late 1979. Iain says that he would be surprised if there were more than a dozen left now in the whole of Uganda.

Ugandan wildlife faces a bleak future. Almost three years after the Tanzanian 'liberation', chaos still reigns. The national parks of the country exist in little more than name, with very limited staff and equipment; the few remaining administrators face a formidable task in trying to keep hungry people from killing game for food. It is also a point of view that when there are hardly any wild animals left aside from those in the parks in Uganda, the very idea of a game department (which in East Africa plays the role of controlling poaching outside parks and protecting people from marauding wild animals) may be obsolete today. In April 1980 the Chief Game Warden of Uganda, John Bushara, told me that his game



From bows and arrows, rhino poachers in Kenya have switched to automatic weapons.



department did not even have one functioning vehicle. When I looked at him in dismay without replying, his eyes flashed with unspoken expletives and he added, "we don't even have a bicycle".

How can international conservation agencies help reverse such a desperate situation? Things are so dismal in Uganda that a positive answer cannot be given. Where people are suffering so grievously animals must of course take second place. International relief organizations have had to give up many attempts to alleviate the starvation of Karamajong pastoralists in the north of the country, so what hope do rhinos have? Traversing war-strewn roads and tracks from the country's capital, Red Cross, CARE and other aid groups have had their trucks ambushed by armed bandits in the course of their mercy missions.

In Kenya the human situation is far better but the prospects for rhinos are grim. In 1969 Kenya had at least 16,000 rhinos and possibly as many as 20,000; today there are under 1,500 left. The Tsavo ecosystem, which embraces Tsavo East and Tsavo West parks as well as adjacent areas, proudly used to proclaim the world's greatest populations: between 6,000 and 9,000 in 1969. The drought in 1970/1 caused the deaths of nearly 1,000 rhinos, but the fact that in 1981 there were less than 200 left alive had nothing at all to do with the weather.

The background to Kenya's tragic rhino story is quite complex.

Poaching, always more of a threat in Kenya than elsewhere in East Africa, quickly became a way of life for the Waata tribesmen (more popularly known as the Liangulu), who had small settlements in and around Tsavo at the time of the park's founding. In the past this tribe had hunted elephant for food and would camp around a carcass until they had consumed all the meat. However, by the late 1940s the Liangulus were instead illegally hunting for ivory and rhino horn which they sold through middlemen to Arab and Asian dealers in Mombasa. They had perfected their hunting skills, using very powerful bows (some bows had draw weights of more than 60 kilos). They tipped their arrows with a poison made from the *Acokanthera* tree which would quickly enter the animal's bloodstream and cause heart failure.

The most famous surviving Liangulu hunter is Galogalo Kafonde. David Sheldrick, who became warden of Tsavo East in 1949, hated Galogalo because of all his misdeeds, but one could not help but respect his wiliness. Once when Sheldrick caught him he arranged an ingenious escape, and he played cat-and-mouse with the authorities for years. He was the principal character in Dennis Holman's book, *The Elephant People*, and he played his own role in the film 'Bloody Ivory'. Recently, he talked to Ian Parker, who has known him for years, and told him the details of his 40-year poaching career. He admits to having killed several hundred rhinos. His favourite technique was to climb a tree when he saw a rhino downwind and to call the beast to him, by emitting a fair imitation of a rhino squeak. When the rhino came trotting along, Galogalo would shoot his poisoned arrow, aiming carefully for a part of the anatomy where he would be sure to hit blood vessels. The stricken rhino would fall within a few hundred yards, after which it took less than three minutes to remove the animal's horns with a sharp knife. If he were hungry, Galogalo would also cut off a hunk of meat for himself. He stored the horn, along with poached ivory, in the bush, in his own or in friends' huts, until a buyer approached him. Sometimes the accumulated trophies grew so numerous that Galogalo would himself go in search of a middleman to make a transaction. He and other Liangulus were paid between 70 cents and a dollar per half-kilo by Giriama, Duruma or Kamba agents. Occasionally they would get as much as three dollars a kilo for very fine rhino horn, but the value was always calculated by weight. The African middlemen took the trophies to the coastal towns where they doubled and sometimes tripled their prices when they re-sold them to exporters.

The greatest amount of horn from any one rhino that Galogalo shot was an almost incredible 22 kilos. He told Ian Parker that the rhino had two pairs of front horns, two pairs of back horns and one extra horn farther up on its head. Another oddity as far as horns are concerned came from a rhino killed by Kathuo Kagalla, an ace Giriama hunter who was one of Galogalo's peers. The rhino had a long horn which was almost translucent with a whitish cast to it. When Kathuo went to sell it, he was hijacked by some crooks posing as game scouts who stole it from him and passed it on to a dealer.

In the course of early foot safaris in the north of Tsavo East, Sheldrick discovered intensive poaching being done by Kamba tribesmen. The Kambas made effective wire snares for smaller game but they were not as adept as the Liangulus with bows and arrows; moreover, the poisons they used sometimes led to long and agonizing deaths for their victims. Some Kambas dipped their arrowheads into nitric acid which tended to neutralize the poison (rather than make it stronger). As a result, elephants and rhinos shot by the Kambas often died of septicaemia. Like the Liangulus, the Kambas sold their trophies to middlemen who took them to dealers in Mombasa and Malindi.

Sheldrick's first move against the poachers involved building outposts for his rangers. The rangers were frightened of the poachers, however, and did not dare to venture far from the outposts. Then Sheldrick established a field force, for which he recruited warriors from the Turkana, Rendille, Samburu and Orma, all nomadic peoples from the north of Kenya, who were tough and used to hardship, and who knew how to follow spoor and read the 'bush telegraph', although most of them could not read or write any language and few even spoke Swahili. Their training was on rigorous military lines, and as each one was armed, discipline had to be very strict. Still, the field force alone was not enough to eradicate poaching. Therefore in 1956, Sheldrick embarked on an ambitious anti-poaching campaign, supported by the police, the army and the game department. As a result of this two-year campaign, the Liangulu people entirely gave up hunting in Tsavo park, and the Kambas lay low. Their chances would come again, however . . .

