



Animal Keepers' Forum



Dedicated to Professional Animal Care

JANUARY 1980

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Animal Keepers' Forum is a monthly journal published by the American Association of Zoo Keepers, National Zoological Park, Washington, D.C., 20008, for its members. Send all address changes, undeliverable copies and other membership inquiries to AAZK Headquarters, Washington, D.C.

Second class postage is paid at Topeka, Kansas. Return postage is guaranteed.

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Herb Roberts from the Zoo of Arkansas, Little Rock, illustrates a close moment between keeper and animal for the January 1980 cover. We are delighted with the talent evidenced in all the artist/keeper's works that have been submitted and look forward to presenting them throughout 1980.

SCOOPS and SCUTTLEBUTT

AMERICAN ATTITUDES ABOUT WILDLIFE REPORTED IN NEW STUDY

The first report on a comprehensive study of American attitudes toward wildlife has revealed some interesting findings. The report analyzes initial findings of a 3-year study by Dr. Stephen Kellert of the Yale School of Forestry and Environmental Studies. It is based largely on an extensive questionnaire administered nationally in interviews with 3,107 people during the fall of 1978. Kellert's first report concerns American attitudes, behavior, and knowledge about endangered species; animal damage control; habitat preservation; consumptive uses of wildlife, such as hunting and trapping; wildlife management; use of backcountry and parks; and miscellaneous issues.

Single copies of the report are available from the Publications Unit, U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

CHINESE LESSER PANDAS AND DHOLES ON DISPLAY IN SAN DIEGO

Two Chinese lesser pandas and two dholes, products of the first-ever exchange between a People's Republic of China zoo and a U.S. zoo, are now on display in San Diego. Both the Chinese lesser pandas and the dholes (also called Asiatic red dogs) are subspecies native to mainland China.

In addition to the lesser pandas and dholes, the San Diego Zoo also acquired four Jankowski's swans and 16 Derbyan parakeets in the trade. The birds remain in quarantine until the end of December. In exchange for these animals, the San Diego Zoo sent two Southern white rhinoceros and a dozen flamingos to the Kwangchow (Canton) Zoo.

METRO TORONTO ZOO RECEIVES THREE AWARDS

Subcommittee Chairman Marvin Jones of the Honours and Awards Committee of AAZPA recently determined that Metro Toronto Zoo is eligible to receive First Captive Breeding (Western Hemisphere) Certificates for the South African Fur Seal, Zorilla and Renault's Ground Cuckoo.

BIOLOGIST PRESENTS "THE LIONS OF UGANDA"

Biologist Karl Van Orsdol presented a program "The Lions of Uganda" to the Chicago Zoological Society. Van Orsdol spent 2½ years in Uganda studying the lions in Rwenzori National Park and witnessed firsthand wanton slaughtering of animals by Tanzanian soldiers. Findings of that study, prepared for the Uganda Institute of Ecology, have had great impact on the zoological community worldwide.

BIRTHS HATCHINGS

ORANGUTAN BORN AT GLADYS PORTER ZOO

A male orangutan, weighing 5 pounds, 4 ounces, (2.4 kg.) was born on Halloween at the Gladys Porter Zoo in Brownsville, Texas. He has been named "Casper" the friendly Orang. He is the fifth offspring of Sophie, who has declined to rear her babies so "Casper" is in the Zoo Nursery.

REPORT ON WORLD CONFERENCE III ON BREEDING ENDANGERED SPECIES IN CAPTIVITY

by
Ron Kaufman
Editor-in-Chief

The World Conference III on Breeding Endangered Species in Captivity was held November 12 through 15 in San Diego. It was sponsored by the Zoological Society of San Diego and the Fauna Preservation Society. I had the pleasure of attending this very important meeting. As the editor of AKF, my registration was provided by the conference hosts. This generous courtesy was extended to the editors of several professional publications.

The conference attracted over 350 persons from around the globe, including several Communist countries. Many of the foremost authorities in captive propagation of endangered species attended. About 29 papers were presented. They included excellent papers on techniques as well as opinions or reports on current wildlife problems.

