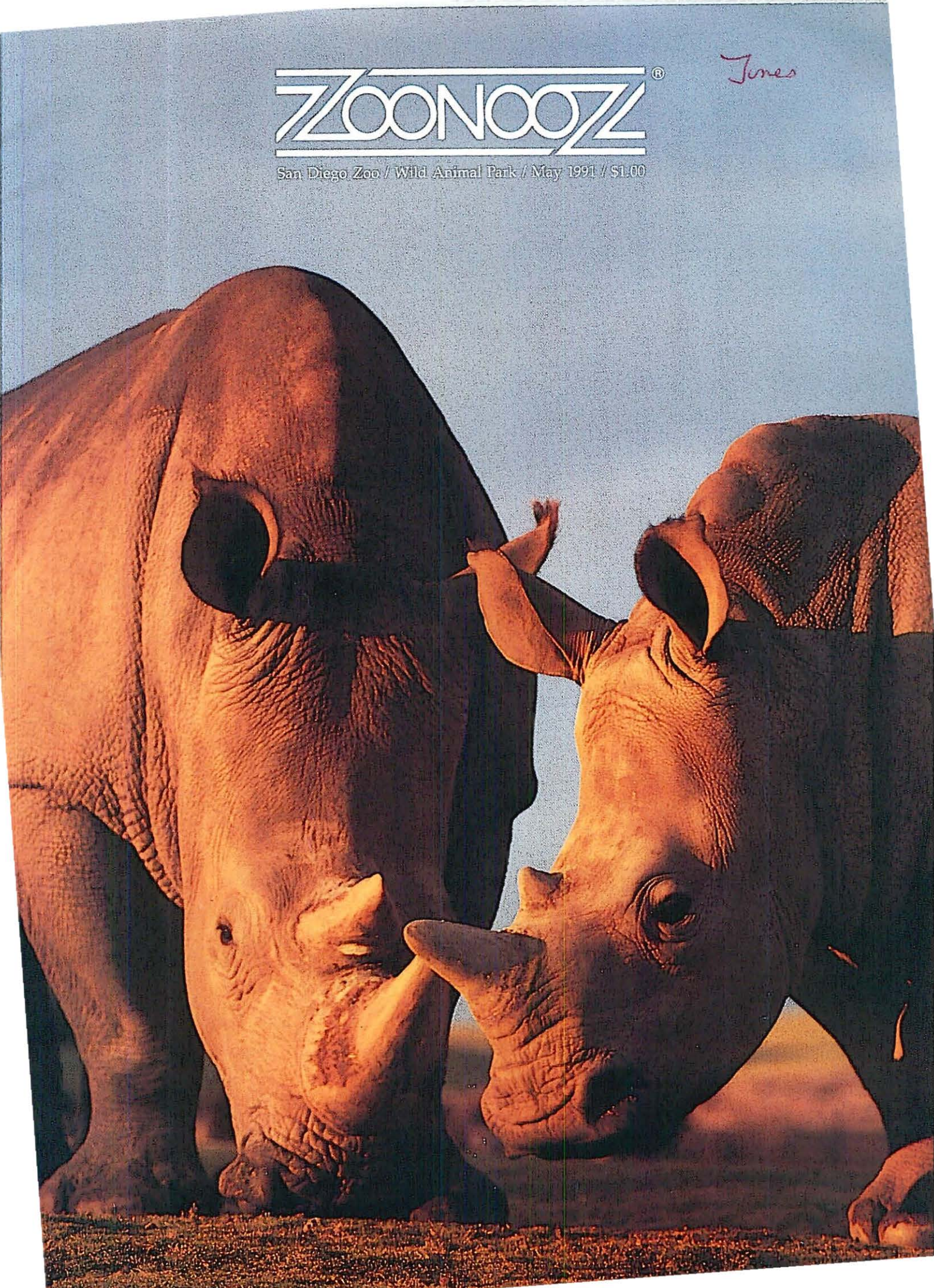
ZOONOOZ®

San Diego Zoo / Wild Animal Park / May 1991 / $1.00



DIRECT LINE

Water Watch, Part II

In March, our Zoological Society reached an unprecedented membership level of 194,344 households. With an additional 84,826 children members in Koala Club, that represents a combined total of 427,000 people, or about one-quarter of the population of San Diego. Surveys have told us that the primary purpose for joining the Society is that membership offers a great recreational and educational value. Rated almost as high, however, is the desire to support our conservation-oriented organization.

One area of conservation that merits every member's attention this year is water conservation. It is not easy to give up what we often take for granted—plenty of water to meet our needs—but the Zoo and Park are ready to meet Mayor Maureen O'Connor's target of reducing water use to 50 percent below the 1989 level.

At the Zoo, we reduced our use by 36 percent last year, so we have another 14 percent to go. It is not clear as of this writing if the Park will be mandated at a 30 or 50 percent level because it is in an agricultural zone; however, water conservation task forces at both facilities are looking at every way to conserve that does not negatively impact the health of our animals, plants, visitors, or employees.

Some of the things we plan to do immediately at the Zoo include turning off the flamingo lagoon fountain, turning off the waterfall in Fern Canyon, and draining the Children's Zoo entry pool. In fact, every water element is being considered either for elimination, for the duration of the drought, or treatment in a long-term, water-conserving way. For example, more pools will be planted with water hyacinths and stocked with debris-eating fish, so they need not be drained and refilled frequently (this has saved us millions of gallons a year in already planted pools). We have also reduced the volume and frequency of hose-downs about the grounds, and those that continue for sanitary reasons are done with water-efficient, high-pressure hoses. Keepers, gardeners, and groundkeepers also sweep areas before hosing down. If these and other measures permit us to meet the 50 percent reduction, we will be able to continue using the recycled water systems in Tiger River and in our newest exhibit, Gorilla Tropics.

The Park uses many of the same techniques to conserve water and also has a reclamation plant to treat its own sewage so that it can be reused to water the grounds. Irrigation of all turf requiring potable water has been stopped, all ornamental waterfalls have been turned off, overhead sprinklers are being converted to drip irrigation, and 8,600 donated Christmas trees were chipped and are being used to mulch the grounds. Our water conservation task forces are also working with the City Planning Department and the County Water Authority on a long-range plan to use reclaimed city and county sewage for irrigation by 1997.

What more can we do? Perhaps the most important thing is to educate employees, members, and the general public about the need to conserve water in our arid environment and suggest ways that are easy to implement and that cause the least hardship. The Zoo and Park will have water conservation graphics and handout information available to the public and visitors; some graphics will ask members and other visitors to report on any water waste seen at the facilities. Classes on water-efficient gardening will be offered at the Park this summer, and our Zoo horticulturist, Chuck Coburn, will be writing a weekly column for *The Tribune* on this topic.

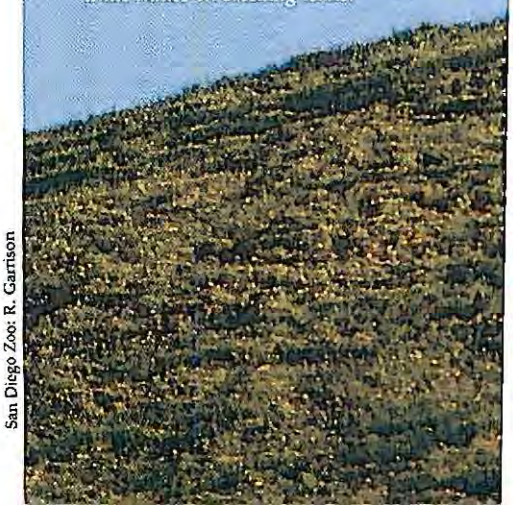
The Mayor has issued the 50 percent reduction challenge. The Zoo and Park intend to meet it. With close to one-half-million conservation-minded Zoological Society members joining in the effort, San Diego can survive today's drought and help with plans to avoid similar crises in the future.

Douglas G. Myers Executive Director

"And then there were none": Saving the Rhino

Marvin Jones REGISTRAR

The northern white rhino Ceratotherium simum cottoni is one of the most critically endangered land mammals on earth—fewer than 40 are known to exist worldwide. Because of the Wild Animal Park's past success in breeding the southern white rhino species, it was chosen by the International Union for Conservation of Nature (IUCN) to receive two male and two female northern white rhinos on breeding loans.



San Diego Zoo: R. Garrison

San Diego Zoo: R. Garrison

Timothy Aller always found "something interesting" in his job at the Zoo.

INTERVIEWER: What were the circumstances that led to your joining the Zoo?

ALLER: Mr. Ralph Virden, who was superintendent of grounds, called me up after I had retired [from the San Diego County Department of Agriculture]—I took an early retirement—and wanted to know if I would be interested in taking the job as horticulturist for the Zoo. This was in 1955. So I talked to Virden and told him I didn't really think I would be interested because I was afraid it would take a lot of my time.... A couple of days went by and he called me back again and just begged me to come in and reconsider. So I said, "Well, I'll take a chance and see if you like me, and I'll see if I like you for about six months or a year." So that was the way I started.

INTERVIEWER: What were your duties?

ALLER: Right away, I partitioned the Zoo off into four sections and put each of the new men in charge of a section; it was a good chance for them to make good and to see that it was watered, taken care of.... I found that I had to put in from eight to ten hours a day. I'd go to work at 6:00 in the morning and be there until 5:00 or 6:00, or sometimes until dark. This went on for the first five years that I was at the Zoo. I had some very difficult problems to work out, but, finally, with this sectioning the Zoo off and getting donations of quite a few plants [things began to take shape]. The City nursery was very good about giving us excess shrubs and plants and large trees. During this time, we planted 89 large *Cocos plumosa* along the entrance way to the Zoo, coming in from Roosevelt Junior High School. They're still there, incidentally. In fact, practically everything I planted there is still there and growing....

I conceived the idea of showing both the common and the botanical name of all of the trees and plants in the Zoo, which went over pretty big with the public, and they're still doing it, you know....

INTERVIEWER: How did the Zoo acquire the plants? Were they mainly donations from the City?

ALLER: We had many donated, and we acquired very fine specimen plants. I don't think they do it now, but I found that people were very receptive to giving us good plants. For example, there was a nice wine palm over on Seventh Avenue that I went over and talked to the owner about. She was an old-time resident of San Diego, and she donated it. I'd take the crew over and dig and ball the trees up and bring them to the Zoo, if they were worth it, and if they were really specimen plants....