Not long after the founding of national parks in Kenya, a rivalry developed between parks and game department people. Game department officials seemed to resent the prestige and success of the parks. After Sheldrick's anti-poaching campaign, authorities in the game department were less inclined to co-operate in later anti-poaching drives. An example of this petty-mindedness was that they refused to follow up poachers who moved just outside park boundaries and would not allow park employees honorary game warden status, thus ensuring that they could not make arrests outside the parks.

With the stated purpose of trying to co-ordinate the work of the game department with that of the national parks and reserves, the Kenya government declared an official merger of the two in 1976. The parks people were disgruntled by being absorbed into what became the Wildlife Conservation and Management Department under the Ministry of Tourism and Wildlife (in 1980 changed to the Ministry of Environment and Natural Resources). Many of them also resented having to accept cuts in their salaries (to bring them into line with civil service employment schedules). Questions of finance and management baffled even the best of government servants in the ministry, and all kinds of misunderstandings arose when office-bound bureaucrats issued directives telling those in the field how to handle matters.

Inevitably, the morale of the former parks employees fell to a low ebb. Sceptics loudly voiced their belief that the amalgamation came about because of corruption in high places. When the government summarily dismissed all honorary park wardens, who were Europeans working without payment to help with wildlife censuses and the patrolling of parks, many Kenya residents felt that the sceptics

indeed had a point to make. When it later became known that private shipments of ivory and rhino horn were arriving in Frankfurt and Antwerp with licensed permits from the Ministry of Tourism and Wildlife, even though there had been a ban on private ivory exports since 1973, there was widespread condemnation of the situation. It was also noted that although Kenya had banned all hunting in 1977, and all trade in wildlife products in early 1978, those years saw huge imports of Kenyan ivory and rhino horn into other countries.

The government was sensitive to adverse comment and public criticism and thought that by transferring wardens to different parks things might improve. That misguided solution was applied in Tsavo East. David Sheldrick was moved to Nairobi as an adviser but the warden who took his place could not pilot an aircraft and therefore was unable to keep as close a watch on poaching as necessary. After a while this warden was also replaced, but the new man had no experience of anything on so large a scale as Tsavo. Poachers came out again in full force, and there was a new development: Kambas found themselves competing for the spoils with Somalis. Somalis had come into Tsavo on previous occasions, but usually had done nothing more illegal than remove the ivory from dead elephants. However, now there were differences of opinion between the Somali and Kenya governments and it seemed as if Somalis were sowing discontent wherever they could in Kenya. They invaded parks in gangs, carrying heavy rifles and even automatic weapons. In Tsavo Somalis (of both Kenyan and Somali nationality) were responsible for eliminating rhinos from several areas of the park. They found that they could sell rhino horn and ivory for very high prices to sophisticated middlemen who moved the trophies either up to Nairobi to be flown to Europe and Hong Kong, or to the coast where they arranged transport for horn and ivory by sea to other countries.

In 1977 I spent some time in the northern part of Tsavo East. Joy Adamson was looking for a suitable place to reintroduce her leopard, Penny, to the wild. She asked me to accompany her on two trips to survey this area, which the government had told her she might use for her project.

We were shocked by what we saw. Wherever we turned we found evidence of poaching: rotting elephant and rhino carcasses, all with tusks and horns removed. We talked to rangers who told us they were powerless against the superior weaponry and numbers of the Somalis. Once we made our way to the town of Mito Andei, where we hoped for a peaceful night in the lodge. Instead, the town was seething with Somalis and Kambas, and there was a sinister eeriness of underhand dealings.

After having combed the whole of northern Tsavo East, we discussed the situation with park authorities who frankly thought it likely that Penny would be shot for her skin if released in Tsavo; Joy's own safety would also be in jeopardy, they said. Joy concluded that the park was not for her, and shortly afterwards she chose Shaba Game Reserve for Penny's release. Penny the leopard survived Joy in the wild; it was at Shaba where Joy was murdered on 3 January 1980.

By 1979 Kamba and Somali poachers had killed most of the rhinos in the 20,800 square kilometres of Tsavo East and West: the population plummeted 96 per cent in just four years. People were wondering whether any rhinos there would survive, even though at the crisis point Bill Woodley became the Warden of Tsavo West and Joseph Kioko took over Tsavo East. Both are superb managers and highly experienced; they are pilots as well and can direct anti-poaching operations from the air. However, the task facing them was formidable. Woodley immediately set out rebuilding the morale of the Tsavo Field Force. Then, on several occasions, he and Kioko called in the new national anti-poaching unit, which operates under Ted Goss and moves from park to park. Together, they took very strong measures against the poachers. They were helped also by the fact that a general clamp-down

on the trade made it more difficult for poachers to sell ivory to middlemen in Nairobi. As a result of the tremendous efforts made in Tsavo, the situation has turned around—at least temporarily. However, rhino horn is in greater demand than ever before, and people somewhere are able to get it out of the country and onto international markets. While only one rhino is known to have been poached in Tsavo in the last eighteen months, Kioko and Woodley do not dare let up on their constant vigilance.

The plight of rhinos was most startling in Tsavo, but there have been parallels in other parks and reserves. Amboseli once had the most famous rhinos with the longest horns. There were about 120 rhinos in Amboseli in the mid 1950s; by 1967 there were only 55 left. Maasai 'warriors', who had been discouraged from killing lions as a part of their manhood rituals, had begun hunting rhinos instead. After they had 'blooded' their spears on an animal, they left him dead with the horns still intact. In the late 1960s the Maasai did begin to take horns from some of the twenty further rhinos they slaughtered, and they sold them to Somali middlemen who had camps on the outskirts of the reserve.

Between 1971 and 1977 the Amboseli rhino population was further reduced to just eight animals; the main cause was poaching for commercial gain. The Maasai found it a fairly easy job, for they could approach the rhinos on the edge of the swamp on foot, moving through the tall grass, completely undetected until the moment when they threw their spears—and the spears sometimes went right through a rhino's body with the tip protruding from the other side of the victim. Tanzanians armed with guns also began to appear in Amboseli during the 1970s and contributed to the destruction of the rhinos there.