Several points became evident as the conference progressed. 1. The need to save our endangered wildlife is so staggering, that not all can be assured of a place in zoos, some must be sacrificed. 2. Zoos are no longer just a last resort for survival, they are a vital first step. 3. Zoos cannot do it alone. With habitat destruction as the primary reason for wildlife loss, steps must be taken to insure the preservation of a natural home for many species. 4. The importance of a genetically vigorous zoo population of any species cannot be overlooked.

A refreshing spirit of international, inter-zoo cooperation emerged from the conference.

However, one thing stands foremost in my mind. That is the need expressed by several authors (and strongly implied by others) for competent, dedicated animal keepers to care for our wildlife heritage. The success, they said, of any propagation program in zoos depends upon the animal keepers involved. Keepers are indeed part of the vital effort to forestall extinction for the animals in their care.



MAJOR EMERGENCY EFFORT NEEDED TO SAVE THOUSANDS OF
VANISHING ANIMAL SPECIES, SAN DIEGO ZOO CONFERENCE TOLD

A financial and scientific commitment on the scale of the U.S. government's space exploration program is desperately needed to save thousands of the world's wild animal species from becoming extinct by the year 2000, William G. Conway, director of the New York Zoological Park, told the World Conference III on Breeding Endangered Species in Captivity.

Citing a two-year study commissioned by President Carter which predicts approximately 600,000 species of plants and animals will be extinct by the dawn of the 21st century, Conway called for "a new federal commitment to our vanishing biota so that the next few generations of human beings will be inheritors and not just survivors."

At Conway's urging, the 300-delegate conference unanimously adopted a resolution proposing a future meeting at the National Zoo in Washington D.C. in an attempt to involve the World Bank, the International Monetary Fund and other multinational financial organizations in funding efforts to preserve as many animal and plant species as possible in the next 20 years.

Major efforts are needed immediately, he reported, to save such familiar yet endangered animals as the rhinoceros, the lowland gorilla, giant pandas, the California condor and the Asiatic lion.

While acknowledging "the magnitude of our aspirations compared to the paucity of our resources," Conway explained that "the preservation of a small number of species even if only for a generation or two is the preservation of options." As examples, he noted recent benefits for human medicine discovered from endangered species research.

"Twenty years ago who could have guessed that armadillos might become useful in the study of leprosy (in a San Diego zoo project) or that capybaras harbor an anti-leukemic agent in their blood?" he said.

"There are strong grounds for the fear that the loss of species ultimately may have very serious consequences for man, but most of these seem to be unconvincing alternatives against short-term exploitation. There is little current market for the goods and services represented by some vanishing species outside of zoos."

Yet Conway said the world's zoos are "desperately tiny and mostly dependent on municipal governments with no commitments to international wildlife preservation." He noted a "frightening gap in the national and international concern with the preservation of the works of nature in zoological gardens compared with the more common concern with the preservation of the works of man in museums of art and history."

To illustrate the costs involved in saving a single animal, Conway told of the Siberian tiger, a highly endangered mammal nearly extinct in the wild. Some 750 of these tigers are now alive in the world's zoos. Figuring food, housing and veterinary care bills at \$4.50 per tiger per day, Conway computed the world zoo tab for upkeep of these tigers at nearly \$2.5 million a year. That would require at least \$49 million to keep a reasonable population of this one species alive until the year 2000, he said.

"Suppose we selected, by invitation only, 2,000 species which we wished

Major Emergency Effort Needed, continued

to sustain at a population of 500 animals each for the next 20 years at a conservative annual food cost of \$625. How much would it cost? The answer, of course, is just about \$25 billion -- or about what it cost to put a man on the moon."

Conway took part in a soon-to-be-released government study called Global 2000 which projects current population, food, economy and environmental trends into the year 2000. Results, he said, will show a world population increase of 2.5 billion; a decline in useable agricultural lands by 30 percent; a reduction in the world's forest lands by two-thirds; approximately 600,000 species of plants and animals becoming extinct and "few significant terrestrial eco-systems will survive in their present form."

