



Photograph by Masud Quraishy

Bathing themselves in dust, black rhinos must shift positions to avoid crushing their own radial nerves.

A most preposterous beast

Rhino fact and folklore — a potpourri

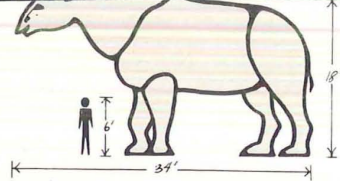
IN the Middle Ages, Europeans thought it was a unicorn. Many people in Southeast Asia still swear by its aphrodisiacal powers. Poems have been written about it, portraits have been painted of it and at least one modern play has been named after it. Big game hunters, including U.S. President Theodore Roosevelt, have killed it, farmers have usurped its living space, and conservationists have recently fought to preserve it. Nearly blind, a great wallower in the ooze but as quick as an Olympic sprinter, the rhino-

ceros is indeed a preposterous and perplexing beast. "A nightmarish creature," one contemporary writer calls it, "an amalgam of a turtle, an elephant and a hog."

Just what is this hulking animal and how can its survival be ensured? To help answer that question, rhino researcher Andrew Laurie in Nepal, roving editor Norman Myers in Nairobi and the staff of INTERNATIONAL WILDLIFE assembled the following compendium of facts and folklore, personal adventures and obscure tidbits about this unlikely but incredibly fascinating relative of the horse.

NOT FOR SALE

An international conservation treaty now lists all rhinos as endangered species. Result: rhinoceroses and rhinoceros products are either banned or restricted from trade between signatory countries. In the U.S., all rhinos except the black and southern white are on the endangered species list.



BIG DADDY

Paleontologists, those students of fossil remains, say rhinos are related to tapirs — and also to horses. Once, the rhinoceros' relatives were part of a large group with widely varying characteristics. The biggest rhino of all — in fact, the largest mammal ever to roam the earth — was the Baluchitherium. It stood 18 feet high and was 34 feet long.



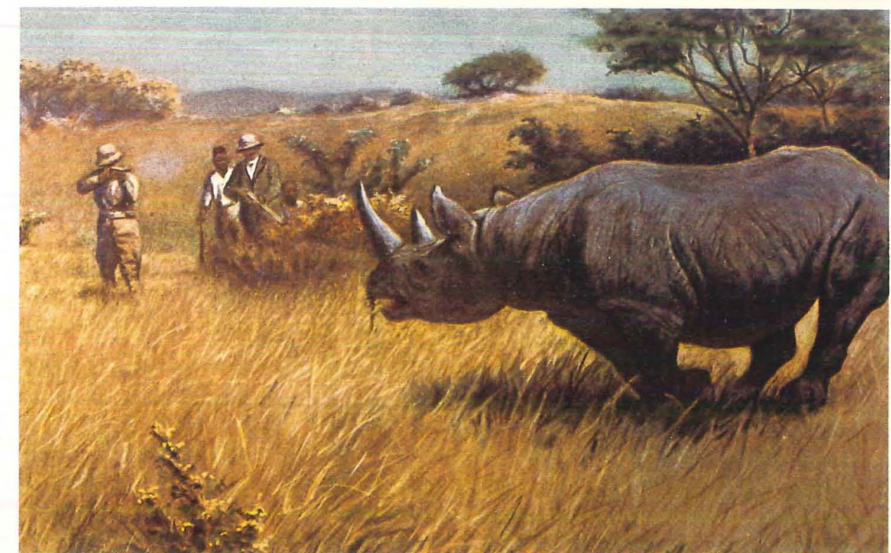
From King to Pope

The first rhinoceros to reach Europe after the fall of the Roman Empire was sent by the king of Cambay in western India as a gift to King Manoel of Portugal in 1513. Eventually, King Manoel decided to give the rhino to Pope Leo X, but the ship was wrecked near Genoa and the animal died.

BULLY!

"The big beast stood like an uncouth statue, his hide black in the sunlight. As I stepped to one side of the bush, the rhino jumped to his feet with the agility of a polo pony. As he rose, I put in the right barrel, the bullet going through both lungs. At the same moment he wheeled, the blood spouting from his nostrils, and galloped full on us. Before he could get quite all the way round, I struck him with my left-hand barrel, the bullet piercing his heart." — *President Theodore Roosevelt*

Text and Philip R. Goodwin drawing reprinted by permission of Charles Scribner's Sons from the book AFRICAN GAME TRAILS by Theodore Roosevelt. Copyright © 1909, 1910 by Charles Scribner's Sons.