INTERVIEWER: What were some of your earliest acquisitions as far as plants?

ALLER: Well, the rare cycads. We received some very rare cycads and there are still some in the Zoo. ... And ficus, about 25 species of ficus; I kept adding to that as I would find them....

Some of the other introduced plants that are a little unusual are the dieffenbachia, the marantas, the orchids, and the *Jasminum primulinum*, a yellow-flowering vine from China that is a very beautiful plant when it's in bloom. I might mention here the red and green tea plants that we got in a trade from Walt Disney up at Disneyland.

I met Walt Disney when he was visiting the Zoo with his grandchildren and his wife. This was probably about a month before he passed away. He was a wonderful man, and he invited me to come up and talk to his landscape people up at Disneyland, which I did, a few weeks after talking to him at our Zoo. [Disneyland's landscaper and I] had a personal interview in October of 1965, which resulted in the exchange of rare and valuable trees and plants....

Other plants that we received from here and there, not necessarily from Disneyland, were black pines and many different evergreen shrubs that we already had from Japan, African fern pine *Podocarpus gracilior*, and nandina. The Hawaiian tree ferns *Cibotium glaucum* were a direct importation from Hawaii.... We planted all of those in Fern Canyon. Then we had bunya-bunya *Araucaria bidwillii*.

INTERVIEWER: How much a part of the animal's diet were you able to grow on the Zoo grounds or acquire from cuttings along the highways? Was it a large percentage?

ALLER: Oh, yes. Well, the first ten years that I was with the Zoo, we cut practically all of the okapi and the giraffe browse—acacia. We'd bring it in and give it to the keepers; the keepers did the actual feeding, but my men would go out and cut the browse. Then we cut eucalyptus for the koalas, just certain eucalyptus, because if you give them certain kinds of eucalyptus it will make them very sick. So I had to make up a browse list and train the men just which eucalyptus to cut. We had to go clear up to Miramar for a while to get it. All along the highways. It would take about an hour, hour and a half, every morning to get a truck full of browse and bring it in for the animals.

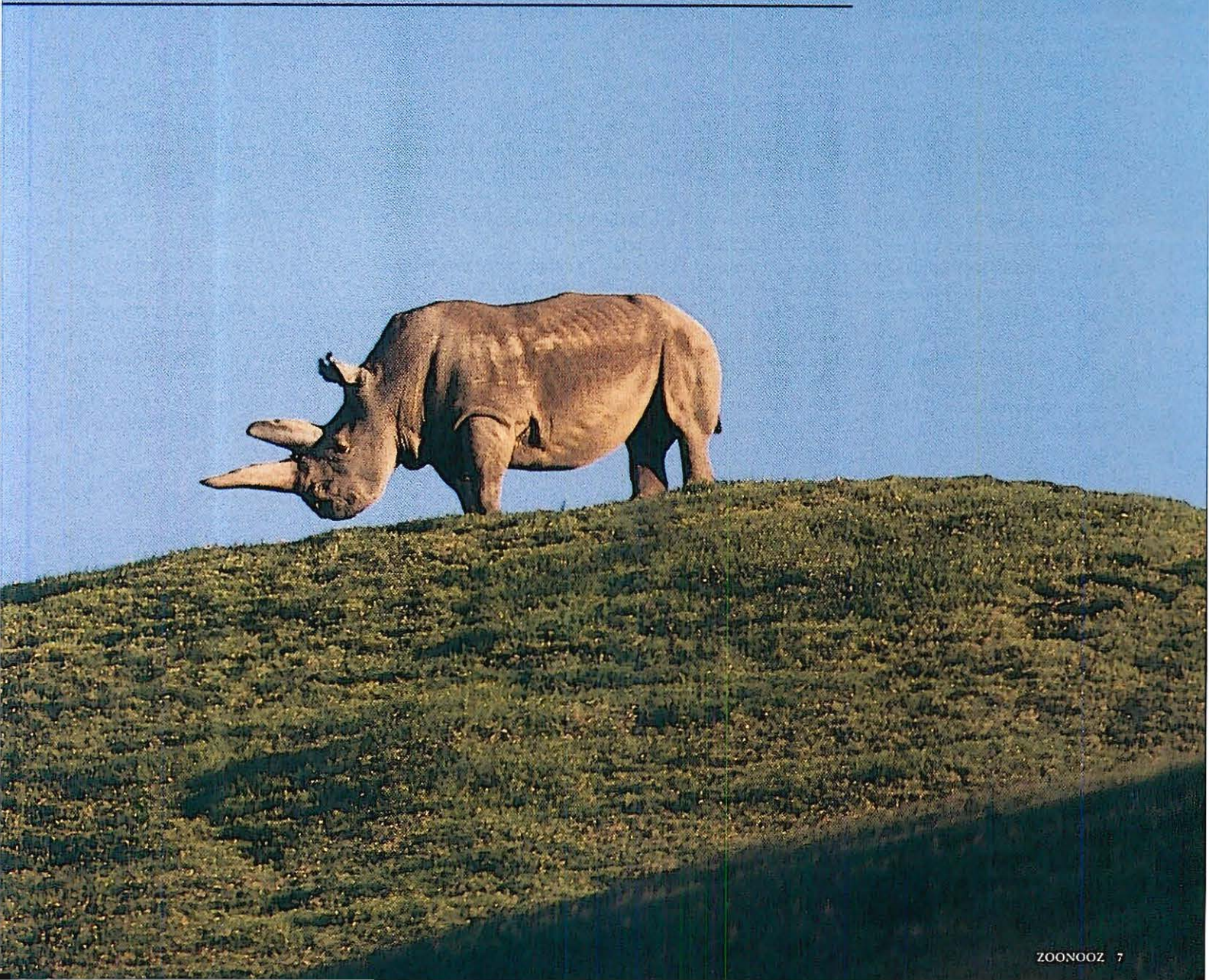
Of course we had our supply at the Zoo, which I tried to keep on hand for emergencies and not cut on it unless we had to. We didn't have enough area to grow much of it at that time.

The rhinoceros is a significant example of a dramatic, large organism that is at serious risk of extinction. There are currently five living species of rhinoceros. Three species live in Asia: the Indian, or greater one-horned, rhinoceros, the Sumatran rhinoceros, and the Javan rhinoceros. Two species survive in Africa: the black, or hook-lipped, rhinoceros, and the white, or square-lipped, rhinoceros. At the turn of the century, there were in excess of one million rhinos in Africa; today, there are less than 4,000 of each species. The black rhino population has declined by 98 percent in two decades, and there are less than 2,000 rhinos in all of the Asian continent.

It has been said in United States congressional testimony, "If we cannot save the rhinoceros, what can we save?" The Zoological Society of San Diego is a recognized leader in the captive propagation and conservation biology research of rhinoceroses. Between them, the Zoo and the Wild Animal Park currently exhibit all of the living rhino species, with the exception of the critically endangered Javan rhinoceros *Rhinoceros sondaicus*. (Very few of this rare form have ever been brought into captivity, and the last known captive specimen died at the Adelaide Zoo in Australia, in 1907.) Comparative genetic and endocrine investigations of rhinoceros species and subspecies at the Center for Reproduction of Endangered Species (CRES) have complemented the Society's notable successes in the reproduction of southern white and Indian rhinos. Ambitious new steps are being taken in rhino conservation efforts, including the efforts in captive breeding for the northern white, the southern black, and Sumatran rhinoceroses.

The White, or Square-lipped, Rhinoceros

The symbol of the San Diego Wild Animal Park and the species for which the Society is most well-known is the white, or square-lipped, rhinoceros. The Park today



When the first southern white rhinos Ceratotherium simum simum *arrived at the Wild Animal Park in 1971, they were critically endangered in the wild and survived only in a few game reserves in South Africa. Twenty years later, the Park had increased their numbers with 75 births. The southern white rhino is now the emblem species for the Park and is represented on its logo.*

San Diego Zoo: R. Garrison

exhibits both the more common southern subspecies, *Ceratotherium simum simum*, and its much rarer northern subspecies, *Ceratotherium simum cottoni*.

First described by Burchell in 1817, the southern subspecies was not brought into captivity until July 29, 1946, when a week-old female called Zuluana arrived at the National Zoological Gardens of South Africa at Pretoria. She was successfully reared and lived at Pretoria until her death on March 21, 1987. Two males and four females came to Pretoria from the Umfolozi Game Preserve in Natal, where the species had been saved from extinction. The first captive-born southern white rhino was born at Pretoria on June 8, 1967, and a second calf was born on October 23, 1969.

Experience gained at Umfolozi and Pretoria revealed that the species could be transported easily, and, unlike its more pugnacious cousin, the black rhinoceros, it could be kept easily in pairs or small groups. With its future assured and the Umfolozi population rapidly increasing, the Natal Parks Board decided to send specimens to selected zoos outside South Africa. In 1962, 13 were sent: pairs went to the Chester and London Zoos in England, the Bronx Zoo, the Brookfield Zoo, and the San Diego Zoo, and the Milwaukee County Zoo received three animals. They arrived safely, and from 1963 to 1980, over 300 additional specimens—the majority in pairs or trios—were sent to over 80 zoological collections worldwide, although only the large groups bred.

Over the years, a growing friendship between then Zoo Director Dr. Charles R. Schroeder, Society President Anderson Borthwick, and Ian Player, chief conservator for the Natal Parks Game and Fish Preservation Board, resulted in that board sending white rhinos to the fledgling San Diego Wild Animal Park: 6 males and 14 females arrived safely on February 17, 1971. They were soon joined by the pair that had been at the San Diego Zoo since 1962, and by another female that came from South Africa later in the year. Mandhla, the now fully adult bull, had not bred at the Zoo, but when faced with a large new harem, he bred almost immediately at the Park. The first calf born there, a male named Zibulo, arrived on October 11, 1972; he was reared there and now lives at the Reid Park Zoo in Tucson, Arizona.

Through 1988, 75 southern white rhinos have been born at the Park. The majority of these offspring have survived and have been sent to other animal parks worldwide. Mandhla was succeeded by the wild-born male Rahisi, from 1983 to 1988, and the current herd bull is called Fodder, a loan from the Chaffee Zoological Gardens of Fresno, California, since May 1990. While the Wild Animal Park has been very successful in its breeding program, it cannot take credit for the first southern white rhino birth in North America, which took place at the San Antonio Zoo on August 28, 1972.