"Whether we be optimists or pessimists, there is no reason to believe that long-term ecological decisions will soon replace short-term economic ones in human affairs," Conway concluded.

"In the face of the problems easily identified ahead, the 20th century wildlife conservationist's best hope for the future seems to lie in the proven consistency of man's inability to predict it."

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THREE HONORED WITH CONSERVATION MEDALS

Three gold Conservation Medals were presented at the concluding banquet of World Conference III on Breeding Endangered Species in Captivity. The medals were given to William G. Conway, general director of the New York Zoological Park; Ray C. Erickson, assistant director for endangered research at the U.S. government's Wildlife Research Center at Patuxent, Maryland; and Craig C. McFarland, director of the Charles Darwin Research Station in the Galapagos Islands.

Conway served as curator of birds for the St. Louis Zoo and the Bronx Zoo before becoming associate director and finally general director there. He is a leader in the conservation movement with countless articles and lectures proclaiming the necessity of captive breeding as a means of preserving endangered species.

Erickson, influenced by the plight of the whooping crane in the 1950's spent 10 years urging his U.S. Department of the Interior superiors and legislative representatives to initiate a government program devoted to saving endangered wildlife. Through his persistence, the Endangered Wildlife Research Program was established and Erickson served as the head scientist for 15 years before becoming assistant director.

McFarland lived for years in a tent studying the highly endangered Galapagos tortoises on the islands. Later, as director, he set up breeding and rearing programs which have succeeded in bringing the giant tortoises and a unique species of land iguanas back from the brink of extinction. McFarland is currently head of the Wildlands Management Unit for the government of Costa Rica.

Scientists at Queensland University, Australia, have noted a decline in the reproduction rate of the Koala Bear. The problem has been traced to a cystic ovary disease.

ELECTION

The membership of the American Association of Zoo Keepers has elected to the Board of Directors

Denise Bartenfelder, Baltimore Zoo, Baltimore, Maryland

Mike Coker, Topeka Zoo, Topeka, Kansas

Jill Grade, Busch Gardens, Tampa, Florida

A fifth member will be added by appointment.

PERFORMING CPR ON AN ORANGUTAN

by
Ron Kaufman
Topeka Zoological Park

CPR (cardio-pulmonary resuscitation) is a proven, widely-taught technique for resuscitating humans in the event of cardiac arrest. The procedure was recently used on a female orangutan at the Topeka Zoological Park with excellent results.

A 12-year-old female orangutan "Daisy" was being given a blood transfusion for a severe anemia, one of the results of a severe bacterial infection. She was anesthetized using halothane gas delivered by an anesthesia/respirator machine, through an endotracheal tube. During the procedure, the animal experienced cardiac arrest. Cardiac compressions were begun immediately, while the respirator was switched over to manual operation and oxygen delivery. Standard two-man CPR was administered using the five compressions to one respiration ratio. The episode lasted about ten minutes, while the veterinarian administered heart-stimulating drugs through the I.V. Shortly after an Isuprel® drip was begun, spontaneous respirations and pulse returned. The CPR was administered by two staff members. One, a registered animal technician was trained in CPR. The other was an experienced emergency medical technician on the zoo staff. Other staff members assisted by providing a cadence. This allowed the veterinarian to free himself and administer the vital drugs that would spark the heart into action.

The resuscitation of this orangutan was possible because:

1. several zoo staff members were trained in CPR,
2. the animal was on a ventilator with O₂ that could be triggered manually and an endotracheal tube was in place,
3. an I.V. was in place and running,
4. the veterinarian foresaw any complication and had the necessary drugs available.

At the very least, I recommend that as many animal keepers as possible learn and maintain proficiency in CPR, to protect their animals as well as their co-workers and the public. This is vital, since many keepers assist with veterinary procedures.

keeper's alert

1980 AAZK CONFERENCE

Montgomery, the first Capitol of the Confederate States of America abounds in history, tradition and southern hospitality. Y'all come and enjoy our old south hospitality at the 6th National AAZK Conference!