Photograph by Andrew Laurie

BY ANDREW LAURIE

What I learned stalking Indian rhinos

FIGHTING to stay awake, I wrapped my blanket closer and scanned the murky Nepalese valley below for signs of life. The moon was nearly full and the sky was clear, but fog hung heavy above the Surong Khola River. I was waiting to see a rhinoceros and when the mist finally lifted, there he was: a great white shape plodding up the valley, obscured from time to time by the tall grass. He reached the white cliff face some 100 yards away and started to lick the rock, eating small chunks of it. I had expected



Indian rhino cows with calves are especially ill-tempered, and clashes are not infrequent.

that. Then, however, I was astonished to see this two-ton creature scramble 15 feet up a 60-degree slope and proceed to nibble more rock. I continued watching from my wooden hideout until the mist descended again. He stayed in the area for 40 minutes. I could hear him in the water and later grazing across the valley.

Afterwards, I analyzed a sample of the rhino's rock and found that it contained a large amount of magnesium and sodium. I eventually learned that this lick was used by rhinos during the winter months only. What to make of it

As seen by Ogden Nash

The Rhinoceros

*The rhino is a homely beast,
For human eyes he's not a feast.
Farewell, farewell, you old rhinoceros,
I'll stare at something less prepoceros.*

Copyright © 1933, 1960 by Ogden Nash

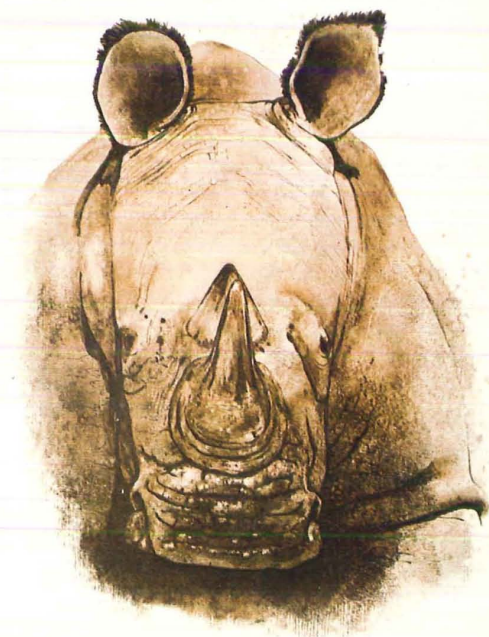


Illustration by Howard Nordland

all? I wasn't sure. It was just another tidbit or two to file away with all the other information I was recording on the habits of the great one-horned rhino of India and Nepal.

Together with the whale, the elephant and the hippopotamus, the rhino is one of the world's truly gargantuan creatures. It is impressively equipped for survival, with its great bulk, its surprising nimbleness, its armorlike skin and its formidable horn. But for all its seeming indestructibility, the rhino is faring a good deal worse than most other large wild animals these days. There are five rhino species in all,



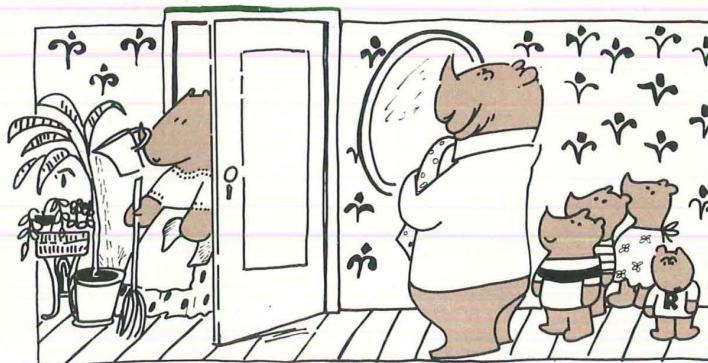
Cool it!

A rhino spends a lot of time in mud baths to keep cool. On a warm day in Africa, its body temperature rises by as much as seven degrees F. — a change that would induce extreme, if not terminal, fever in a human being.

How the rhino got its skin

"Long ago, it seems, the first animals were absolutely naked. Seeing their plight, God gave each of them a needle. The leopard sewed the most beautiful coat. The others did their best. But Kifaru — the first black rhino and the dumbest animal in all creation — dropped his needle and kicked it into the thicket. Tortured by ticks and fleas, he charged back and forth looking for his needle. It was nowhere. Snatching at a thorn, he stitched frantically, then donned his hastily made coat. It hung in deep folds and wrinkles. Seeing it, the other animals began to laugh. The rhino galloped from thicket to thicket searching for his needle. Perhaps, he thought, some of those laughing beasts had picked it up and hidden it. So he charged every living thing he met.

Condensed from ANIMAL KITABU. Copyright © 1967 by Jean-Pierre Hallet and Alex Pelle. Reprinted by permission of Random House, Inc.



"A rhino is as good as his horn," Ralphi's father liked to say.

From the book RALPHI RHINO. Copyright © 1974 by Lisl Weil. By permission of the publisher, Walker and Company.



Indian.

Largest of the Asian rhinos. Probably fewer than 1,200 left in Nepal and India.

Javan.

Similar to Indian rhino but smaller. Only 45 to 55 remain in western Java, a few on mainland Asia.