The Maasai did not take kindly to the idea of Amboseli—which they regarded as part of their homeland—being gazetted a reserve. In consequence they encouraged their cattle to overgraze the main part of the swamp which was favoured by wild animals. Negotiations for turning Amboseli into a national

These white rhinos were introduced into Kenya's Meru National Park from South Africa. Although there is fossil evidence that white rhinos once occurred around Lake Turkana, they were unknown in Kenya in recent times.



park—thus preventing the Maasai from bringing their cattle into it—were long and arduous. It was not until 1977, when the Maasai agreed to an annual cash payment of over \$50,000 and a piped water supply outside the borders for their cattle, that Amboseli officially became a park.

Since then, no more rhinos have been killed and the population has increased to eleven, due to the birth of three calves. Observers believe, however, that there are still not enough rhinos in Amboseli to ensure continued reproduction. The problem is that if other rhinos were moved to Amboseli then the distinctive long-horn genetic trait of Amboseli rhinos could be lost.

Prospects for the continued existence of rhinos in northern Kenya are extremely precarious. The Somali government has never set aside its claim to this part of the country and at times has actively abetted the movement of Somali nomads into Kenya. Somalia also claims the Ogaden province of Ethiopia and went to war during 1977 and 1978 to try to enforce this claim. Fighting on three fronts, the Ogaden, and Eritrea and Tigre in the north, the Ethiopians would have lost to the Somalis had it not been for the reinforcements from Cuba and the Soviet Union. With these reinforcements, however, they roundly defeated the Somalis in March 1978. Today, as a result, the Somali population is in dire straits, some eking out a miserable existence in refugee camps and others looking for pasture for their goats, camels and cattle wherever they can find it. This search takes the Somalis into Kenya, particularly to North-Eastern Province, which has a large indigenous Somali population. The incomers are usually armed and have taken to poaching for a livelihood in a very wide area including Meru, Samburu, Kora and Tsavo. They operate in the parks and reserves in gangs generally between three and ten strong, shooting rhinos solely for their horns (sold to middlemen for about \$135 a kilo in 1979).

Most of the ivory and horn collected from northern Kenya by middlemen eventually reaches Mombasa where unscrupulous dealers arrange to have it smuggled out of the country in dhows, the old wooden sailing vessels that have plied the Indian Ocean for centuries. There are so many dhows that it is almost impossible to counteract their role in the illicit movement of goods. Dhows can sail into secluded, shallow inlets and pick up cargo without attracting any attention and slip quietly away to make contact with foreign ships that will take the trophies on to such ports as Dubai on the Arabian Gulf. Almost anything other than drugs can be brought into Dubai legally. Where goods go from there is not the government's concern.

The slaughter of Kenyan rhinos has been especially severe in Meru, where not only have black rhinos succumbed but also most of the white ones that were introduced into the park from South Africa. Rhinos are extremely difficult to count in areas where they have been harassed by poachers. They hide in the densest bush, and even the most experienced observers flying overhead in a light aircraft cannot always discern a rhino from the greyish-brown mass that looks like shade cast by trees. Nevertheless, it seems certain that the park's rhino population today does not much exceed 35 individuals as against at least 127 in 1976. In 1979, the Warden, Peter Jenkins, came across a very large gang of Somali poachers armed with 22 Russian and Chinese automatic weapons. It is no wonder that the rhinos are fast disappearing.

From August 1979 until May 1980 there seemed to be some hope that the Somalis were at least being held at bay in Meru, for no rhinos were poached during that period. Then in June 1980 a gang of about ten killed six more rhinos. Jenkins now says he thinks that the Somalis will continue their poaching as long as there are rhinos left alive. The risk of getting caught by the anti-poaching unit or the park's rangers is easily outweighed by the profit to be made from the sale of horn.

When the national anti-poaching unit moves into a park or reserve in the north,

the Somalis have usually already moved out, having been tipped off by their informants. The damage done by the Somalis is immense: in Samburu, for instance, they have almost completely wiped out the rhinos; there are less than ten and possibly no more than two left.

In the Kora Game Reserve, where George Adamson has been rehabilitating lions since 1970, rhinos are so rare that for a time George did not think there were any remaining; however, he has recently come across the spoor of a couple of them. Knowing Kora better than most game wardens know their parks because of the many hours he spends each day tracking his lions, Adamson has also witnessed behavioural changes in some of the larger game, brought about by intensive poaching. Elephants, for example, have become particularly cunning and take care not to show themselves in the open. A while ago some game rangers on patrol were so stunned by suddenly coming across a cow elephant with her calf that they opened fire, killing the cow and maiming the calf so badly that it had to be put down.

Kora has never been free of poachers; and, when I was there in 1975, the stench from rotting rhino carcasses not far from Adamson's camp was overpowering. A ruthless slaughter had taken place: of the four rhinos killed, two were only calves. At that time the Somalis seemed determined to undermine the development of the reserve, bringing in herds of camels and goats, recklessly burning trees and terrorizing the authorities. Poaching on a large scale stops only momentarily when the anti-poaching unit comes in. There were two campaigns in Kora in 1980, but after they were over the Somalis returned. When my wife visited Kora in late June 1980 four poachers brazenly left footprints across one of the tracks leading to the Tana river minutes before Adamson passed by in his Land Rover.

In Tanzania rhino poaching also greatly increased in the 1970s. In the northern part of the country Somalis here, too, turned it into big business. Whilst Tanzanians—especially Maasai tribesmen—are responsible for most of the poaching, Somali middlemen have encouraged them by paying for trophies with Kenyan shillings (which have a higher black market value than Tanzanian shillings). The racket has become so profitable that Tanzanians themselves now vie with Somalis as middlemen.

There are areas in Tanzania where rhinos have been totally wiped out during the past decade. Olduvai Gorge, where the Leakey family has spent 50 years carrying out research on early man, still had 70 rhinos in 1966; none were left in 1979. The days are long past when Mary Leakey's Dalmatian dogs would come whimpering back to camp, having been frightened by snorting rhinos. Tarangire National Park lost almost all of its 250 rhinos to poachers in only two years, 1976 and 1977.