The Northern White Rhinoceros

The northern subspecies of the white rhinoceros, *Ceratotherium simum cottoni*, was one of the last large land mammals to be described by scientists; Lydekker classified the subspecies in 1908. Today, it is very close to extinction in the wild, and very few have ever been brought into captivity; it has bred only at the Vychodočeska Zoo at Dvůr Králové in Czechoslovakia. The first captive animals were received at the Antwerp Zoo, Belgium, in 1950. However, while they grew to maturity, these animals never bred.

Other pairs came to the London Zoo, the National Zoo in Washington, D.C., the Khartoum Zoo in the Sudan, and the St. Louis Zoo. Four of these came to the Wild Animal Park—Bill and Lucy from the National Zoo, in April 1972, and Dinka and Joyce from the St. Louis Zoo, in August 1972—but these animals also never bred while here. (Dinka died at the Park on January 28, 1991.) Of this early group brought from the Sudan, the London male Ben was on loan to the Dvůr Králové collection and died on June 25, 1990. However, there is still hope for breeding this subspecies at the Park, because in October 1989 the Dvůr Králové park loaned the male Saut and the females Nola and Nadi to San Diego; and they were joined in August 1990 by the male Angalifu, on loan from the Khartoum Zoo.

The Black, or Hook-lipped, Rhinoceros

The black, or hook-lipped, rhinoceros *Diceros bicornis*, the other African species, has had a long history in captivity. The first black rhino was born at the Brookfield Zoo in Chicago on October 7, 1941, to the female Mary, who lived in captivity for 45 years—the record for this species. The black rhino has suffered a tremendous decline in its wild habitat and is currently the focus of efforts to increase its numbers in the wild and in captivity. The majority of the

San Diego Zoo: R. Garrison

The black rhinoceros Diceros bicornis *has the hooked lip, an adaptation used for browsing on branches and leaves. The white rhinos* Ceratotherium simum *have square lips, used for grazing.*

Zoological Society of San Diego's black rhinos are the East African subspecies *Diceros bicornis michaeli*, named for the late Michael Grzimek, who was killed in a plane crash in East Africa. He was the son of well-known Zoologist Dr. Bernhard Grzimek, late director of the Frankfurt Zoo and a tireless fighter for the conservation of African wildlife.

The first black rhino received in the Society's collection was the female Sally. Born in Kenya in 1950, on the estate of Hugh and Jane Stanton, she came to San Diego in August 1952. Sally spent her entire life at the Zoo; and while two different males joined her, she never bred, and she died in 1985. Her mates were Barney, who arrived in 1953 and died in 1968, and Lenny, who came in 1969 and died in 1980. Like Sally, they, too, were from East Africa.

Among specimens received in recent years that did not breed and are no longer in the collection were three females: Olive Oyl, born at the St. Louis Zoo in 1970; Stella-Teca, born at the Hanover Zoo in 1968; and Kifaru, born at the Los Angeles Zoo in 1971.

The Park received the male Dillon in 1970, who had been born at the National Zoo in Washington, D.C., on August 31, 1967. He was joined in September 1972 by the wild-born female Mulenda, and they produced the first black rhinoceros born in San Diego, Nanyuki, born on October 15, 1976. Mulenda was sent on loan to the Columbus Zoo in 1989, and Dillon now resides at the San Diego Zoo, where he is the mate of Edith-Anne, who was born at the Oklahoma City Zoo in 1972 and is on loan from the Wichita Zoo since 1988; she has not yet given birth.

Nanyuki was Mulenda's only offspring, and she still resides at the Park. She was mated with Mwaniki, a male born to captive-born parents in 1980 that is on loan from the Cincinnati Zoo. He has been in San Diego since 1981. They produced Mashaki in 1987, the second black rhinoceros born at the Park. Nanyuki was also bred to Cornelius, a male born at the Granby Zoo in Canada in December 1979, and they produced Nakili, born at the Park in 1990.

Cornelius came to the Zoo in 1981, and since then he has moved between the Park and the Zoo several times. He has sired two more youngsters at the Park, with a wild-born female named Judy. She is on loan from the Brookfield Zoo and was 17 years old when she came to San Diego in 1986. The two calves she and Cornelius produced are Jioni, born in 1988, and Jimma, born in 1990. Mashaki is now at the Potter Park Zoo in Lansing, Michigan, and Jioni is now at the Columbus Zoo. The two youngsters born in 1990, Nakili and Jimma, are still at the Park with their mothers Nanyuki and Judy.

The breeding success with the black rhinos has been due, in large part, to breeding loans. Breeding loans are a modern tool of the zoological community and are used to increase reproduction of endangered species. This is usually dictated by a program of the American Association of Zoological Parks and Aquariums (AAZPA), known as the Species Survival Program (SSP). The Society participates in many of these SSPs, including the ones for the various rhinoceros species.

The majority of black rhinoceroses in captivity have been of the East African subspecies, but recently efforts have been made to establish the southern subspecies,

The most common black, or hook-lipped, rhinoceros in captivity is the East African subspecies, Diceros bicornis michaeli. *Nanyuki, one of the Park's adult females, was the first black rhino born to the Society, in 1976. Her offspring Mashaki, seen with her here, was the second birth at the Park, born in 1987.*

San Diego Zoo: R. Garrison

San Diego Zoo: R. Garrison

The Indian, or greater one-horned, rhino Rhinoceros unicornis *can reach an impressive 6 feet at the shoulder, measure 13 feet in length, and weigh between 4,500 and 6,000 pounds. At the Park, only one male at a time is placed in an enclosure with the females, because adult males are tenaciously territorial and intolerant of other males.*

Seen here with his mother Gainda, Gujrat was the fourteenth Indian rhino born at the Wild Animal Park. He was born on December 28, 1990—the third Indian rhino calf born there last year.

San Diego Zoo: R. Garrison

Diceros bicornis minor, in captivity. San Diego has a pair: the male, Gundwane, was received in 1987 from South Africa, and the female, Chirundu, was received from Zimbabwe in 1989. Both are still adolescents, but they are a compatible pair and may be seen on Elephant Mesa at the Zoo. Studbooks for both of the African rhino species are maintained by the Berlin Zoo, and Professor Dr. Heinz Georg Kloes serves as studbook keeper.

The Indian Rhinoceros

Of the two Asian species represented in the collection, the greatest success has been with the imposing Indian rhinoceros *Rhinoceros unicornis*. This species has been kept in captivity for many years, in most of the major zoos of the world, and a number have been born. As of December 1989, there were 54 males and 43 females in 42 collections worldwide. Of those, 29 were in North America, where the 4 males and 5 females at the San Diego Wild Animal Park were the largest captive group.

Lasai, our main breeding male, came to San Diego in October 1963. He was born in August 1962 at the Basel Zoo in Switzerland. Lasai was joined in February 1965 by the female Jaypuri; she was also captive born, in June 1963 at the Gauhati Zoo in Assam. Both moved from the Zoo to the Wild Animal Park in April 1972, and they produced their first young in March 1975. As with any captive-breeding program, not all young survive, and this first of their offspring only lived one day. However, on March 19, 1978, success was achieved with the birth of a female, Gainda.

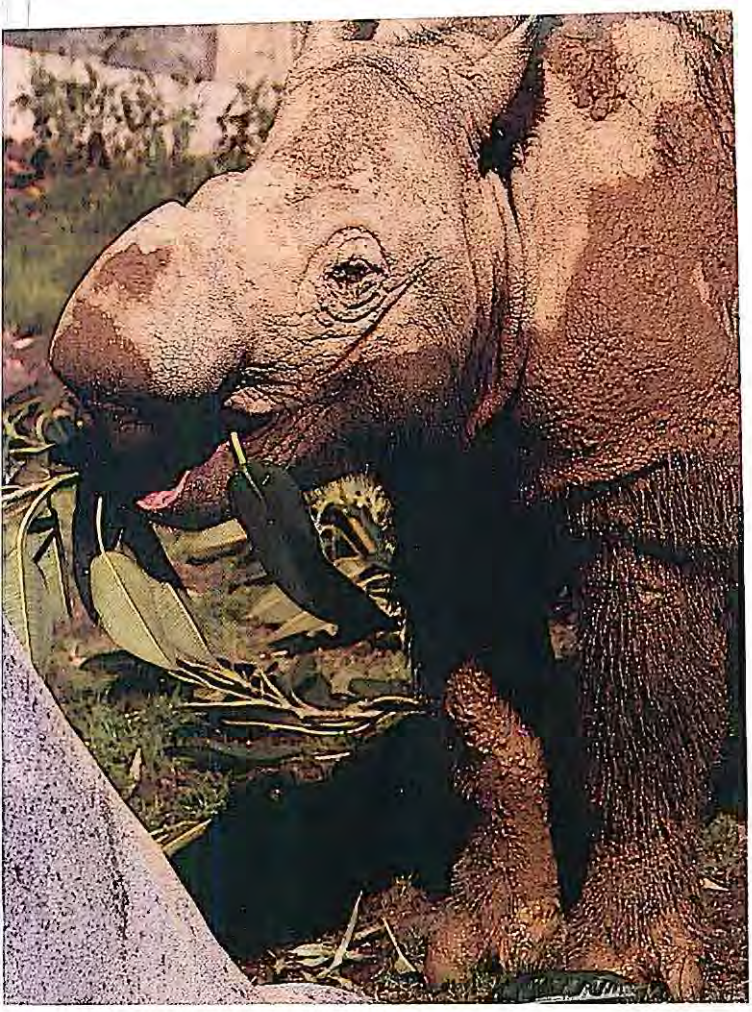
Until the new male, Rabha, became sexually mature, Lasai bred both with Jaypuri and Gainda, and eight young were successfully reared. Three of these are still at the Park: female Jumia, born January 18, 1986 to Jaypuri; female Goalpara, born May 28, 1987 to Gainda; and male Jaunpur, born January 27, 1990 to Jaypuri. Jumia herself bred with the new male, Rabha, who was born at India's Hyderabad Zoo in 1981, and they had a female youngster named Jhansi on July 20, 1990. In all, three young were born in 1990, including a male, Gujrat, born on December 28 to Gainda and also sired by Rabha.