Sumatran.

Smallest of the rhinos. Fewer than 300 remain in Sumatra and other Asian areas.

White.

Earth's second-largest land mammal. In Africa, less than 500 remain of northern subspecies, 3,000 of southern.

Black.

So aggressive it will attack its own shadow. About 12,000, perhaps twice that, remain in southern and central Africa, but populations have declined rapidly.

Illustrations from GRZIMEK'S ANIMAL LIFE ENCYCLOPEDIA, Volume 13. Reprinted by permission of Van Nostrand Reinhold Company.

The five species of rhinos



Milwaukee Public Museum

Bottoms up!

Cups made from rhinoceros horns were used in China to detect poison. A dangerous liquid poured into the rhino cup would froth, it was believed, warning the drinker. During the T'ang Dynasty, when the cups were first used, they were quite plain. Later examples had elaborately carved ornamentation.

Photograph by W. Bayer (Bruce Coleman, Inc.)

and they are found from Sumatra and Java to India and the plains of Africa. Some of these species are in less trouble than others, but all are in considerable jeopardy, including the endangered behemoth I journeyed nearly halfway around the world to study.

To help develop a plan for saving the great one-horned rhinoceros of India and Nepal, I undertook a three-year examination of this beast in the Royal Chitawan National Park in Nepal. My assignment from the government of Nepal was to provide detailed information on the park's

200 rhinos: their distribution, habitat preferences, feeding behavior, reproductive rate mortality and social organization. Hopefully, this welter of data would suggest some ways to reconcile the rhino's habitat needs with the continued expansion of agriculture.

The Chitawan Valley is nestled in the Himalayan foothills, about 50 miles southwest of Katmandu. Since 1950, most of the valley floor has been cleared for cultivation, but dense stands of elephant grass up to 25 feet tall still cover much of the lower portions. Here, old bends in the

The white rhino is also known as the square-lipped rhino; the Boer term *wylt* means "wide."

river remain as reedy swamps or as lakes overhung by sim-
ul trees whose bright red flowers adorn their leafless
branches in March.

Fires sweep through the grasslands in February and
March, but the water table is high and regrowth is quick
and luxuriant. In spring, newly created sand banks are
colonized by grasses and eventually by shrubs and trees. By
the time monsoon rains arrive in June, the grass is already
six feet tall in places. The rivers swell and spectacular
floods toss tree trunks like matchsticks. The area is a con-

stantly changing mosaic of habitats and well defined seasons.
During my first month in Chitawan, I explored the park
and established my base camp on its eastern side. My plan
was to follow individual rhinos and also to find areas of
good visibility with tall trees in which I could construct
stationary observation platforms.

Before long, I was able to recognize individual rhinos by
peculiar ear cuts, horn shapes, scars and irregularities in
the folds of their huge bodies. Although these dis-
tinguishing characteristics were the most identifiable marks



At home in water, an Indian rhino makes waves. Scientist Andrew Laurie learned to recognize individuals from their unique physical features.

and shapes, I was also able to recognize more subtle differences. One rhino, for example, had ears which were very close together and stuck up like a rabbit's. I was always able to identify her correctly from that feature alone when I spotted her from a distance. My name for each animal was normally associated with its particular characteristics. Thus, Flapper had a big flap of skin on one fold. Stumptail, Splithorn, Cutear, Crumplerump and Curvey had correspondingly peculiar features.

Working constantly with these animals, I was also able

to get to know their different individual temperaments. I could predict the reactions of each to my approach. With some, I knew, I could walk confidently past as they lay in a wallow, realizing their immediate reaction would be to rush away from me into the forest or grassland. With others, I was more wary and made a detour.

I took regular trips around Chitawan, riding on the back of an elephant, and these circuits enabled me to record the various movements, associations and feeding habits of the different rhinos. As the months passed, for instance, I

added more and more plants to my list of rhino food — from water weeds to wheat and hard green *Trewia* fruits to shrubs that are unpalatable even to goats. The animals' movements, I found, were related largely to food. Their ranges overlapped most in the best feeding grounds.

Among males, I noticed more exclusiveness with respect to ranges. There were several big bulls who differed from the others in their behavior. They often squirted urine up to ten feet behind them in various displays that sometimes also included dragging their hind feet to make long paral-

Photograph by Andrew Laurie

lel furrows and rubbing bushes and trees with their horns.

The mating chases of *Rhinoceros unicornis* are often long and fierce. Sometimes, in fact, cows are actually killed by bulls or die later as a result of injuries sustained. At dusk one day, I heard loud roars and bleats from a nearby patch of grassland and hurried over on elephant back to investigate. There, a bull named Mr. Plod and a cow I called Gertie were engaged in a fierce battle.