Wherever rhinos exist in northern Tanzania there has been extremely heavy poaching. For example, in the Ngorongoro Conservation Area, which includes the world-famous crater, the rhino population has fallen by 70 per cent since 1966, due to the presence of armed bandits and Maasai poachers who spear the animals at night. The Maasai have shown a growing interest in buying consumer goods and are increasingly raising the necessary cash by poaching. They are stealthy hunters and usually prove more than a match for the Tanzanian anti-poaching units. Furthermore, although no one will officially admit the fact, it is generally accepted that some employees in the Conservation Authority were responsible for the deaths of several rhinos in 1980 and 1981 inside the crater. If the rangers do not improve their technique, then rhinoceroses are doomed in northern Tanzania.

Tanzania lost half of its total rhino population in the 1970s. However, because poaching was most apparent in the northern part of the country where rhino numbers fell by over 80 per cent, conservationists thought that elsewhere in the country rhinos were in much better shape. The view was that the inaccessibility of

The serial numbers on these rhino horns and elephant tusks in Kenya's Tsavo East National Park show that these were victims of the massive die-off from starvation of both species which occurred between 1970 and 1972. Later, the survivors were further decimated by poachers.



central and southern Tanzania would slow down the poachers. Unfortunately, this was not the case in Ruaha National Park in central Tanzania. The rhino population there dropped from 447 in 1973 to 94 in 1977. There should therefore be cause for concern for the future of rhinos in the southern part of the country, particularly in the Selous Game Reserve where there may still be as many as 3,000 rhinos. If poachers could kill 75 per cent of the isolated Ruaha rhinos, what is to prevent them moving in on the undeveloped Selous where there is thick bush for cover, where the patrols are limited, and where the trade in horn could be facilitated by dhowmen who already sail into the Rufiji swamps to collect mangrove poles?

I believe that it is indeed necessary to take measures quickly to combat the spread of poaching to the more remote areas of Africa where there are still relatively large rhino populations. An FAO survey in 1973 estimated a minimum of 4,000 rhinos and possibly as many as 8,000 in Zambia's Luangwa valley. However, in the late 1970s local gangs of up to a dozen men armed with modern rifles were hunting for ivory and rhino horn. In an attempt to stop the problem, an independent anti-poaching unit under Phil Berry was set up. Berry believes that while rhino poaching has since been reduced by a very considerable extent within the South Luangwa National Park, the average figure of one rhino killed a day could apply elsewhere in the valley. Today there are between 1,500 and 1,800 rhinos left, and what worries Berry most of all is that only in the places where his anti-poaching unit is able to maintain a regular presence are young rhino calves now found. In an interview with Peter Jackson for the September 1981 World

Wildlife Fund monthly report, he said: "If lack of recruitment carries on like this it could well be that in the next four or five years there will be virtually no rhino left." As for the Zambian poachers, they receive less for their horns than almost anywhere else in Africa: Berry claims that buyers from Tanzania (both Tanzanians themselves and Somalis) and from Malawi pay only \$25 to \$36 per horn.

The Central African Republic is another country with a large rhino population. Although no count has ever been made, Dr Clive Spinage believes that there could be as many as 3,000 to 4,000. Under ex-Emperor Bokassa, there was, of course, a great deal of poaching, but that was almost entirely for ivory which hunters could sell directly or through middlemen to an ivory-trading monopoly under the name of La Couronne in the capital city—with no questions asked. The hunters had little conception of the value of rhino horn then, but that may be changing now. Crossing the eastern border into the Central African Republic, Sudanese poachers have recently made hit-and-run raids for rhino horn.

Black rhino populations in other African countries today are limited, and the lack of control in some of these will probably mean the rhinos dying out. Chad has under 20 rhinos left, Mozambique has 300, Angola 200, Ethiopia between 10 and 20, and Uganda maybe 12. There is protection for rhinos in South West Africa (with a population of 350), Rwanda (20-40), Malawi (25-50), Cameroon (150), Botswana (20) and Zimbabwe (1,400). However, in none of these countries, with the possible exceptions of Malawi and Zimbabwe, are rhino numbers increasing. Even in South Africa, where the government provides better protection for its 625 black rhinos than any other country in the world, the population increase over the past two decades has averaged less than two per cent a year.

Over the last 160 years around 95 per cent of the entire African rhino population has been lost. Even more alarming is the fact that there were twice as many African rhinos in 1970 as in 1980.

Because the cost of conservation has soared, due to a tremendous increase in fuel prices for both aircraft and vehicles, salary rises and inflation everywhere in Africa, many governments tend to look upon wildlife as an expensive luxury which they can ill afford. The matter is not helped by fast human population growth which inevitably puts pressure on areas set aside for parks and reserves. Furthermore, the international demand for rhino horn has reached unprecedented heights. Whilst the African poacher makes well under a third the amount of money that a poacher of the rarer Asian species does, the temptation to earn a living from poaching in Africa is very much greater and there is generally much less risk. Despite the remaining large populations in the Selous, the Luangwa valley and the Central African Republic, black rhinos are in severe peril.



4 · How Rhino Products are Used

Rhinoceros horn has been in demand for many centuries and by people as varied as the Ethiopians, Europeans, Arabs, Indians and Chinese. There are records of the trade to China and India going back to the beginning of the Christian era.

The Chinese have made the most beautiful masterpieces of rhino horn sculpture. It was a tradition from the Tang (618–907) to the Ching (1644–1912) dynasties for the wealthiest aristocrats to present the emperors on their birthdays with rhino horn vessels. These included cups and decorative bowls for washing paint brushes, although none were ever put to use. They were instead treasured objets d'art, depicting Taoist scenes suggesting immortality. The aristocrats who commissioned them from the finest craftsmen of the day paid fortunes for them, and they were the epitome of the highest quality of workmanship.

Some rhino horn cups from China made their way to Europe in the sixteenth and early seventeenth centuries—the Archduke Ferdinand of Tyrol and Emperor Rudolf II collected them for their 'curiosity cabinets'. The major export period for Chinese carved rhino horn vessels was, however, the nineteenth century. Cantonese craftsmen made rhino horn cornucopias with Taoist motifs for sale to Europeans. Because these are such large vessels, only African rhinos could have provided the horn for them. Soame Jenyns, who has done research on the subject, also believes that most of the rhino carvings made in the Ming and Ching dynasties, regardless of size, were from African rhinos. Since we do have documented evidence of horns from Africa coming to China even before the Ming dynasty, I tend to agree.