The sight of all these mothers and young is a visual treat for visitors to the Park. Young born at the Park have been sent to the Singapore Zoo, Seoul Zoo, Tampa's Lowry Park Zoo, and the National Zoo in Washington, D.C. There, male Pandu, born in San Diego in 1980, is the mate of two young females born in Nepal. The studbook for this species is kept by the Basel Zoo, and Miss Kathleen Tobler is the studbook keeper.

The Sumatran Rhinoceros

A number of Old World zoos and two American zoos exhibited a few dozen individuals of the rare Sumatran rhinoceros species, *Dicerorhinus sumatrensis*, prior to 1920. In the fall of 1959, ten animals were captured in the Siah River area of Sumatra, two of which reached Europe alive. One went to the Basel Zoo, and one went to the Copenhagen Zoo. The latter animal, called Subur, died in 1972. In recent years, efforts have been underway in Malaysia and on Sumatra to capture a number of animals. These rhinos have been moved to collections in Malaysia and Indonesia, as well as one pair to England and one female each to the San Diego Zoo, the Bronx Zoo, and the Cincinnati Zoo.

The export of the latter animals is a result of what is called the Sumatran Rhino Trust, a joint United States and Indonesian program that, eventually, will see several pairs established in both countries. As this article is being written, a male has been captured and is awaiting transport to the United States. He will remain in San Diego for about a year, and he will then go to the Cincinnati Zoo. This program has been reported previously in



The smaller size, red coloring, and appealing, rounded noses of the Sumatran rhinos Dicerorhinus sumatrensis *differentiate them from other rhinos. The Zoo's female, Barakas, is 15 years of age and weighs a dainty (for rhinos) 1,600 pounds. She is part of the Sumatran Rhino Trust project, a joint program of the United States and Indonesia that will soon bring a male Sumatran rhino to the Zoo on a breeding loan.*

ZOONOOZ (see April 1989), and while it has taken considerable time, it has achieved limited success. The San Diego female has settled down well since her arrival in November 1988, and it is hoped that once the male has arrived and completed the necessary quarantine procedures, breeding will take place and produce the first Sumatran rhinoceros to be born in North America.

A Future for Rhinos

Efforts to save these rhino species require simultaneous action on several fronts. The captive-breeding programs that currently exist for four of the five rhino species are largely based in North America and Europe. Such programs are directed at supporting wild populations and represent an important strategy for conservation of rhino species' gene pools. The captive populations are based on relatively few wild-born founders, however, and they could serve better in their role of supporting species' gene pool conservation activities if additional wild-born individuals were included. Furthermore, technology in captive management of small populations has applicability to sanctuary populations in Africa and Asia.

However, captive propagation stands as only a part of necessary conservation efforts for rhinoceroses. Without development and coordination of wild and captive rhino populations—including proper breeding strategies and application of genetic management, health maintenance, safe methods for animal translocations, and effective protection of remnant populations—the outlook for rhinos surviving into the twenty-first century is dim.

In the wild, illegal poaching and loss of habitat are the major causes of decline in rhino numbers. In several countries, rhinoceros horn is prized for medicinal purposes, including fever reduction and the treatment of arthritis and impotence. The horn is also prized for the handles of traditional Arabic daggers, while skin from the rhinoceros is used by peoples in African, Arab, and Asian cultures.

Public education to reduce the demand for rhino products—as has occurred for elephant ivory—is essential. Habitat for Asian rhinos must also be conserved. African rhino habitat is still plentiful, but anti-poaching efforts must be focused on smaller, defensible sanctuaries. Additionally, deliberate management strategies must not only be developed but also coordinated. Efforts to conserve rhino populations are currently being developed as separate national strategies; however, conservation of rhinos through such programs is insufficient to assure viable populations and conservation of rhinoceros genetic diversity.

In order to clarify and take action on these issues, the International Symposium on the Biology and Conservation of the Rhinoceros will be

The International Symposium on the Biology and Conservation of the Rhinoceros will be held in San Diego from May 9 through 11, 1991. For more information about this conference, contact Dr. Oliver Ryder at (619) 557-3952.

Rare in captivity, the southern subspecies of the black rhinoceros, Diceros bicornis minor, *can be found at the Zoo on Elephant Mesa. The male, Gundwane (right), arrived in 1987 from South Africa, and the female, Chirundu (left), came in 1989 from Zimbabwe. This photo was taken on the day of their introduction, which involved some scuffling until the two settled down into the compatible pair they are today.*

San Diego Zoo: C. Radcot

held in San Diego from May 9 through 11, 1991. Organized by the Zoological Society of San Diego, it will facilitate communication and coordinated action on behalf of all five rhino species.

This conference represents a significant opportunity to unite leading experts in conservation planning, management, research, health, and disease, as well as government officials from countries with surviving rhino populations. The aim is well-defined: to assemble the information necessary for the conservation of all five rhinoceros species and establish new initiatives for creating self-sustaining rhino populations. If we can preserve rhinos into the 21st century, perhaps we will have the confidence to use our knowledge to save the next endangered species. ZNZ

A Southern White Rhino Family Tree

The following chart is an example of how the offspring of endangered species are transferred between institutions to insure genetic diversity and viability.

- Male MANDHLA
wild born Natal, 1960
arrived San Diego, February 17, 1971
sent overseas October 27, 1983

- Male RAHISI
wild born Natal, 1968
arrived San Diego, October 27, 1983
sent to private holder July 7, 1988

Female MFOLOZI
wild born Natal, 1963
arrived San Diego, February 17, 1971
She is still living at SDWAP.

- Female born SDWAP, December 14, 1972
died SDWAP, January 27, 1973
- Female born SDWAP, June 29, 1974
to Wildlife Safari, Oregon, June 26, 1975
- Male born SDWAP, January 12, 1976
died SDWAP, January 20, 1976
- Male born SDWAP, September 2, 1977
to San Jose Zoo, CA, September 9, 1977
- Male born SDWAP, May 5, 1979
to Auckland Zoo, New Zealand, September 6, 1980
- Female born SDWAP, March 3, 1981
to Taiwan Zoo, China, April 17, 1982
- Female born SDWAP, October 24, 1982
to Gelsenkirchen Zoo, Germany, June 1, 1983
- Female born SDWAP, July 8, 1984
to Orana Park Zoo, New Zealand, April 25, 1986
- Male born SDWAP, September 23, 1986
to Gelsenkirchen Zoo, Germany, April 8, 1990
- Female born SDWAP, August 4, 1988
to Gelsenkirchen Zoo, Germany, April 8, 1990

MFOLOZI has been the most prolific female of the SDWAP group, giving birth to ten youngsters from 1972 to 1988.

WHONOOZ

Taking Steps for Rhinos: The Odyssey of Michael Werikhe

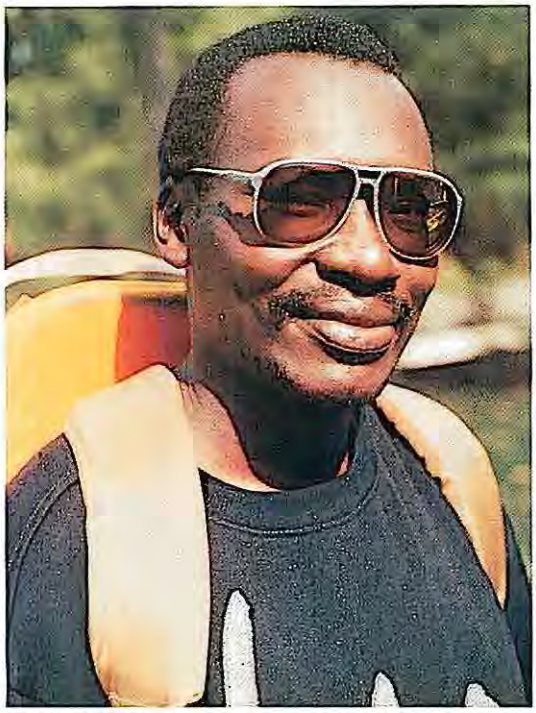
People in Michael Werikhe's native Kenya, and thousands of others worldwide, know him simply as the Rhino Man. In 1982, taking along little else than a strong desire to save his country's rapidly declining populations of black rhinoceros, Michael Werikhe (pronounced where-ree-key) walked three hundred miles from his hometown of Mombasa to Nairobi, telling everyone he met along the way about the animals' plight. For each mile he walked, he also asked people to donate money toward efforts to conserve the rhino. Thus, the Rhino Walk and the travels of Michael Werikhe began.

This month, at both the Zoo and Wild Animal Park, you too can help Werikhe's efforts by joining him and Zoological Society Goodwill Ambassador Joan Embery as they lead two concurrent Rhino Walks on Saturday morning, May 11 (call 268–5882 for information). The walks will help kick off a new trek for Werikhe—one throughout the entire United States—that is expected to earn $3 million for rhinoceros conservation projects, both in this country and in Africa.

While in San Diego, Werikhe is also scheduled to open the international rhino conference to be held at the Zoo from May 9 through 11. He will later bring his Save The Rhino Walk back to San Diego in September, during the annual meeting of the American Association of Zoological Parks and Aquariums (AAZPA), hosted this year by the Zoological Society of San Diego.

What makes Michael Werikhe walk? That question might best be answered by some alarming statistics. In 1975, in his homeland of Kenya, the black rhinoceros population stood at approximately 10,000. In 1980, that figure dropped to roughly 1,500, and today it has fallen to around 400.

Why is this happening? Habitat destruction caused by humans as they clear more and more land for agricultural purposes is part of the problem. But, sadly, most black rhinos—and, for that matter, the four other remaining rhino species—



Michael Werikhe, otherwise known as the Rhino Man.

Duncan Willets, Camerapix

A concern for the dwindling populations of rhinoceroses in his native Kenya started Michael Werikhe on his now famous worldwide Rhino Walks.

are being slaughtered for their horns, which are considered by some of the world's population to be more valuable than gold. Rhino horns are ground into a powder that is said to cure diseases of all kinds. Modern science has disproved this, but, due to traditional beliefs in some countries, the animals continue to be exterminated.

"It is crucial for our species—humans—to decide today whether the rhinoceros will continue to exist in the future," says San Diego Zoo Geneticist Dr. Oliver Ryder. "It's clearly up to us. They may well be extinct by the time our children are grown." Michael Werikhe is working hard to make sure this is not what happens.