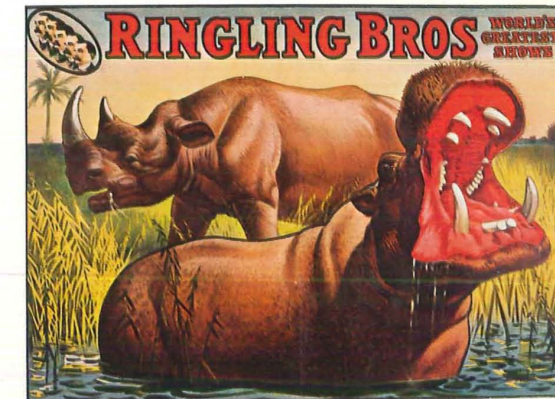
They charged toward each other, heads lowered, roaring loudly. Their horns clashed and they stood touching at

Ode to the ugly



*Rhinoceros, your hide looks all undone,
You do not take my fancy in the least.
You have a horn where other brutes have none:
Rhinoceros, you are an ugly beast.*

From THE BAD CHILD'S BOOK OF BEASTS by Hilaire Belloc. Copyright © 1965 by Alfred A. Knopf, Inc.



Circus World Museum, Baraboo, Wisconsin

Under the big top

They may not have dangled above center ring, but rhinos were often circus curiosities. Usually, they were strictly menagerie animals, but at least one circus did bring its rhino into the big top. In 1968, the Knie Circus in Switzerland had a performing rhino that did simple tricks, like putting its feet on a pedestal.

A FEW EXTRA HORNS

Sometimes rhinos grow extra horns. A former game warden in Kenya tells of a horn he found growing on a rhino's rump — along with other small horns growing from the flank.



Most aggressive of the rhinos, the black charges at the slightest provocation. Where it is persecuted by man, it is especially belligerent.

ground level, trying to get past the other's guard with the razor-sharp tusks in their lower jaws. Both animals raised their heads, backed off a pace or two and moved apart. Mr. Plod sniffed the ground and raised his head, the extended top lip quivering. Gertie approached again, but he turned away to sniff at the ground where she had urinated. Then he swung around suddenly and charged at her. Gertie lowered her head and bleated loudly. Their horns met but Mr. Plod's pushed past and his bared tusks hit her beneath her chin. The next second he had swung round to the side

and with his horn under Gertie's neck had lifted her head over heels so that she landed with a thud on her back. She lay there for a minute while Mr. Plod stood over her, and as soon as she had recovered, he chased her into the woodland. The squeaks and pants of their chase faded into the distance as Gertie's calf followed, grunting plaintively.

The bulls in Chitawan usually kept apart, but fierce, occasionally fatal fights sometimes took place between them. Nearly one-fifth of 30 recorded rhino deaths in my study area were due to fighting among males. Other causes of

When a rhino charges

For all its bulk, a rhino can accelerate fast — quick enough to beat a truck to the 50-yard mark. One African rhino charged a bulldozer and came out even. Another charged a moving train — twice.



Philip R. Goodwin drawing reprinted by permission of Charles Scribner's Sons from the book LIFE-HISTORIES OF AFRICAN GAME ANIMALS by Theodore Roosevelt and Edmund Heller. Copyright © 1914 by Charles Scribner's Sons.

A horse with a horn



An early explorer's account of a rhino probably led to stories in Europe about the unicorn, a horse with a long mane and a horn in its forehead. Speculation on that mythical beast's existence persisted until the 1800s.

Illustration from the book A DICTIONARY OF FABULOUS BEASTS. Copyright © 1971 by Richard Barber and Anne Riches. By permission of the publisher, Walker and Company.

Rhino as symbol

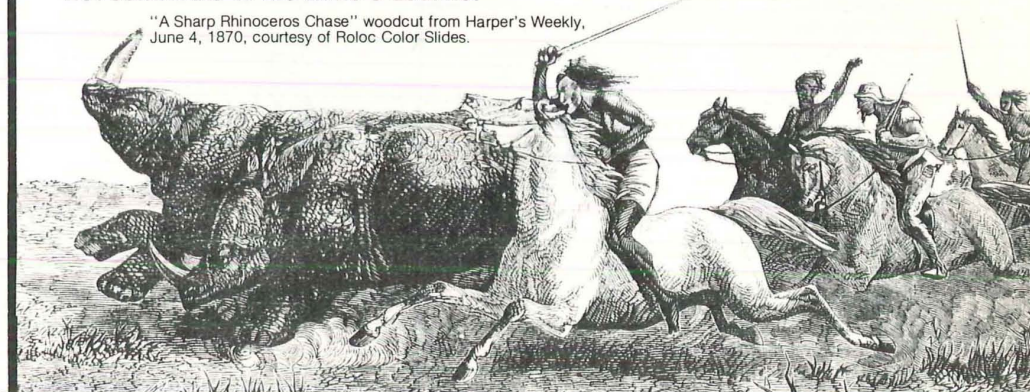
In 1960, a new play called Rhinoceros was the hit of the European theater season. In it, dehumanized people went along with the crowd, even as they chanted: "We must resist rhinocerotization at any cost." In searching for an apt symbol of human fanaticism, playwright Eugene Ionesco rejected other animals. "The bull?" he asked. "No, too noble. The hippopotamus? No, too blah. The buffalo? No, the buffalo is American. I don't want political allusions. The rhinoceros! Finally, I saw my dream."