There are several important collections of rhino horn carvings. The oldest is in the Shosoin in Japan, where Chinese rhino horn girdles and plaques from the possessions of the eighth-century Emperor Shomu are kept. The finest Chinese rhino horn vessels I have seen are the half dozen in the National Museum of Taipei, all formerly belonging to Chinese emperors. The quality of their craftsmanship is exceptionally fine, and the colour and patina of these Ming and Ching pieces are aesthetically superb. In the West, probably the largest collection is to be found in the Beatty Library in Dublin where, among the 180 rhino horn carvings, is a brush pot decorated with figures of Immortals in a pine-tree setting. The Museum voor Land en Volkenkunde in Rotterdam has 77 cups. In the United States the Field Museum in Chicago has many cups collected by John T. Marshall in the early twentieth century, and there is a large selection of rhino horn carvings from the Ching dynasty at the Fogg Museum in Boston.

There are still Chinese rhino horn cups on the market in Europe. If a collector were to visit the antique shops, especially those dealing with Chinese works of art, in Paris, London, or even across the Atlantic in New York, he would certainly find several for sale. In May 1980 I went to some shops in Kensington, Chelsea and Mayfair in London and saw seven; however, they were not as elaborately carved as the most famous ones, although a couple had very attractive bird and grape motifs. They varied in price from \$900 to \$5,000, depending on quality and size. Similar cups and goblets, made mainly in the nineteenth and early twentieth centuries by German and British artisans, are also available and their retail prices today are between \$280 and \$650 in London antique shops.

Very simply carved rhino horn cups for detecting poison have been widely made and used in the Muslim, Hindu, Buddhist and Christian worlds, from central Africa in the West to China in the East. The belief (which to some extent exists in

This rhino horn cup was carved during the Ching dynasty, but never used other than as an objet d'art by a Chinese emperor.



Sudan and Arabia) was that if a liquid suspected to contain poison were poured into a rhino horn cup then either an effervescence of bubbles would appear or the drink would be rendered harmless by the special properties of the horn. Dr Lee Talbot, a well known American scientist, thinks that the rhino horn cups may have been partially successful in detecting some of the older poisons which were strong alkaloids that would have reacted when put into contact with the horn, which is composed of keratin and gelatine.

In Africa, the main centres for making rhino horn cups in the nineteenth century were Ethiopia and Sudan. When Sir Samuel Baker left Africa, Hussein Khalifa Pasha gave him three cups mounted on silver bases. Rhino horn cups were popular in Ethiopia well into the twentieth century. I was taken aback soon after I began this study when I went to Wilfred Thesiger's flat in London to give him a copy of a book on Oman and saw three rhino horn cups on top of a bookshelf in the hallway. He told me that when he attended Haile Selassie's coronation in Addis Ababa in 1930 he bought one of them from a street pedlar. He liked the translucence of the cup so much that when he returned to Addis three years later he bought the other two in the main market. He believes that these cups were made in Ethiopia for various princes and other members of the aristocracy.

Cups are the best known items made from rhino horn, but there are others. The Chinese used to consider the horn ideal for their "most highly esteemed ornaments" and used it for buttons, belt buckles, cross-pieces on straps, girdles, hair-pins, combs, bracelets, writing brush handles, scroll ends, paper weights, box covers, weights for curtains and talismans. There is even a reference by a Chinese poet to a currency made from rhino horn that was used inside the Palace in the Sung Dynasty (960-1279).

Rhino horn has also long been popular in Japan where it is carved into netsukes. These are toggles, a kind of fastener for a Japanese man's kimono. For centuries, netsukes have been important ornaments and the Japanese have carved them traditionally from wood, coral, ivory and rhino horn. They are often little sculptures of insects, snakes, birds, turtles, fish and mammals.

Because of the fine calibre of their workmanship, the richness of the materials used and their subject matter, Europeans collect netsukes; moreover, in recent years two Englishmen have entered the market with their own carvings of netsukes made from rhino horn. I interviewed one of them, Michael Birch, when he held an exhibition of his netsukes at Quaglino's Hotel in London, May 1980.

Michael Birch carves amber, walrus ivory, stag antlers, elephant ivory, roots, roebuck antlers, whale teeth, narwhal ivory and marine fossil plants; but he is especially attracted to rhino horn, which he buys from Sotheby's and Christie's rooms in the form of old trophies. His finished products are translucent, in colours ranging from a golden yellow to a rich brown, achieved by polishing the carved rhino horn with sand and Russian tallow, then adding a wax and cerium oxide coating. He has made ten rhino horn netsukes since 1977, and three of them were on view at his exhibition. These are all under 13 centimetres in height and quite modern in their abstract designs. One of them represented "Baku, the Eater of Bad Dreams", and was priced at \$4,500.

It was not until the nineteenth century that Europeans began to use rhino horn extensively for decorative carvings. They may have copied the fashion from South Africa, where the horn was popular for sword hilts and ramrods. Certainly, by the early twentieth century butt-plates and hand-grips for the more expensive European rifles and pistols were being made from rhino horn. During the Edwardian period in England, there were quite a number of uses, including the tops of riding-crops, walking-sticks, door-handles and even the interior mountings of limousine cars. Rhino horn items can still be bought in second-hand shops. Prices for riding-crops and walking-sticks range from \$230 to \$650 in London



Throughout the nineteenth century until the World Depression of the 1930s, rhino horn was put to many uses in Europe. This picture is of a mortar and pestle made from it.

today, depending on the length of the horn and the quality of the carving. Polished rhino horn looks almost like amber and it is not difficult to carve. It had a prestige value, too: since rhinos were still regarded by most Europeans as exotic beasts, a dandy with something made from rhino horn could almost certainly count on attracting the attention of his peers.

The rhino horn that reached European markets in the nineteenth and early twentieth centuries came from Africa, and both European sportsmen and traditional hunters supplied it. The rhino craze in Europe peaked in the 'Roaring 20s', but when the Great Depression came, the demand for rhino horn diminished, and it has not regained its former popularity.