DATE: October 5-9, 1980

CONVENTION SITE: Holiday Inn State Capitol. Gracious accommodations in the deep south tradition located in the midst of Montgomery's most historic section.

RATES: Singles \$23.00 Doubles \$29.00

THEME: The Role of Smaller Zoos in the Zoological World.

For starters, there will be a moonlight Ice Breaker/Casino Night cruise aboard the General Richard Montgomery, a full size replica of an old time show boat, down the historic Alabama River.

For further details on the cruise and other exciting plans for the 6th AAZK National Conference in Montgomery, Alabama, check future issues of AKF.

ATTENTION: ELEPHANT KEEPERS.

For those of you who filled out and returned the elephant questionnaire distributed at the AAZK Conference in Portland--thank you for sharing your information.

For those of you who picked up a questionnaire and have not returned it--Tsk, Tsk, C'mon, fill it out and mail it!

For those of you who don't know what I'm referring to, well, hopefully, you will soon. I've decided to send a questionnaire on Basic Elephant Care to every zoo I can find an address for. I would like a larger sampling of information than just the eight zoos that responded.

I will compile the information and make it available. Further progress on the project will be noted in the AKF.

Ellen Leach
Cleveland Metroparks Zoo

INFORMATION PLEASE!

Information (references, personal communications, etc.) is wanted concerning breeding and maintaining river otters *Lutra canadensis* in captivity.

I am grateful to the people in the nature centers in Texas and Massachusetts who did respond to my request in the September issue, and would appreciate further comments from other keepers.

Regina Grebb, Animal Keeper
Pittsburgh Zoo
P.O. Box 5250
Pittsburgh, PA 15206

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December 24, 1979

AND ALL THROUGH THE ZOO
A Christmas Eve Daily Report

by
Steve Robinson
Hoofed Animal Keeper, Honolulu Zoo

'Twas the day before Christmas and all through the zoo
Not a creature was stirring, not even a zebu
(bet you thought I was going to say gnu)

All the feed bowls were set by the commissary with care
In hopes that the keepers would all soon be there.

Me in my rubber boots, with my shovel and such
Had just gotten down to scrape up some muck

When what to my wondering eyes should appear
But a half-striped quagga and a Père David's deer.

"What are you doing here, David's?" I said
And, to the quagga, "I thought you were dead."

"I am," said the quagga, "but I've come back to check
With my friend here to see how the others are kept."

With a full Flehman curl and a stretch of the hock
They got right to their work, checking the stock.

They trotted by cage, enclosure and pen
When they finished, there was nowhere they hadn't been.

Their Christmas report form was filled to the max
And with a twist of metacarpals, they flipped to the back.

Under comments the deer said, "You've got a good zoo,"
But he quickly added, "there's still much to do."

"Right," said the quagga from Christmases past,
"Remember, this Christmas is some species' last

"So educate, breed, research and write,
Merry Christmas to all and to all a good night."

Then they galloped off, their footing unsure
And left me still standing in a pile of manure.

And I thought to myself how incredibly strange
For creatures like that to be roaming this range:

The Past and the Present, here and gone just like that
I wondered if Future was coming to chat.

Then a poisonous cloud of death and decay,
The Future came stalking me in just that way.

It was headless, hornless, skinless and gaunt
And swaying there weakly went down on its haunch.

Said I, "Are you what the future will be?"
A shaking phalange it pointed at me.

"It could be," he said, " we're depending on you.
Our future you could hold right here in the zoo.

"So remember, you keeper, when you're feeling down
With low pay, the routine, and where you are bound

"When you're tired and sweaty and covered with feces
Remember your work may someday save a species."

Then it was gone with a rattling of bones,
I shouldered my shovel and headed for home...