Two's company, three's a crash

A "pride" of lions is a familiar term, but what do you call a group of rhinoceroses? A "crash."

BIG HUNTS, BIG HUNTERS

His name, appropriately enough, was John A. Hunter. His claim to fame: killing more than 1,600 rhinoceroses in Africa, including 300 in 1947 and 500 in 1948 in a futile attempt to clear marshland for farming. Some conservationists have blamed professional hunters for declining rhino populations, but mass hunting of rhinos is nothing new. In Nepal, in the mid-1800s, rhinos were hunted by large expeditions, using as many as 700 domestic elephants. These forays were infrequent, however, and did not contribute to the rhino's decline.



"A Sharp Rhinoceros Chase" woodcut from Harper's Weekly, June 4, 1870, courtesy of Roloc Color Slides.

death include tiger predation on calves and poaching by man. The latter has been controlled fairly well in Nepal, but tigers still accounted for 11 percent of the deaths.

During the hot dry season and on into the monsoon, wallowing in mud holes and swamps became more and more common. The rhinos protect their skin in this way from insect attack. In the densely populated eastern end of the park, I often observed brief but fierce clashes between cows with calves at the wallows. I suspected that the females in the east were breeding less often than those in the

west, perhaps partly due to the repeated stress of these encounters at the wallows.

By the time a calf leaves its mother for good, it has usually been separated for short periods on several occasions. This is a time of change in social role from part of a cow-calf association to an individual status. Young animals, on leaving their mothers, often band together in small groups. I never observed an attack by a breeding male on a group of young males, but attacks on single young males, sometimes resulting in death, were common.

Calling out the army!

At Kaziranga National Park in India, rhinos are guarded by 183 men patrolling on foot, on elephant or by vehicle during the dry season and by boat during the monsoons. Rhinos in Chitawan National Park in Nepal are protected by Nepalese Army soldiers distributed among 20 guard posts, each of which has 11 men.

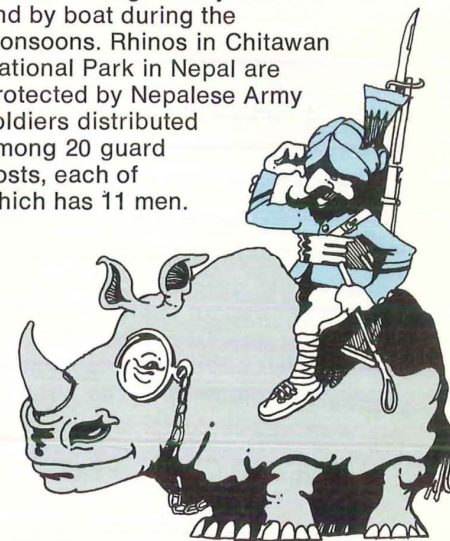




Illustration by Bob Kuhn

Nosing around

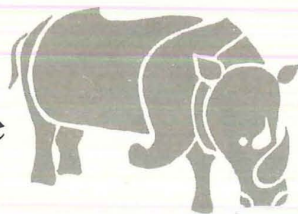
A rhino navigates by its nose. It retraces its steps from water holes to the patch of scrub where it feels at home by sniffing its way back along a trail, apparently using dung piles along the way as scent posts to help it find its way. One rhino researcher put rhino droppings in a net and dragged the pile behind his truck. The rhino followed the path for miles, regardless of the zigs and zags introduced by the researcher.

RHINO TALK

Apart from snorts, some rhino species have a repertoire of other sounds. A mother mews to call her offspring, an infant in danger screams, a rhino about to mate or attack bellows.

With one game leg

For all its lumbering gait, a rhino can get along quite well on three legs. But an elephant, similarly injured, can't budge a single stride.



Indian rhino at a glance

Rear

Dung-heap scent posts probably act as orientation aids, also provide information to other rhinos which have passed. Urine also used for marking.