Within tropical Africa, few people other than the Ethiopians and Sudanese have traditionally had much use for it. In Kenya, Dorobo tribesmen made clubs out of rhino horn, and the Turkana used it for mallets to pound animal hides to make them more pliable. The Zulus in South Africa, however, have a multitude of uses for not only rhino horn but other rhino products as well. They boil pieces of the horn in water and sip the strained liquid to alleviate coughs, chest pains and snake bites. Some Zulus crush rhino horn into a powder and mix it with milk which they drink to cure asthma attacks. One Zulu said to me that he occasionally burns rhino horn and then sniffs the ash to stop nose-bleeds. Since Zulus believe that rhinos are very strong and powerful animals, some men like to keep a little piece of rhino horn in their pocket as a talisman for strength and good luck. Others think that a little ash from rhino horn rubbed into the eyebrows will help a man attract beautiful girls.

While the Natal Parks Board has in effect stopped all retail sales of rhino products within Natal Province, the Transvaal Nature Conservation Division still allows them to be sold in Johannesburg's and Pretoria's African traditional medicine shops. These establishments, called *muti* (the Zulu word for medicine) shops, sell hundreds of different herbs, bulbs and animal products which Africans use for both medicinal and spiritual purposes. Among the animal products available are hyena, leopard and monkey skins; elephant skulls and feet; ostrich claws; hippo and lion fat; baboon menstrual blood; and vulture brains. Since Africans are generally not allowed to obtain trading licences in the major cities, most *muti* shops are owned and run by Indians (mainly Tamils), but there are some European shopkeepers. Businessmen have found the *muti* shops profitable enterprises, and their number has increased substantially during the past 30 years. However, in African townships, including Soweto, the medicine shops are generally much smaller, more expensive and less well-stocked. I found rhino products for sale in five of the ten *muti* shops I visited in Pretoria and Johannesburg. The horn is the most popular rhino product, and a customer usually buys a piece about two centimetres in length, weighing under ten grams, for less than \$5. The horn is sometimes smuggled out of Natal Province, but more often it is obtained from suppliers in neighbouring countries.

Today North Yemen—a relatively unknown Arab nation with a population of under six million—is the world's major importer and consumer of rhino horn. None of the international conservation agencies, which had been decrying the decline of African rhinos for at least a decade, had any idea at all about the tremendous amount of rhino horn that North Yemen imports until I publicized the information I gathered there in 1978. This state of ignorance is easily understandable, I suppose, since the country was completely cut off from the rest of the world from 1904 until 1962, during the reigns of the last two Imams, Yahya Ben Mohamed El Din who was assassinated in an ill-fated coup but was later that year succeeded by his son, the Crown Prince Ahmed. These autocratic, reactionary religious leaders prohibited all foreign investments in North Yemen, made no distinction between their private purse and government treasury, had no

In the Transvaal, South Africa, rhino horn is still legally sold in medicine shops which also deal in a wide range of wild animal hides, skins and bones; the principal customers are Zulu who buy them for treating various diseases and for spiritual purposes.



legislative body and only the Maria Theresa thaler as currency. Tribal leaders and sheikhs were the local administrators and tax collectors. When Ahmed died in 1962, civil war broke out. In *Arabia Without Sultans* Fred Halliday has described North Yemen at that time:

It was a society overwhelmed with misery. In 1962 there were only fifteen doctors—all foreigners. There were 600 hospital beds in the whole country. Over 50 per cent of the population had some kind of venereal disease; over 80 per cent were suffering from trachoma. No money at all was spent on education by the state and less than five per cent of the children attended the traditional Koranic schools. There was not only no North Yemeni doctor, but there were no modern schools, no paved roads, no railways, no factories. The average per capita income was \$70 a year. There was nothing romantic about it; it was a very horrible place.

The civil war was one of the most destructive Arabia has ever seen. Egyptians supported the republican faction and Saudi Arabians backed the royalists. It went on for eight years, and although technically the republicans won, the new administration became closely linked to Saudi Arabia. The damage was so great that North Yemen soon opened its doors to any country that offered economic aid. In the early 1970s the main sources were the Soviet Union, China, the USA and Saudi Arabia.

When I went to North Yemen, I found that the people were actively engaged in improving their standards of education, health and general prosperity. Saudi money was most evident in government-sponsored projects, and Saudi influence was prevalent in all the cities. Moreover, by the early 1970s Saudi Arabia was employing large numbers of migrant workers from North Yemen to help in the massive Saudi development programme. As a conservative, traditionally-orientated people, generally very hard-working, the Yemenis ideally suited Saudi Arabia's needs. Thus, in 1978, over a third of the adult male population of North Yemen was in Saudi Arabia working primarily on construction projects, road building and transport. All these labourers send money back to their families and the figures are staggering: the migrant work force was remitting over three million dollars a day in the late 1970s.

As a result of all this, North Yemen has become an astonishing consumer society. In the financial year 1976/7 the country exported \$11,222,220 worth of goods but its imports amounted to \$674,511,000—surely a unique set of statistics. In small shops one finds imported frozen chickens from Italy, French processed cheese, bottled drinking water from the United Arab Emirates, and there must be more cassette shops per square metre in Sanaa than in California! Recorded Egyptian singers wail loudly on every street corner, in most coffee shops and from cassettes installed in motor vehicles. Japanese-bottled Coca Cola is everywhere, and so are Suzuki motor scooters, screeching their brakes and equipped with jarring horns.

Some of the money earned by the migrant workers is also used to indulge in luxuries that were once the exclusive prerogatives of the elite ruling-class: qat and rhino horn daggers. Both of these cost a great deal of money; however, many Yemenis today can afford them. Yemenis do not hoard their savings: they spend whatever they can buying the things they want. Qat and rhino horn daggers head their list of priorities.