* * * * *

coming events

3rd Annual International Wildlife Film Festival
University of Montana
Missoula, Montana March 1980

AAZPA Regional Workshops
Central--March 9-11, Tulsa, Ok.
see announcement below
Northeastern--March 30-April 1, Norfolk, VA
Southern--April 13-15, Orlando, Florida
Great Lakes--April 27-29, Cincinnati, Ohio
Western--May 4-6, Winston, Oregon

CENTRAL REGIONAL WORKSHOP

The 1980 AAZPA Central Regional Workshop will be hosted by the Tulsa Zoo on March 9-11. Keepers planning to attend the conference are invited to stay with members of Tulsa's newly formed AAZK Chapter. Like your funds, our space is limited, so please contact us as soon as possible. There will be an AAZK session between 9:00 and 11:00 am on March 11. We're looking forward to seeing many of you!

Beth Mathews
President AAZK
Tulsa Zoological Park
5701 E. 36th St. N.
Tulsa, OK 74115

AAZK CONFERENCE 1980
October 5-9, 1980 Montgomery, Alabama

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THE KEEPER'S ROLE IN ZOO ANIMAL HEALTH

by
Judie Steenberg

This is Part III of a series. This article continues the theme of "Keeper, Know Thy Animals"

The Routine

Following a basic routine is for the benefit of both keepers and the animals. A routine can help to identify problems, allow for prompt treatment and insure that all animals have received proper care. A routine can be reassuring to the animals and serve as a means for the keeper to check that everything is in order.

The first duty a keeper has in a day's work is to check all of the animals in his or her area. There will be some variation in this practice according to a zoo's policies and physical lay-out, but at least within the first hour all animals should be accounted for and known to be alive and well or otherwise. It is also important to note the condition of the facilities at this time, the amount of food and water consumed since last check, and the condition of the stools. If medication had been put into the feed, the amount eaten should be noted. If there is a medical or maintenance problem that needs immediate attention, the proper supervisory personnel should be notified promptly.

Talking to the animals lets them know you're approaching. A keeper's voice identifies who is approaching and can be soothing to otherwise excited animals. It doesn't matter what's being said; the tone and the calmness of the voice does. In some areas a radio can be helpful to give the animals exposure to voices and other sounds.

Before entering a cage to pull food or water pans or to clean it, it may be beneficial to the animal to allow it to transfer to another cage or outdoor enclosure. This applies even to animals that pose no threat to the keeper and is especially important with highly excitable animals. Clean is important, but not at the animal's expense. A keeper should know and respect the animal's territory, and the critical distance for each animal being cared for.

In addition to talking to animals, it is important to know when to make eye contact with them. Some examples are: primates feel threatened or challenged when stared at, some timid species of birds and mammals can be worked with and moved quite easily if the person's back is kept toward them, large raptors that have a tendency to be aggressive (defensive if nesting) can usually be kept at a safe distance by simply looking at them all the while the keeper is working near them. Another technique that benefits the animals is to move slowly and deliberately around animals, and to exhibit an air of authority. Knowing how to work around various animals according to the species and the individual is a must.

Cage cleaning should be done thoroughly and efficiently. Having the proper tools (in good working condition), disinfectants and cleaning agents in a convenient but safe place, out of reach of the animals, helps the process go more smoothly. Care must be exercised when using cleaning agents or disinfectants to see that they are used according to the instructions. While cleaning a unit care should be taken not to cross-contaminate other units by flushing feces or debris into them. After

The Keeper's Role in Zoo Animal Health, continued

a unit and food and water containers have been cleaned properly, all cleaning materials have been removed from the unit, drain covers replaced and the unit securely locked, the animals can then be allowed to return to it.

Many animals anticipate feeding time, some actually becoming highly excited. Part of a keeper's daily routine should be to feed animals on schedule. This includes both the number of times during the day an animal is to be fed and the hour of the day food is to be offered. The subject of nutrition is covered more thoroughly on the following pages. The point here is that when an animal is fed is also important, especially for animals with high metabolic rates that require food more frequently.