Skin

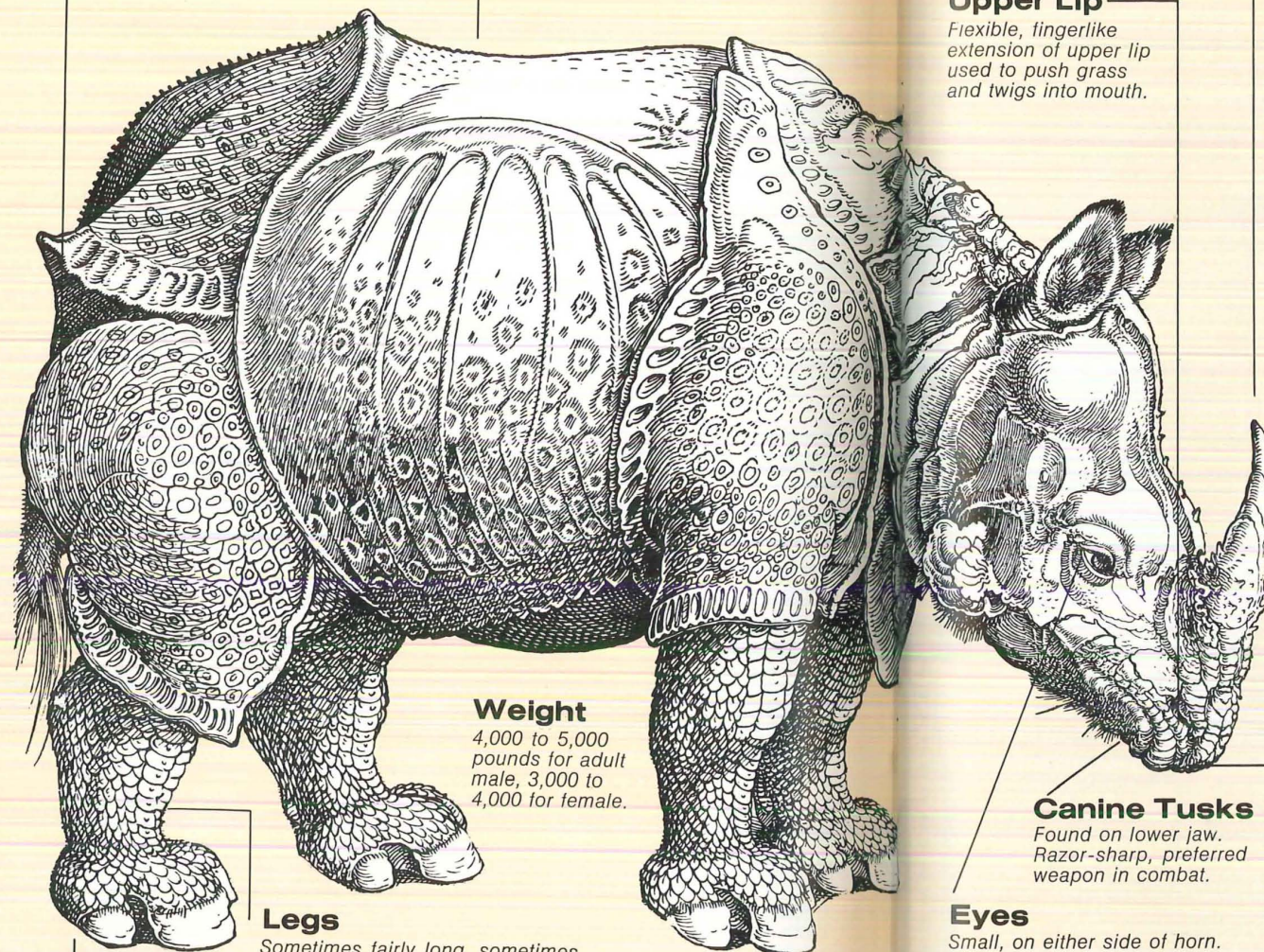
Knobby prominences give armor-plated effect. Skin folds across back and around rump and neck.

Horn

Stiff appendage made up of close-packed, hairlike fiber — not really "horn" at all. Rarely more than 18 inches long in Indian rhinos.

Upper Lip

Flexible, fingerlike extension of upper lip used to push grass and twigs into mouth.



Weight

4,000 to 5,000 pounds for adult male, 3,000 to 4,000 for female.

Legs

Sometimes fairly long, sometimes stocky. Usually walks at deliberate pace but can gallop at 25 mph.

Feet

Three toes leave an imprint like the ace of clubs. Hippos have similar-sized feet, but four toes.

Height

Up to six feet for adult male, five and one-half feet for female.

Canine Tusks

Found on lower jaw. Razor-sharp, preferred weapon in combat.

Eyes

Small, on either side of horn. Eyesight poor, "sees" more by smelling than by looking.

Nostrils

Acute sense of smell picks up scent at a half mile. Communicates with other rhinos via smell.

Woodcut by A. Dürer. The Metropolitan Museum of Art, Gift of Harry G. Friedman, 1959.

Albrecht Dürer's woodcut, circa 1515, of a beast he'd never seen, influenced later artists.

I was fascinated by all aspects of the rhinos as I watched them through the seasons of Chitawan. With poaching almost completely controlled, numbers were increasing by nearly two percent per year. I estimated the population to be between 250 and 280.