Following his initial walk in 1982, Werikhe walked an additional 1,250 miles across Uganda, Kenya, and Tanzania in 1985, raising $54,000 for rhino conservation studies and rhino sanctuaries. In 1988, he completed an ambitious five-month and 1,800-mile walk across Europe, starting in Italy and ending in Great Britain. He raised $1 million for rhino projects and captured the attention of Prince Philip, Duke of Edinburgh, an avid wildlife conservationist: "It is easy enough to analyze the threats to the future of the black rhino, and it is not very difficult to suggest what needs to be done to prevent it becoming extinct. The real problem is to generate the human will and commitment. Your magnificent walk is just the sort of gesture that provides the spark of inspiration which makes people respond to a crisis."

Werikhe wholeheartedly agrees that people must be involved: "Conservation cannot be imposed; it must have the understanding and support of the public, and especially the people on whose land the animals live. So much of the conservation message has begun to sound sentimental, and must seem horribly out of place to a man whose maize (his sole means of staying alive) has just been trampled by a herd of buffalo. We need to come up with practical systems and solutions in line with these realities and the present times—positive aims and positive actions."

Some might say Werikhe has a childlike confidence when he remarks: "The man in the street is very willing to conserve wildlife, as long as he has information and does not feel left out." But, this is part of his basic belief system, one that has served him well. Lacking any kind of formal degree, Werikhe operates at the grass roots level, trusting average people to become as concerned as he is, and it usually works.

Werikhe's own interests and experiences started him down the road to conservation at an early age. While his current focus is on the rhino, he has always been concerned for all threatened wildlife. As a boy, he would sometimes bring small injured animals home to care for until they could be returned to the wild. His enthusiasm for these wildlife "friends" caught the attention of his schoolmates and teachers, who encouraged him toward a career in animal and game management. Ironically, he later accepted a job in the Kenyan government's Ivory Room (before the country's current ban on hunting), sorting piles of elephant tusks and rhino horns to be sold at public auction. Needless to say, he soon left the position.

Today, when he is not out walking for rhinos, Werikhe works for the Associated Vehicle Assemblers (AVA) in Mombasa. His employers have recognized his work by granting him time off with pay for his many conservation activities. Others, too, have chosen to acknowledge Werikhe's valuable work. The United Nations Environmental Programme (UNEP) honored him as one of UNEP's Global 500 in 1989. And, in 1990, he was given the Goldman Environmental Prize for outstanding environmental achievement.

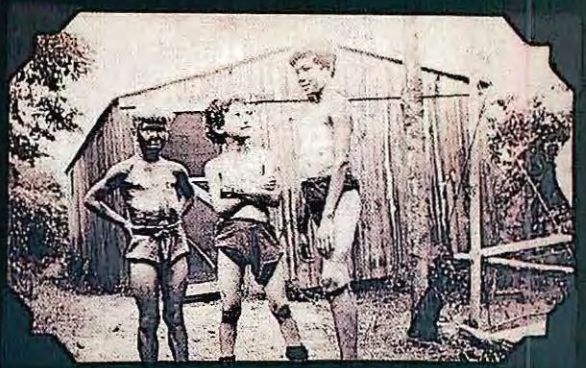
Now, at age 34, after nearly a decade of carrying his message of conservation and cooperation across two continents, Werikhe will begin his most ambitious walk yet and rally American support for the endangered rhino. He notes: "In this nuclear age, there are no national boundaries to the environment. The rhino will live or die because of us."

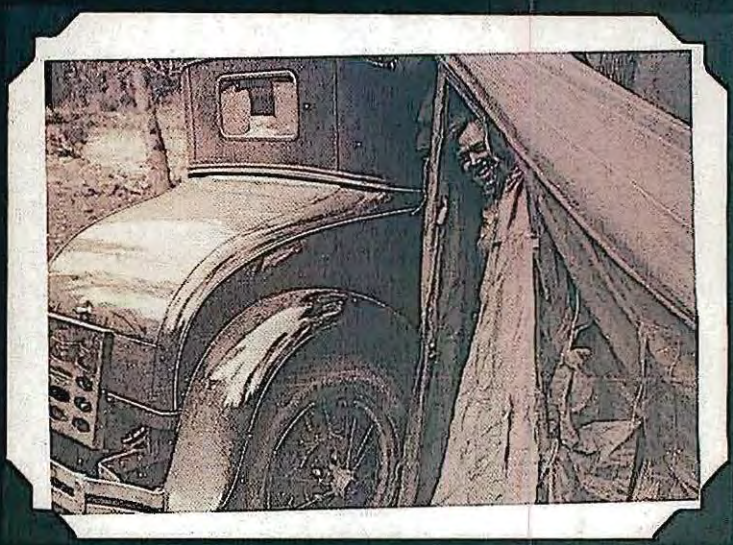
A Family Album

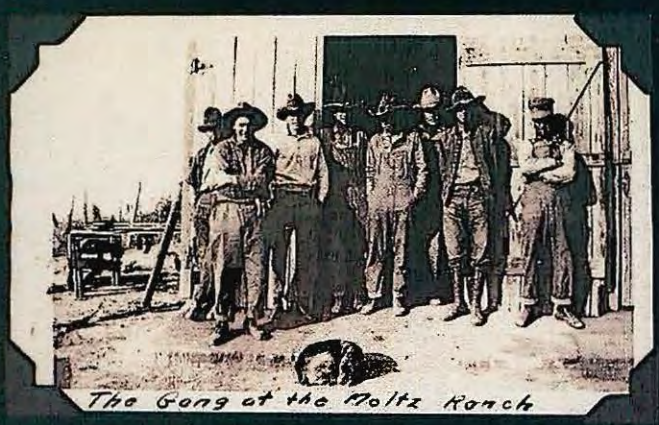
School days: A young Charlie Schroeder with his second-grade teacher. Charlie graduated from P.S. 158 in 1916, the year the Zoological Society of San Diego was founded.

Below: *The former college athlete enjoys the sun and the sand with a favored pooch.*

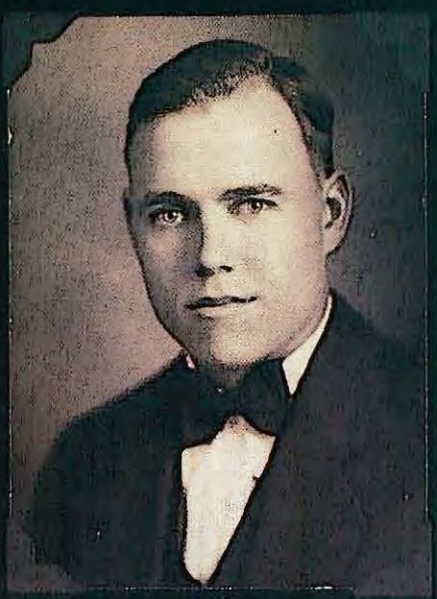
At play in the days of cowboys and Indians—everyone here wanted to be Indians. With characteristic enthusiasm, Charlie (left) threw himself into the role, war paint and all.







Summer work was as diverse as working on an oil tanker or working the wheat harvest. Charlie, hired hand, stands at the far right with "the gang at the Moltz Ranch." Such summer labor set a pattern for the man who would later take part in the initial physical tasks of building the Wild Animal Park.



Traveling with Charlie: Cross-country tenting took him from New York to his next term at Washington State University at Pullman.

Portrait of a young man about to launch himself on a lifelong career of acclaim in the zoo world.

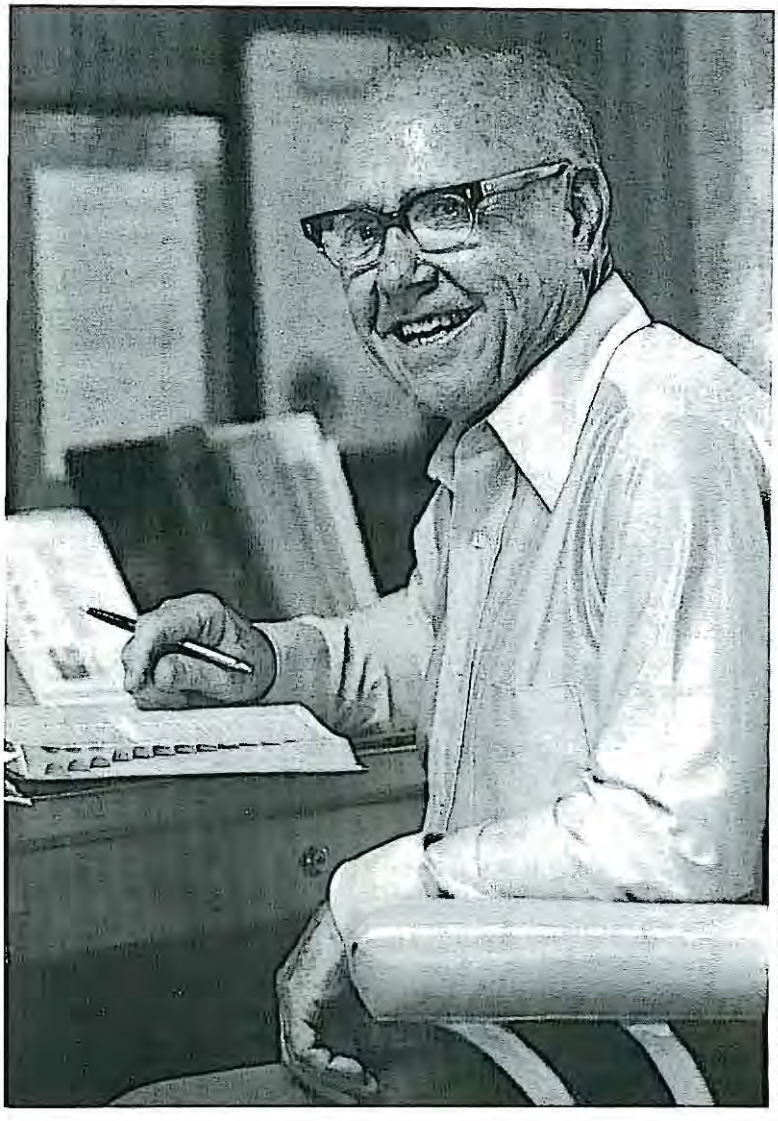
Charles Robbins Schroeder: A Life Celebrated

July 29, 1901–March 21, 1991

Marjorie Betts Shaw

When the San Diego Zoo was not quite 16 years young, it was in search of someone to head its research and veterinary programs, and Dr. Charles R. Schroeder came highly recommended. He was two-and-a-half years out of veterinary school and ensconced at Lederle Laboratories in Pearl River, New York. He had traveled between his native New York and graduate school at Washington State University and had worked odd jobs across the country to support his education, so in accepting the Zoo's veterinary post, he wrote, in true veterinary style, "I have spent some time in the West and fear the good old California germ is still with me, in fact I am a carrier and have already transmitted the infection to several people including Mrs. Schroeder. Being beneficial, it develops remarkable but pleasant symptoms." Over the course of the next 40 years, he would work twice for Lederle Laboratories, once for the Bronx Zoo, and three times for the San Diego Zoo, where he would crown his achievements by establishing the Wild Animal Park.