Policing the area is another "routine" practice. It is especially important on very crowded days for reasons already mentioned, to discourage visitors from teasing or harming the animals, to remove harmful items thrown into exhibits and to explain "no feeding" policies where relevant. While making a routine check of the area a keeper can learn some of the daily habits of the animals, such as nap-taking.

In addition to the morning check of the animals, a keeper should routinely check all animals and units just before leaving for the day, to be sure that:

- all animals are alive and well.
- all units were cleaned and are free of foreign objects.
- all animals were fed and watered properly and hoofed stock has sufficient forage to last till the next day.
- all transfer doors and unit exit doors are properly closed and locked.
- temperature control equipment is properly set or doors are open or closed according to the weather forecast.

As a final routine practice during a day, important data should be entered on the zoo's report form, keeper's notebook, and/or personal notebook. If an animal is sick and needs to be checked, an animal is about to give birth or nay other condition exists that requires checking on during the night, the night keeper or security guard should be advised before the day keeper leaves.

While a routine can add to an animal's sense of security, can help prevent minor problems from becoming major and can be a self-checking practice, care must be taken that the routine is not so set that a sudden change results in a panic reaction from an animal. Extremes are seldom acceptable in any respect.

Nutritional Requirements

A properly fed animal helps identify other health problems. If the animal is receiving proper nutrition, other possibilites must be investigated when the animal is sick.

The nutritional requirements of zoo animals vary according to species, age, size and environment. The quality and assortment of food offered must provide sufficient nutrients. The needed amounts of protein, fat, carbohydrates, fiber, vitamins, minerals and water vary greatly from amphibians to reptiles, to birds and to mammals. Whether an animal

The Keeper's Role in Zoo Animal Health, continued

is a carnivore, omnivore, browser, grazer, primate, insectivore, etc., must be considered, too. Proper nutrition, according to the needs of the specific animals, provides energy for structural development, maintenance, (heat, repair and replacement of tissue), reproduction and lactation.

Although the keeper is not generally the person determining what diet will be fed to a particular animal, he or she should know what the nutritional requirements are for the animal and why a certain diet is being fed.

Assuming that proper diets have been established, and quality food is available, it becomes the keeper's duty to see to it that food quality is maintained in his or her area, that the correct food items and quantities of food are offered according to the animal's diet, that the food is prepared properly (shape, size of pieces, temperature, texture and consistency), is offered to the animal in a proper container and fed at the designated time. The area of food preparation will vary from zoo to zoo.

The subject of zoo animal nutrition is not generally taught in a zoo or academic situation, but the interested keeper can, through selected reading, acquire a basic knowledge of the subject to better tend to the needs of the animals. This is not to suggest that the keeper should become a nutritionist, or adjust diets without approval; it means the keeper needs to know enough about the animal's nutritional needs, and the zoo's operations, to do a good job.

There should be one person at a zoo who is responsible for determining and changing diets. A keeper should inform and/or discuss with that person any diet changes or modifications that occur according to an animal's appetite, age or condition. If it's zoo policy, a keeper may have to relay such information up through a chain of command.

Examples of animals' changing nutritional requirements according to reproduction, social conditions, lactation, growth, age and season are:

- a herd male has increased energy needs during breeding season.
- a pregnant female has a need for additional nutrients, especially during the last 1/3 of pregnancy.
- a lactating female has an even greater need for adequate nutrients in a diet.
- quantity, the consistency of food and the frequency of feeding change as an animal grows. This can apply to the composition of both milk and solids.
- crowding or social dominance can cause nutritional problems in subordinate animals.
- a highly stressed animal has increased energy needs.
- an inactive animal may have subnormal nutritional requirement.
- problems of poor nutrition will show up faster in young animals.
- animals require additional nutrients during cold weather to maintain body heat and condition.
- poorly fed animals may not reproduce or deficiencies may become evident in their offspring.

Even when the nutritional requirements are known, there can be variations in the needs of two animals of the same species with the same basic nutritional needs. Some animals are "easy keepers" or sometimes referred to as "thrifty" and simply require less intake of nutrients

The Keeper's Role in Zoo Animal Health, continued

to remain in good condition. Conversely there are also problem animals that in spite of a balanced diet in adequate amounts are "unthrifty" and always appear to be in subnormal condition.