The main problem they face is possible conflict between farmers and rhinos since both are increasing in numbers. Farmers in Chitawan have long had to contend with wild crop raiders from the forest. The Tharu people, who have lived in this area for many generations, have become ac-

customed to the chores of guarding crops at night from field platforms. They keep losses to a minimum by digging defensive ditches and fences and scaring the animals.

Rhinos go mainly for the rice and wheat crop and in three out of the ten areas I surveyed, the damage to the rice crop was nearly 20 percent. These kinds of losses will be tolerated less and less in the future as human and wild animal populations increase.

Similarly, human deaths due to rhinos are philosophically accepted as inevitable at present. Five local villagers

were killed by rhinos during my three-year stay in Chitawan — usually by cows with calves which were surprised at close quarters. If the animals and their habitat are to be conserved in the face of tragedies such as these, park authorities must maintain good relationships with local people to keep their cooperation.

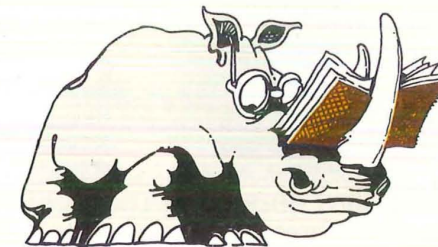
Though deforestation in the hills makes flooding worse every year in Nepal, and also in West Bengal and Assam where the other remaining rhinos live, Chitawan can presently support still more of the animals. In addition, the

park is about to be extended to include some adjacent farmland. That will increase good rhino habitat and shorten the park's common boundary with other fields, strengthening one of the last strongholds of this impressive beast.

My observations painted a profile that may help keep these animals and their refuge intact. But one day, near the end of my study, a rhino almost prevented my scientific findings from seeing the light of day.

I was walking along a narrow path in scrubby forest outside the park when I heard rhinos on the path ahead. Im-

Rhinos by the book



How do the people who make dictionaries decide on the plural of a word like "rhinoceros?" They simply keep a tally of usage in periodicals. "Rhinoceros," it turns out, is most common, and thus preferred. To refer to several species of rhinos, say "rhinoceroses" or "rhinoceri." For more than one individual of the same species, stick to "rhinoceros." Want to appear learned? Say "rhinoceri."

The bottomless pit

A rhino at the Cincinnati Zoo eats 19,710 pounds of food each year at a cost of \$1,075. Twice a day at the Milwaukee Zoo, a rhino consumes: ½ scoop bran, handful of salt, two pounds mangels (like turnips), 1½ bushels carrots, 1½ bushels beets, four pounds apples, 20 pounds alfalfa and two pounds commercially made rhino pellets.



Etching from The Naturalists' Library, volume XXIII, Mammalia, Thick-skinned Quadrupeds by Sir William Jardine, Edinburgh, 1845-1846.

Pruning power



Inside the white rhino's broad upper lip is a strip of cartilage which enables it to pluck off grass only an inch or two tall. The black rhino, on the other hand, eats bushes. Some rhinos feed on up to 100 kinds of plants in a day.

A boon to health and sex

BANGKOK DRUGSTORE	
Rhino Blood.....	\$30.00 pound
Dried Blood.....	\$34.50 pound
Bones.....	\$2.75 pound
Skin.....	\$5.50 pound
Teeth.....	\$25.00 a piece
Horn.....	\$907.00 pound

Many people in Southeast Asia and China are ardent believers in the medicinal and magical properties of most parts of the rhino, and the horn is especially prized as an aphrodisiac. A potion containing rhino horn is considered effective against a vast number of ailments. Blood is drunk as a tonic. In Nepal, the urine is poured into the ear to cure earache. Skin, bones and teeth are all ground up and taken internally or used as amulets against evil spirits. A horn under the bed is thought to ease labor pains. Today, the demand for rhino parts still persists, even though respected chemical laboratories say there is no evidence to support the proclaimed aphrodisiacal properties of the horn. At drugstores in Bangkok, present-day prices are high: blood, \$30/pound; dried blood, \$34.50/pound; bones, \$2.75/pound; skin, \$5.50/pound; teeth, \$25 apiece; horn, \$907/pound.