Dr. Schroeder began his career at the San Diego Zoo at a time when all zoos in the United States were relatively young. The oldest, at Philadelphia, was only 42. The venerable Bronx Zoo, opened at the end of 1899, aged at the same rate as the century, and the century was young. Dr. Schroeder's colleagues and contemporaries at home and abroad constituted a who's who of that golden age of zoos, when there was the fresh, boundless enthusiasm of a new enterprise. His energy and optimism were perfectly matched to the age. Dr. Leonard Goss, a colleague who followed Dr. Schroeder into his job as veterinarian at the Bronx Zoo and who later became direc-

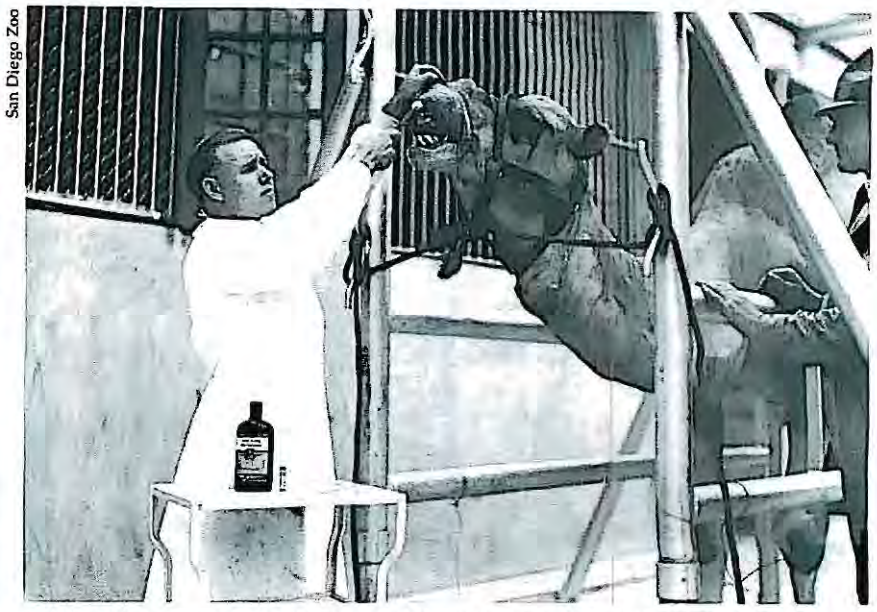


San Diego Union-Tribune: Phil McMahan

Dr. Schroeder had a busy retirement, in his home office and around the world, as consultant to zoos ranging from the United States and Mexico to Singapore. When he retired, this dynamic man was praised for his dedication, drive, stamina, and contagious enthusiasm, and for his service to the International Union of Directors of Zoological Gardens and to the American Association of Zoological Parks and Aquariums. He had served as president of both organizations.

Photo courtesy of the Schroeder family

Dr. Schroeder gained valuable experience during his years as veterinarian at New York's Bronx Zoo, but he and his family longed to be back in San Diego.



San Diego Zoo

Belle Benchley planned to use this photo on the Art Linkletter Show to introduce Dr. Schroeder as the soon-to-be director of the San Diego Zoo. But Linkletter talked too long, she said, and they ran out of time to announce her successor.

tor of the Cleveland Zoo, characterized Charlie Schroeder at his retirement as "an eternal optimist—we can add him to the list of vanishing species."

During his first term as Zoo veterinarian (1932 to 1937), the Zoo's hospital also served as the diagnostic laboratory for San Diego County. In between treating and researching exotic animal diseases, Dr. Schroeder was also concerned with the diseases of domestic poultry. In his spare time, he was the Zoo's photographer and darkroom technician. He took animal photos during the day, processed them at night, and had them on the sales rack as postcards the next day. All in a day's work as veterinarian meant versatility.

Research was as important to him as it was to Zoo Founder Dr. Harry Wegeforth, and when the Bronx Zoo pulled the Schroeders back to New York in 1937, Dr. Wegeforth wrote,

My whole ambition was to have the Zoo revolve around the research. I do not care a 'tinker's dam' to merely run a circus....

Then, with either premonition or faith in his protege, Dr. Wegeforth advised,

Put as much time in with [an] up-to-date institution and when you do come back bring a wealth of knowledge. Your friend,

"Dr. Harry"

Two years later, Zoo Manager Belle Benchley wooed Schroeder back to San Diego for his second stint as veterinarian: "I do really feel ... there is a bright prospect for you out here and there will be more people than the members of the Zoological Society and the staff who will welcome you back to San Diego." And after he had accepted, "I do not know how many calls we have had altogether, rejoicing over your return, but it gives me the greatest satisfaction to see how happy people really are that you are coming back." This time he stayed until 1941, when Lederle Laboratories induced him, with some difficulty, to rejoin the staff at Pearl River as manager of their animal industry section and, later, director of veterinary clinical research. For the next 13 years he worked with noted scientists during a period when great strides in medical and veterinary research were being made and life-saving vaccines were being developed.

That period of his life and those biomedical researchers were to have a continuing influence on his subsequent Zoo career. He wrote numerous scientific papers during the years at Lederle, and he became chairman of the biology section of the New York Academy of Sciences.

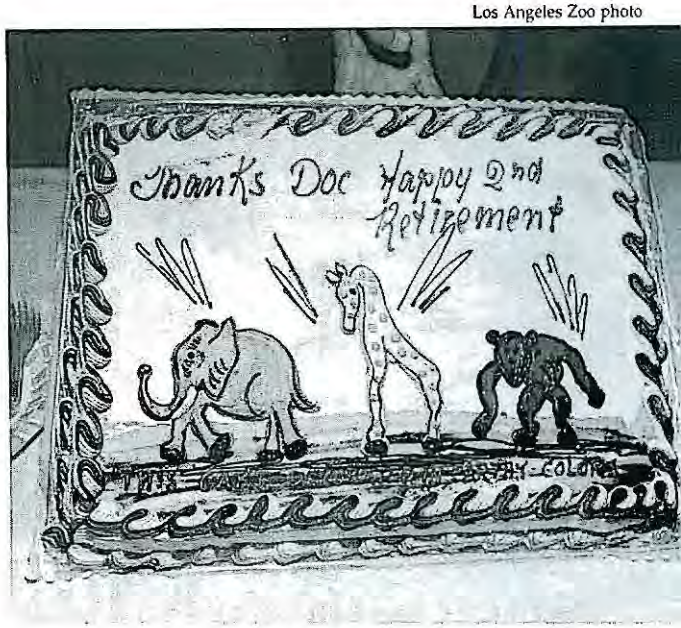
The opening lines from a 1948 pamphlet published by NYAS echoed Dr. Schroeder's feelings about science: "Not even a hermit today can isolate himself from the influences of science." He was proud of the caliber of both staff and visiting scientists who carried on their studies at the Society's Zoological Hospital and Biological Research Institute, as it was originally named. He was devoted to Scholia, a scholarly group to which he belonged and for which he recruited many others. He championed writers that interpreted science for a lay public, and he always required his staff to be aware of research that was in progress elsewhere. Curators at the Zoo during the 1950s and 1960s were constantly encouraged to keep up with the scientific journals in fields other than their own. Even if they didn't have time to read scientific papers, they were expected to enhance their awareness by perusing tables of contents to become familiar with titles and subjects of works. Stacks of journals, magazines, and correspondence were routed to staff members daily. There was scarcely desk room to accommodate the material. But Dr. Schroeder had gone through it all, and so could they. When he was awarded the Zoological Society's conservation medal in 1976, he was lauded for having created an "attitude of education."

With strengths, ideas, and convictions firmly in place, and with countless plans crowding into his imagination, he was ready to return to San Diego when Belle Benchley was ready to retire. Charles Schroeder, who had made such a mark at the Zoo as veterinarian, was her choice as successor. The Board of Trustees was in unanimous agreement, and President Robert J. Sullivan offered the post of managing director on July 3, 1953, to become effective in early 1954. Dr. Wegeforth had died in 1941, only a few months after Dr. Schroeder had returned to Lederle, but in ac-

Fotografia Praha

Sir Charles: To add to his many honors, he was knighted in Czechoslovakia.

Los Angeles Zoo photo



This cake was given to Dr. Schroeder after he served as interim director for the Los Angeles Zoo in his retirement. It was actually his third retirement—the first was from Lederle Laboratories, where they partied under palm trees and to a jungle theme to send him on his way to the directorship of the San Diego Zoo.

cepting the directorship, he remembered his mentor with characteristic enthusiasm: "I'll bet Dr. Harry knew I'd be back, or did Mrs. Benchley plan this?"

As director, he ran a tight ship. He was famous or notorious (depending on one's point of view) for his memos and for his little black book. On his daily walks through the Zoo, every dripping faucet, each bit of chipped paint was duly noted in the black book. Back in his office, his Dictaphone recorded all items that needed attention, and the next day a flurry of memos reached all those charged with correcting the problems. If, after a few days, the faucet still dripped or fresh paint hadn't been applied or there had been no response to the memo, a follow-up copy went out with a handwritten note signed CRS that simply asked, "What happened?" Few waited to receive a third memo. The little black book and the oft-cursed memos kept the Zoo shipshape. Nothing escaped his notice. He saw every purchase requisition and every piece of correspondence that left the Zoo, and if there was a question or a problem, he promptly responded. He expected his employees to look neat, no matter what the job. Zoo Physiologist Andy Phillips recalls working summer vacations in the back of a trash truck, knee deep in garbage, and being admonished by Dr. Schroeder to tuck in his shirttail.