An animal should have access to fresh, clean water. Water is vital to the functions of the body and metabolism of nutrients. It helps regulate the body temperature, is important to the absorption and transportation of nutrients, it serves as a medium for chemical reaction in tissue cells and it helps carry off body wastes.

In addition to providing essential nutrients, a balanced diet should insure employment of the teeth and digestive organs in such a way as to keep them healthy. Food also provides occupation and contentment for captive animals. According to Hediger (1964) "The animal does not simply eat; it takes its food in a very definite way, usually at a definite time as well." He also makes mention of the search, recognition, grasping, chewing, swallowing, etc., of food, and that some animals need to feed continuously while others only occasionally.

Another factor is psychological stress. "The intake of sufficient food is not enough; the best conditions for digestion should be present" (Hediger 1964). In reference to an animal's flight tendency, Hediger states "even the best food will not be taken by the animal if it has a flight tendency and if the food presented is less than the flight distance away from man."

Keepers should also keep in mind what the animal's normal activity pattern is--diurnal, crepuscular or nocturnal. If for example, a nocturnal animal is given food early in the day, there could be spoilage problems in the heat of summer, the food might freeze solid in the winter, or it could be carried off by birds or rodents.

A cause of digestive problems in zoo animals can be poor quality food. "There is a mistaken notion, impossible to eradicate, that tainted food no longer fit for human consumption can be eaten by animals without harm. Mouldy bread, spoiled vegetable refuse, rotten food cause just as serious disturbances in health to animals as to man" (Hediger 1964). Food quality begins with the purchasing of food items or accepting donated food. Quality is maintained by properly storing and using foods according to the shelf life of food items. All foods should be rotated at the point of delivery and in each area, the oldest items being used first. Using good judgement in discarding unpalatable or rotten portions of food should be done with care taken not to waste good food.

Moisture and pests are both problems to avoid in storing grains; proper containers are helpful, but only if they are used properly, i.e. covers tightly in place. A keeper can be instrumental in maintaining food quality in his or her area by such practices. A good rule of thumb is to treat the food and preparation of it as if it is to be consumed by oneself.

When using animals donated from laboratories for feed, careful checking should be done for metal tags, clips or dyes. Care must also be exercised in using animals that die around the zoo as food for carnivores. The question "what did it die from" must be kept in mind, and the decision to use the animal as food made by the zoo veterinarian.

continued

The Keeper's Role in Zoo Animal Health, continued

All surfaces and containers used for food and water should be kept clean. Hay should be fed in a bunker, if possible, not from the ground or floor of a stall; all hay should be shaken and fluffed to locate any foreign objects. Brushes for cleaning food and water containers should be labeled as to their intended use and not used for other purposes such as scrubbing floors, walls, etc.. Water buckets should be labeled "for clean water only" and used accordingly. If animals with health problems are kept in the same area as healthy animals, it is especially important that their food and water containers are used for them exclusively and not mistakenly used to feed or water other animals.

Public feeding of animals is a problem in some zoos. In a recent survey of children's zoos (Schneider 1975-76) 67% reported allowing the public feeding of the animals. It stated that this coincides with a trend in zoos to abolish public feeding throughout the zoo. It is felt that in a carefully monitored children's zoo area, some control can be exercised in which animals are fed, what kinds of food are offered and how much food the animals are receiving. It must be kept in mind however, that zoo visitors may not restrict themselves to feeding only children's zoo animals and may attempt to feed other animals in the zoo regardless of signs saying "no feeding".

Other problems of public feeding are that the type and quantity of food can be harmful to the animal, and it encourages begging behavior. An animal that's obviously begging for food can cause an uneducated or ill-intended visitor to feed the animal unsuitable food or other "items". Zoo animals are not always discriminating in what they take into their systems resulting in such problems as "hardware disease" as previously mentioned.