Qat (*Catha edulis*), indigenous to Ethiopia, was probably first brought into North Yemen as early as the fifteenth century. It is a bushy plant with succulent leaves which are chewed as a stimulant. Not long ago only a few Yemenis could afford to buy qat and not very many agriculturalists grew it because the market was

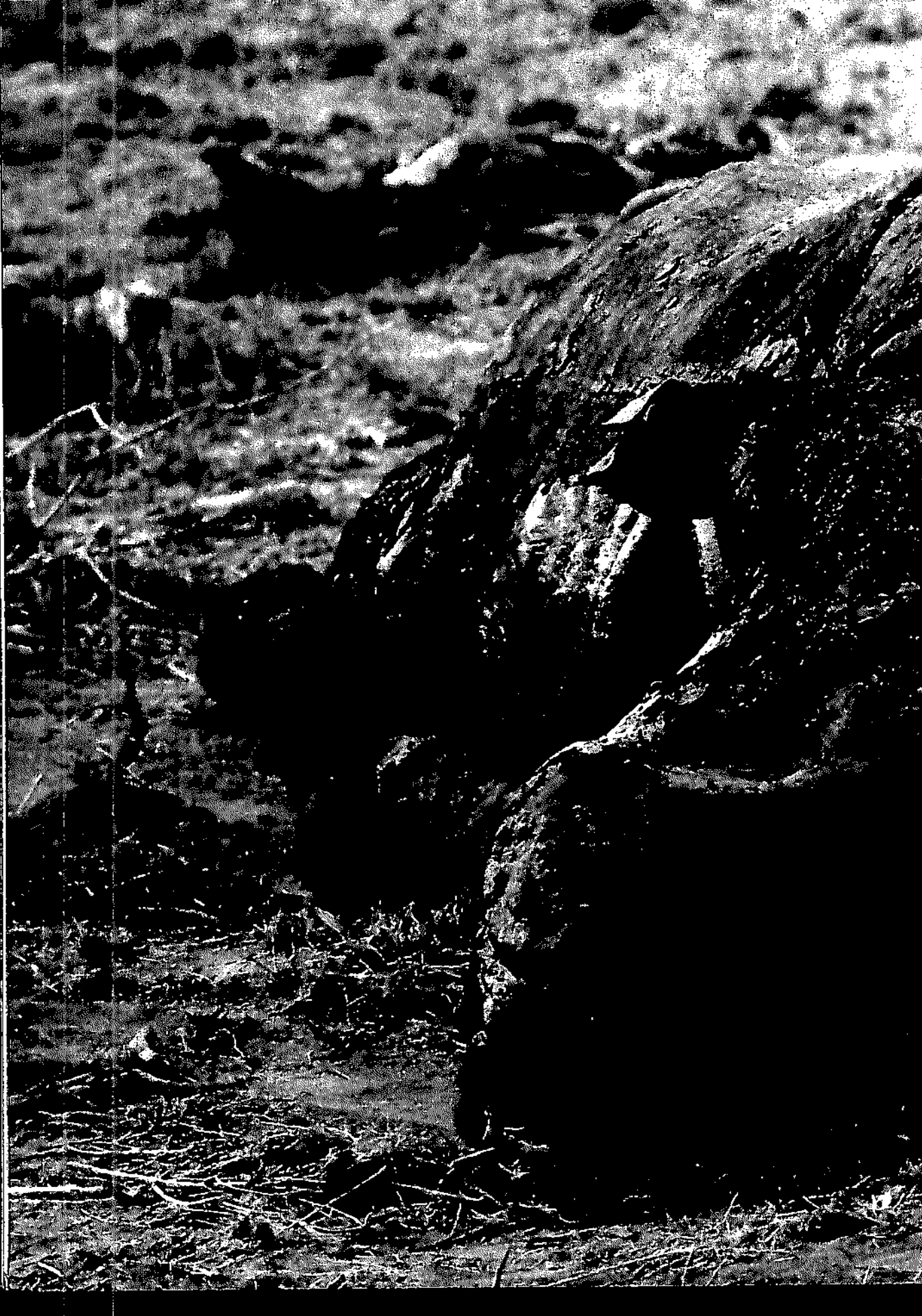


Female black rhinos are usually not solitary; most of their lives are spent with current offspring or in the company of an older daughter. Other than for the odd bristle, the only hair on the black rhino is on the animal's eyelashes, at the end of its tail and on the fringes of its ears. The ears are in almost continual motion, even when the animal is asleep.