It was a side effect of his enthusiasm and optimism that he was easily enamored of people. Some of those people became lifelong friends, others brought disappointment. But no disappointment could quell his zeal for the next interesting person met. He irrepressibly liked company and conversation. As director, he often enjoyed company and discourse by sharing the contents of his mail with Zoo staff over morning coffee. In retirement, he hailed employees to his lunch table—always keeping track of the pulse of the place. A short, conversational walk with Dr. Schroeder would become a lengthy and interesting, spasmodic stroll, because he couldn't walk and talk. It was imperative that he stop and face his companion to make a point. In recent years, he delighted in his Sunday morning breakfasts with keepers at the Wild Animal Park.

It was Dr. Schroeder's vision that produced the Wild Animal Park, but he was quick to credit his close friend Andy Borthwick for making the Park possible. The Schroeders' Escondido home overlooks "the Park that Charlie built." The same charging energy he used to drive posts to mark the route for the Wild Animal Park's Wgasa Bush Line monorail kept him chopping firewood and repairing his roof well into his 80s. But then he grew up tough and resilient—in New York's Bedford-Stuyvesant area—where, he said, "You had to belong to a gang to survive." For many years, he attributed his remarkable good health and recuperative powers to the immunity he gained from his childhood swims in New York's polluted East River.

He often dismissed discussion of his numerous awards, honors, and accolades by saying, "They're really for longevity." He began reaping them as too young a man for that to be true. It is true that they are too numerous to list without fear of forgetting a dozen or so. The most recent was probably (but not necessarily) the unveiling in February of the gorilla statue erected in his honor at the Wild Animal Park.

In January 1986, Dr. Schroeder and Dr. Harry Wegeforth each received nationwide attention when CBS television featured them on "An American Portrait."

Dr. Harry was prophetic when he welcomed Dr. Schroeder as a returning veterinarian in 1939: "...I am glad to see you come back to a zoo that is young for I feel you will be able to see it in full bloom before you pass out of the picture." Dr. Schroeder saw it in full bloom and helped it to bloom—far beyond Dr. Harry's wildest dreams. ZNZ

Editor's Note:
Marjorie Shaw knew and worked with Dr. Schroeder for almost 30 years and received her own share of memos. She is a former editor of ZOONOOZ.

NOOZNOTES

San Diego Zoo: R. Garrison

European river otter Lutra lutra

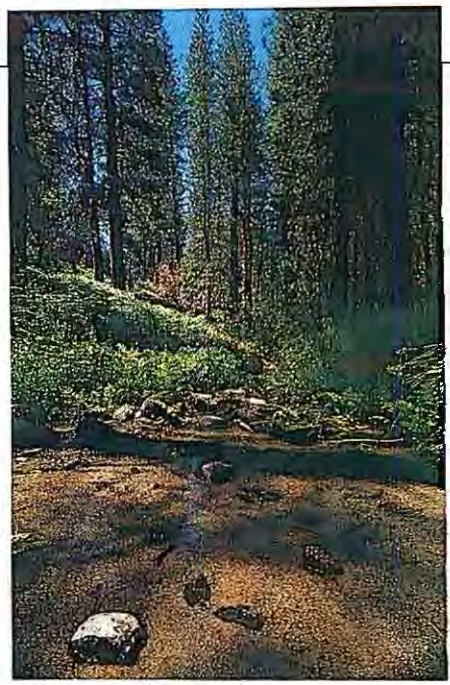
Sun Bear Forest has some new residents, given to the Zoological Society by the Zurich Zoo in Switzerland. Two European river otters *Lutra lutra*, also known as Eurasian otters, now occupy the tumbling waterfall pool within the lion-tailed macaque portion of the exhibit. Look for their quick and agile movements as they cavort around the enclosure.

A rather solitary member of the species, these Old World representatives of the *Lutra* genus have a range that extends from Scotland east and south, all the way to Java. While otters prefer life in streams and lakes, where they forage for food, they are equally at home on land. Otters are the only amphibious representatives of the weasel family.

In their native habitat, Eurasian otters tend to have a varied carnivore diet, usually frogs, fish, eels, and other small water creatures. They eat their catch immediately, crushing bones and all with strong premolar teeth. Due to their rapid metabolism, otters must eat a substantial meal at least four or five times a day.

Otters are also known for their vocalizations, which range from short chuckle sounds to chirps. Eurasians otters tend more towards a twitter sound that is made between adults in close proximity or between a mother and her young.

—Editor



Phillip Roullard

Palomar Mountain State Park

Wildlife Treks

Explore the mountains this summer with local wildlife expert Celia Condit Taylor. She'll take you out to three local areas—Cuyamaca State Park on June 15 or 16, Laguna Mountains on June 22 or 23, and Palomar Mountain on June 29 or 30—to see our local flora and fauna. There's even a special trek to beautiful San Jacinto Mountain, led by Naturalist and Wild Animal Park Education Manager Debra Erickson on July 6 or 7. In addition to the three-hour, easy-to-moderate walks, each trek includes handouts to help you identify local birds, mammals, and plants. Member fees for the three-trek series to Cuyamaca, the Lagunas, and Palomar are $17.50 per trek or $45 for the series. Nonmember fees are $22.50 per trek or $60 for the series. The San Jacinto trek, which includes the Palm Springs Aerial Tram fee, is $30 per person. To register, send a check payable to the Zoological Society of San Diego to Wildlife Treks, P.O. Box 551, San Diego, CA 92112-0551.

DEMYSTIFYING DINOSAURS

Spend some time alone in the woods at the Park with our prehistoric creatures! Adults who want to find out more about our dinosaurs can sign up for this fact-filled, three-hour tour. You'll find out what prehistoric animals can teach us about the past—and the future—of life on this planet. The tour, which includes a monorail ride and an animal encounter, will help you sort fact from fiction by taking a look at the plants and animals of long ago to see which ones survived and which ones did not. And, best of all, you can spend an hour in the dinosaur exhibit before it opens to the public. Demystifying Dinosaurs is offered on Saturday and Sunday mornings, from 8 to 11 A.M. The program fees are $13.50 for member adults and $28 for nonmembers; $11.50 for members ages 12 to 15 and $19 for nonmembers. For reservations, call (619)738–5057.

THERAPY FOR A DYING PLANET

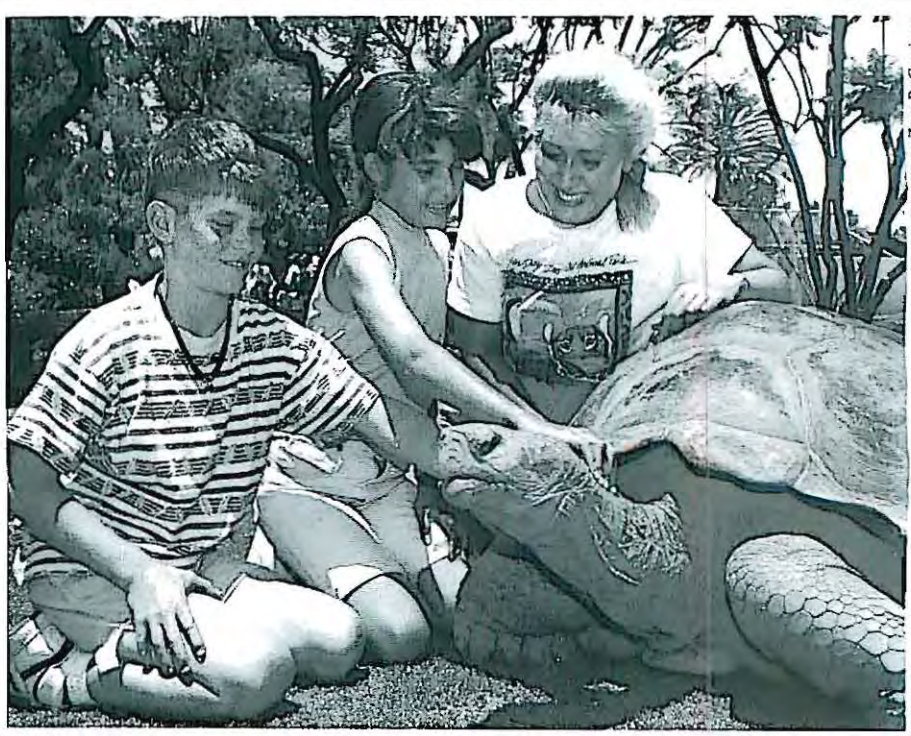
As part of its ongoing commitment to conservation, the Zoological Society of San Diego, in conjunction with San Diego State University, is piloting a new environmental education program called **Therapy for a Dying Planet**. This cooperative project combines the efforts of educators from San Diego State University's Educational Opportunity Program, its Psychology Department, and staff from the San Diego Zoo in teaching graduate students how to effectively use behavior modification with both animals and people. Behavior modification, simply put, provides a reward in exchange for a desired behavior. With animals, the reward is usually a food item; with humans, the reward can be anything from money to farming space to international recognition.

The project involves several phases. First, the SDSU graduate students participate in the classroom study of a variety of worldwide environmental issues, pinpointing areas of concern—such as the South American rain forests or the North American wetlands—and discussing ways that the native peoples might receive rewards for protecting, instead of destroying, the environment. The second phase is a summer internship at the San Diego Zoo, where students can apply what they have learned about behavior modification by working with Zoo animals, encouraging natural foraging behaviors with food rewards. The third phase asks students to design a specific action plan that will address a conservation problem in a targeted foreign country, and the last phase involves the students in a field conservation project in that country. This year, the students will travel to Papua New Guinea, where they will work with the Office of Environment and Conservation to find ways to reward people for preserving Papua New Guinea's abundant natural resources, allowing the population to benefit from the natural diversity without irrevocably depleting it.

In order to properly identify our own positions within the overall ecological picture, we must be concerned with our individual impact on the world and the legacy that each of us leaves behind. **Therapy for a Dying Planet** is designed to promote an increased understanding of environmental problems and the delicate interaction that exists between human beings and the planet, as well as to teach the behavior-modification techniques that, if applied effectively, may change the ways people interact with their environments. The underlying philosophy is that as long as people get something they want or need from conservation efforts, they are more likely to participate. Those involved in this project hope it will be duplicated in universities nationwide, and a video tape describing the project and its goals is being made to provide more information. If you would like to know more about **Therapy for a Dying Planet**, contact Dr. Kathryn Wullner at the Educational Opportunity Program, Psychology Department, San Diego State University, San Diego, CA 92182.