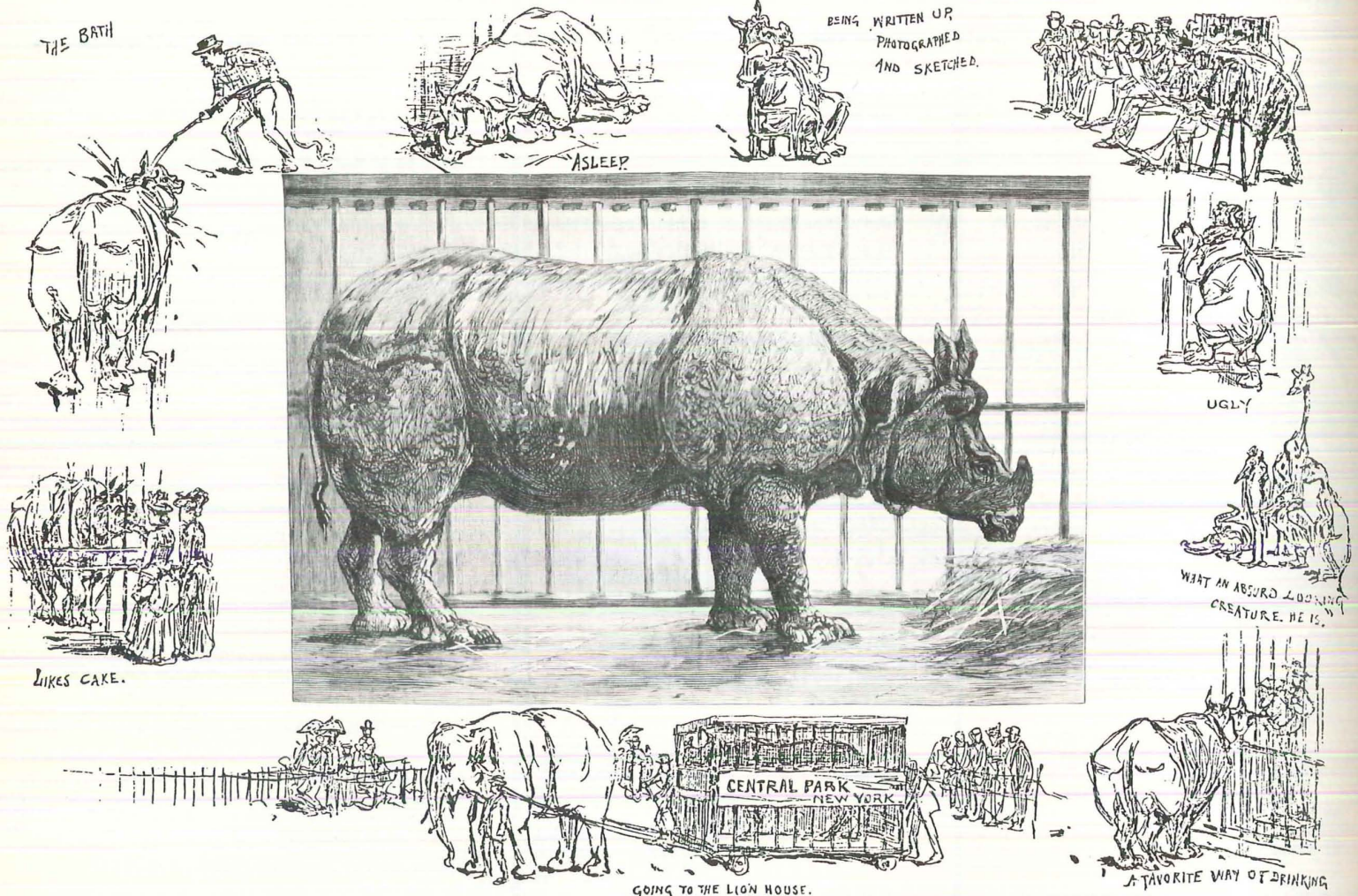
Mail-a-rhino

So revered are rhinos today that virtually all nations that have any — plus some that don't — honor the beasts on their postage stamps. All told, there are at least 39 rhino stamps issued by nations ranging from Angola to Zambia.



Courtesy of Northwestern Stamp Company, Inc.

"The Rhinoceros Bombe" woodcut from Harper's Weekly, July 3, 1886, courtesy of Roloc Color Slides.



IN THE ZOO

With a few notable exceptions, captive breeding of rhinos in zoos has been

far from successful. The biggest obstacle is lack of space. The San Diego Zoo has bred 25 of the southern subspecies of white rhino in

its Wild Animal Park since 1972 and 21 calves have survived. The Basel Zoo in Switzerland has been most successful in breeding Indian rhinos.

Contemporary stamps and historic art, such as this 1886 woodcut from *Harper's Weekly*, point up the rhino's influence on man's culture.

mediately, I slipped off my backpack and swung up into the nearest tree. It was only a small tree, about eight inches in diameter with one fork about seven feet above the ground. I was up just in time. As an 18-month-old calf came round the corner sniffing the air, his mother, Crumplerump, charged straight for my tree. She smashed into the trunk and carried my backpack 20 yards down the path on her horn. As my slender tree began to bend over further and further under my weight, she ground the pack into the earth, threw it into the air and left it with the al-

loy frame broken into pieces. She returned to stand with her calf and sniff with her head high in the air underneath my tree. Helpless, I waited as my perch continued to fall until I was only a few inches above Crumplerump's back. Then, at the the last moment, the rhinos ambled off. ■

Biologist Andrew Laurie, a Fellow of Selwyn College, Cambridge, England, has just started a three-year study of jaguars in Brazil. His rhino study was supported by the New York Zoological Society.