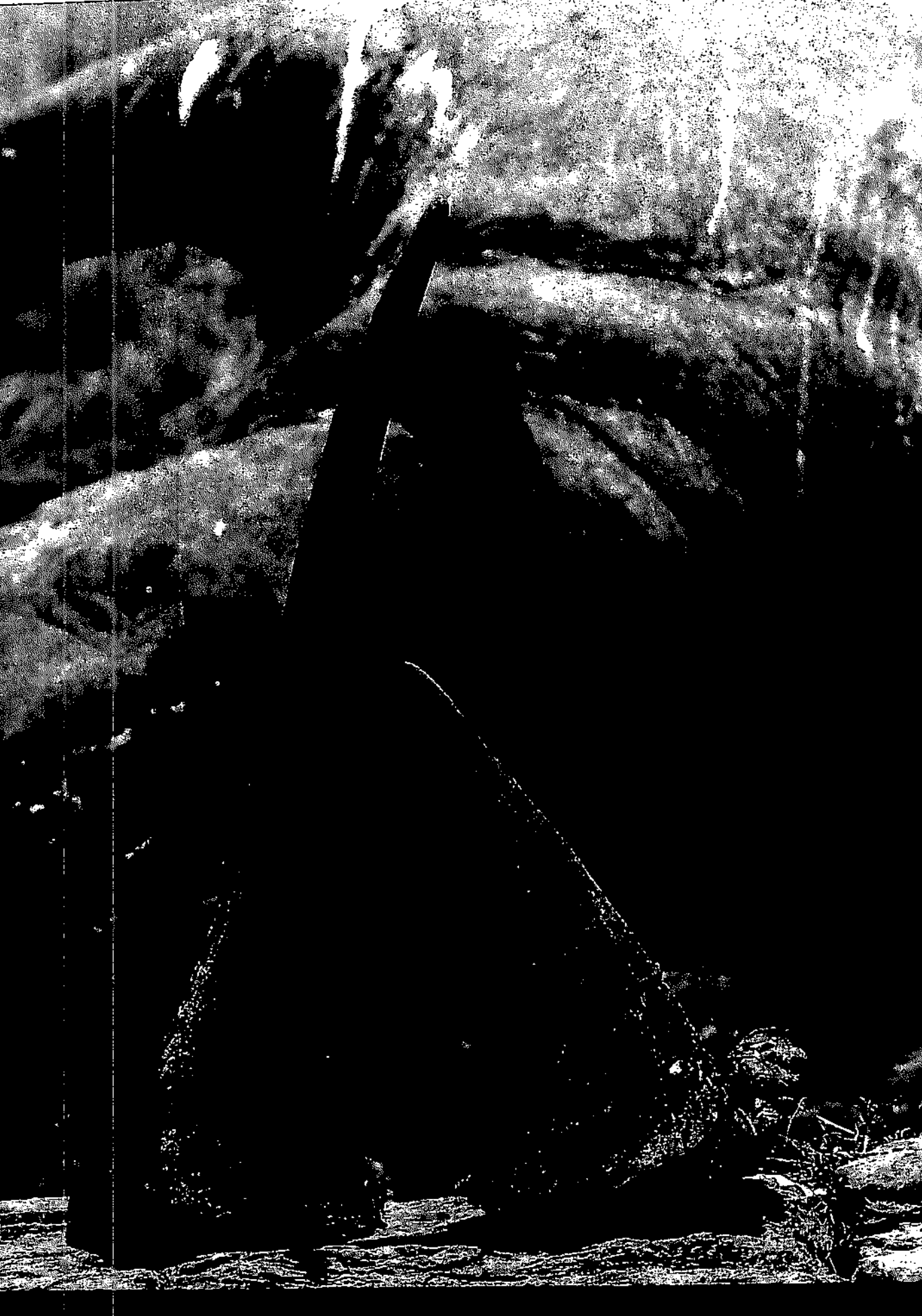
On following pages In tropical Africa, poachers take only the horns of the rhinos they kill, leaving the rest of the carcass to rot. However, in Asia, almost every part of the rhino is highly valued – the toes, the skin, the stomach, the bones and even the dung of the animal serve medicinal purposes.

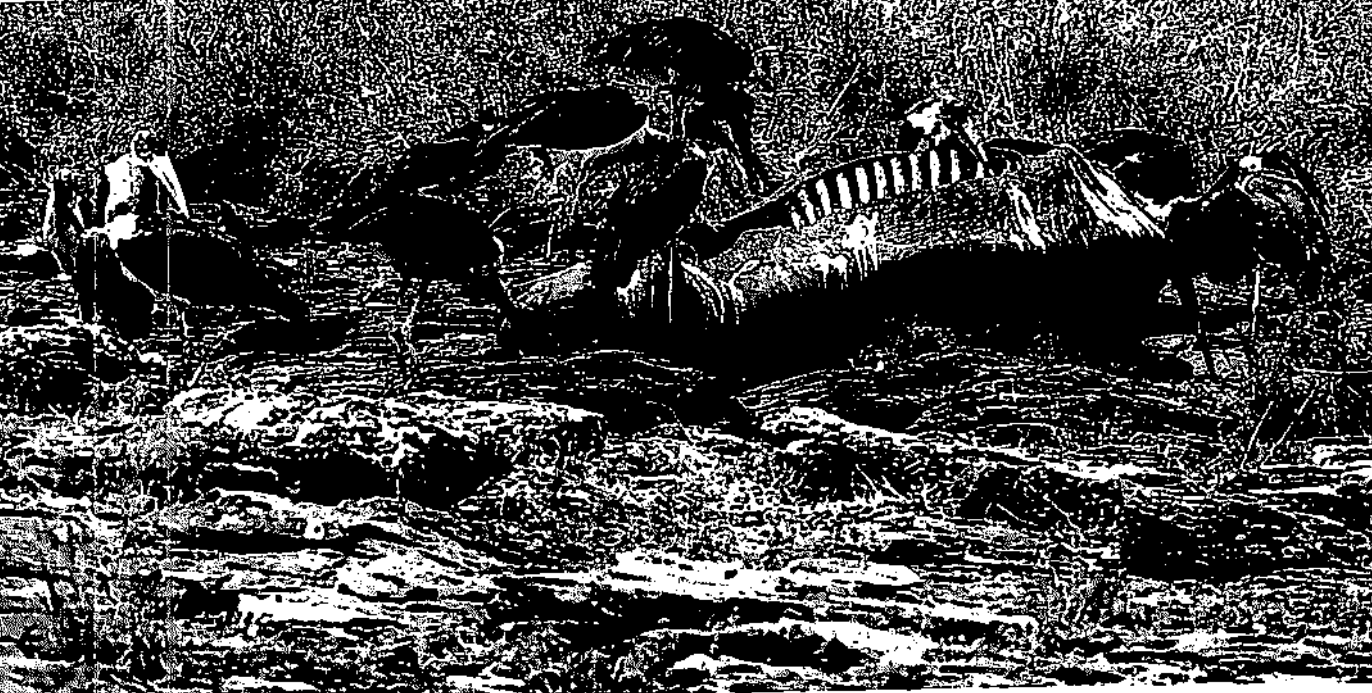
When trotting or galloping, the tail of the black rhino is invariably held away from the hind legs. Frequent dust baths cause black rhinos to take on the colour of the ground where they live. This rhino in Amboseli typically matches its surroundings.











Rhino hide is so thick that scavengers are unable to break through it easily, and in this instance were only able to take flesh from where humans had removed a strip of hide from the carcass.

Opposite It is very easy to remove the horns from a rhino. They are not fixed to central cores of bone on the skull, like those of cattle and antelope, but instead are attached to thick skin. African rhinos use their horns mainly for clubbing rather than goring. They occasionally break off near the base and grow back.

On following pages A bush fire reveals the remains of a poached rhino in Kenya's Meru Park.

Having found a dead rhino in a Kenya park, armed rangers examine the carcass to determine the cause of death and immediately remove the horns to prevent poachers from taking them.