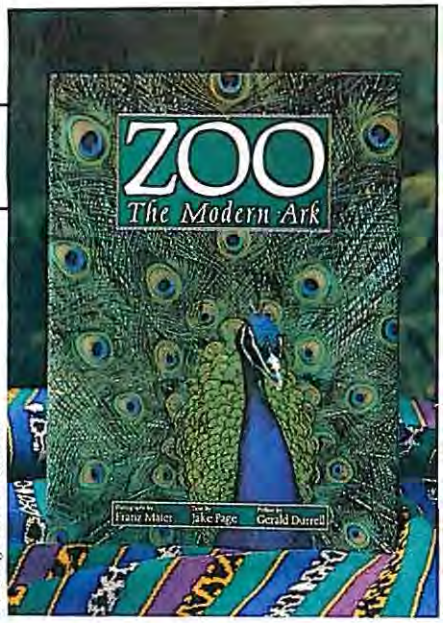
SUMMER SCHOOL

Get 'em while they're hot! The Zoo and Wild Animal Park's Summer School brochures are ready, and classes for students entering grades 1 through 12 are already filling fast. If your child will be entering first grade in the fall, sign him or her up for both Dino Day Camp at the Wild Animal Park and a week-long chance to meet some mammals at the Zoo. Your ninth grader can find out more about saving endangered species in the Zoo's A Race Against Time and will have an opportunity to spend a day at the Wild Animal Park learning what it's like to be a zoo keeper. You can even bring the whole family on an unforgettable photo caravan trip in the back of a pickup truck, driving through the African field enclosures at the Park and feeding inquisitive giraffes as you go. All Wild Animal Park Summer School classes include a visit to the dinosaur exhibit. Fees range from $20 to $50 per class, with discounts for Koala Club members. To get your brochure and registration form, call our Summer School hotlines—(619)740-9383 for the Wild Animal Park, or (619)236-0163 for the Zoo.



San Diego Zoo: R. Garrison

Education Department Intern Lise Christensen introduces a Galápagos tortoise to summer school students.



San Diego Zoo: R. Garrison

SHOP TALK

Zoo: The Modern Ark

Text by Jake Page, photographs by Franz Maier, preface by Gerald Durrell, Facts on File, New York, 1990.

The zoo's vital new role in conservation is the focus of this beautifully illustrated book by Jake Page, a noted authority on natural history and a founding editor of the Natural History Press and Smithsonian Books. This volume brings its readers a historical appreciation of zoos by tracing their history from 2300 B.C., as well as providing a new understanding of their increasingly important role in saving endangered species. This book recounts the launching of the Species Survival Plans (SSPs) and how these plans have helped to revolutionize the modern zoo with more natural habitats, advances in breeding, public education programs, and the reintroduction of captive-bred animals into the wild. The book also discusses how zoos in general care for their collections and profiles some prominent zoos, including the Bronx Zoo, the National Zoo in Washington, D.C., and the San Diego Zoo.

During May, Zoological Society members may purchase this book at a 10 percent discount. Copies are available in the Zoo and Wild Animal Park gift shops. To order by phone, use your VISA® or MasterCard® and have your Society membership number at hand.

Publisher's price: $35.00
Member price: $31.50
Shipping and handling: $2.50
California residents add 7 percent sales tax. To order by phone, call (619)586-1657 or, toll free, 1-800-628-3179. Member discount price good through May 31 only.

A Remembrance: Pamela C. Orsi

1963–1991

A bright, welcome sun warmed the grassy hillside in the Wild Animal Park's African elephant enclosure on March 22, as friends, family, and co-workers gathered to remember Pamela Orsi.

In song, in poetry, in words, and in silence, before a panorama of the Park's rhinos, antelope, and birds and the beautiful San Pasqual Valley, several hundred people said goodbye to a young woman devoted to elephants.

Pam Orsi, 27, was caught up in a confrontation between two Asian elephants on March 14. Her accidental death stunned the community and saddened all who knew her. And it ended, too early, a promising career she had spent most of her life preparing for.

Pam graduated in 1981 from St. Mary's High School in her hometown of Manhasset, New York. She earned an animal science degree from Cornell University in 1985 and took a mammal keeper position at the Bronx Zoo that same year. For five years, Pam worked at the Bronx Zoo, caring for tigers, deer, rhinos, and elephants. But it was the elephants that intrigued her most.

"Pam loved elephants, she loved to work with elephants," said Bronx Zoo Curator James Doherty. "She wanted to work in San Diego because it would give her an opportunity to work all day, every day, with elephants."

She began her job as an elephant keeper at the Wild Animal Park in 1990. Fellow keepers recall that Alice, an adult Asian female on breeding loan from the Rio Grande Zoo in Albuquerque, was Pam's favorite. Alice would follow Pam around the elephant yard like a playful puppy. Now and then, Alice would take the keeper's wrist with her trunk and lead her down to the gate, knowing that Pam would get her an apple or some other treat.

"Pam touched the lives of so many people," said Robert Porec, a Wild Animal Park co-worker and friend. "She gave of herself and was always there with a kind word or smile. She was an accomplished young woman who chose to follow a career that would satisfy her passion for elephants."

Soon after her arrival in San Diego, Pam's training and abilities were quickly put to good use with the birth of Omar, the first Asian elephant born to the Zoological Society. Rejected by his mother at birth, Omar required around-the-clock attention by a number of caretakers, and Pam eagerly volunteered to be among them.

San Diego Zoo: G. Irvine

Pam Orsi was one of Omar's dedicated, around-the-clock caretakers after his birth in June 1990. Her love of elephants was apparent in the joy she showed while romping with him.

As a surrogate mother, she often sat quietly for hours with the baby elephant's head on her lap while he napped. For playtime, she would sometimes open a large bag of wood shavings for Omar, which he loved to roll around in. For exercise, keeper and elephant calf kicked a soccer ball. Pam helped feed and bathe Omar and conspired to coax him onto the scales for daily weighing. Pam's enthusiasm and dedication to the elephant orphan was evident.

On March 24, ten days after Pam's death, baby Omar had to be put to sleep by an injection from Wild Animal Park veterinarians. The 10-month-old elephant calf was no longer able to stand, having suffered since January with an undetermined infection and poor bone development.

Wild Animal Park keepers, veterinarians, and curators who had rescued Omar from attacks by his mother at birth and had organized 24-hour-a-day care teams throughout the rallies and setbacks of Omar's short life, were on hand when hope for his return to health disappeared.

"Don't worry," someone said, in the barn with the baby elephant. "Pam will take care of him."

On the BOTANICAL side...

San Diego Zoo: R. Garrison

An East African black rhino Diceros bicornis michaeli *and her youngster browse on* Ficus macrophylla. *The Society's rhino browse program provides several pounds of such vegetarian treats as ficus, acacia, or hibiscus cuttings for each rhino every day, fulfilling their behavioral need to forage for food.*

Prescription Browse for Rhinos

Daniel Simpson HORTICULTURE

The five species of rhinos that exist today are somewhat specialized in their feeding methods. The white, or square-lipped, rhino and the Indian rhino are grazers, meaning that they feed on grasses and other similar types of vegetation. The black, or hooked-lipped, rhino and the Javan and Sumatran rhinos are considered browsers because they feed on small trees and shrubs.

Regardless of their specific feeding behavior, rhinos require large amounts of fiber for their slow digestive systems. Bacterial activity in the cecum, rather than in the stomach, breaks down the cellulose contained in the volume of vegetation a rhino needs to consume daily. In their natural habitat, these animals have access to a wide variety of plant material. However, habitat destruction reduces their food supply and increases competition for living space and available forage.

Captive management and successful reproduction are important steps in the survival of these species. A good example is our southern white rhino population at the Wild Animal Park, where successful care and reproduction have produced 75 offspring since 1971. We hope to parallel that kind of success at the Zoo as well. On Elephant Mesa we have two species of rhino, the Sumatran and the black. Our browse program is designed to meet their needs. Barakas, a fifteen-year-old female Sumatran rhino, is an enthusiastic browser. In order to keep her happy and healthy and to reduce her impact on the plants in her exhibit, she receives daily offerings of several different plant species, including acacia, ficus, and hibiscus. Presently, she consumes about twenty or more pounds per day. In the near future, we plan to receive a male companion for her, and we hope this will lead to a triple demand for browse.

Nearby, we have two pairs of black rhinos, Dillon and Scooter and Gundwane and Chirundu, that also require branches of foliage on a daily basis. Our captive rhinos receive a carefully planned diet of herbivore pellets, carrots, yams, apples, alfalfa, and vitamin E supplements that meets their nutritional needs, but the browse material supplements that diet and helps to meet their behavioral needs.

Rhino researchers in the field have compiled lists of the plant species rhinos seem to prefer. Although we have an extensive botanical collection on our Zoo grounds, most of the plants listed by the field biologists are not available for us to use as browse. In order to meet an expanding demand for browse by our rhinos from both Africa and Sumatra, we rely on the availability of generic plant substitutes, which we have growing on the grounds and which the animals will readily accept (see table). The browse-worker, a member of the horticulture department, delivers armloads of four- to six-foot branches of these plants to water barrels near the rhino exhibits several times a week.

Despite the variety of plants provided, the favorites seem to be *Acacia longifolia* and *Acacia saligna*, which are both from Australia. This preference may be due to the higher amount of cellulose present in the phyllodes, or leaflike petioles, that function as leaves on Australian acacias. In their desire for cellulose fiber, our rhinos will consume branches up to two inches in diameter—which makes those of us who have seen these browsing beasts in action wonder if they themselves aren't responsible for the deforestation of their natural habitats! The browse program as we manage it at the Zoo is an excellent example of how modern zoos meet the needs of the animals in their care, allowing them to continue to breed highly endangered species in captivity.

Plant Species Acceptable to Browsing Rhinos:

Acacia longifolia
Acacia saligna
Ensete ventricosum
Ficus benjamina
Ficus elastica
Ficus macrophylla
Ficus nekbudu
Ficus pumila
Ficus retusa
Ficus rubiginosa
Ficus thonningii
Harpephyllum caffrum
Hedychium flavum
Hibiscus rosa-sinensis
Morus alba
Syzygium paniculatum
Zingiber zerumbet

Opposite: *The Zoo's female Sumatran rhino reaches up to sample one of the rhinos' favorite browse items.* Acacia longifolia.

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