In the introduction to the results of a survey on the "Public Feeding of Zoo Animals", Wilson (1976) stated that whether public feeding was beneficial or detrimental to the public, the staff and the animals was a matter of individual interpretation. The survey also gave pros and cons regarding the practice of public feeding. Of 54 zoos responding to the survey, 31 stated they did allow public feeding. In answer to the question "should public feeding be allowed?", only 25 responded "yes", indicating some were allowing the practice of public feeding contrary to the attitudes of the survey respondents. Whatever the practice of the zoo, the potential hazard to the animals' health cannot be overlooked; whether from eating the wrong food, non-food items or from becoming obese. It has been said that a well-fed animal is less susceptible to trash foods, and perhaps so. But, much depends on the species of animal being fed. Keepers should know of the ramifications of the public feeding of zoo animals, the policy of the zoo he or she is working in, and act accordingly when problems occur.

The next issue of AKF will contain Part IV, concluding the section on Nutrition and including a section on Diseases.

"Harmony in Nature" a science lesson for grades 4-6 has been produced by the Society for the Preservation of Birds of Prey, Box 891, Pacific Palisades, CA 90272. Slides and narration are free for a one week loan to members, teachers, or youth group leaders.

WAR ON WILDLIFE

by
Robert Berghaier
Philadelphia Zoo

In 1977, Hammond Innes' book *The Big Footprints* was published. This novel is about the aftermath of war in East Africa sometime in the future. This fictional conflict involves the nations of Kenya, Uganda and Tanzania in a war of East African unification. The end result of the fighting is the complete destruction of the area's famous wildlife sanctuaries. The Serengeti's vast herds are ruthlessly machine-gunned by the combatants. The Ngorongoro crater is turned into a cattle ranch. Mount Kenya, The Aberdare and the Samburu reserves become farmlands. This fictitious account is, to say the least, depressing reading for anyone interested in wildlife conservation. Certainly the plot is not so unbelievable if one considers recent incidents in East Africa.

Toward the end of 1978, Idi Amin's troops invaded Tanzania, starting a war which lasted until May, 1979. Amin was finally deposed and his reign of terror ended. Now it was the wildlife of Uganda which would suffer.

The first disaster took place at Kabalega Falls National Park (one of three Ugandan parks). Amin's troops, cut off from the rest of Uganda, destroyed thousands of animals for meat, skins and ivory. A news correspondent reported that during his three day stay at the park he saw only one giraffe, one buffalo and several small groups of antelopes. The pre-war population of the park was 50,000 head of game.

A second disaster was soon to follow. Early in August, American biologist Karl Van Orsdol reported the destruction of one third of the wildlife in Rwenzori National Park by Tanzanian troops occupying the area. Van Orsdol was studying the park's lions for a doctoral dissertation, but so many were killed it became impossible for him to continue. The chief warden of the park protested the massacre of wild life. The Tanzanian troops were ordered back to their barracks, but they have so far refused. The warden feels the soldiers' refusal was due to Government instability.

With Kabalega Falls already destroyed, Rwenzori's destruction means the death of a tourist industry which had been lucrative for Uganda before Amin's reign. Innes' book has partially come true. The results of war in East Africa has devastated two of the world's unparalleled wildlife sanctuaries.

Similar incidents occurred during the post independence era of the Congo. Many parks were caught in the fighting. At one park, twenty-three game rangers were killed trying to protect its' wildlife. In the Sudan, the Northern White Rhino population was destroyed during a civil war in the sixties. Rebel troops traded rhino horn and ivory for weapons. The story is the same in Angola, Somalia and other areas in Africa where fighting has taken place.

Some would say that such actions are typical of underdeveloped countries cultures which do not value animal life. Few are aware of the examples of "Western Civilization" in Africa. During the 1941 British drive on Italian-held Abyssinia, British and South African troops blazed away from their vehicles slaughtering thousands of animals and leaving the

War on Wildlife, continued

carcasses to rot. Some believe the populations of game in such an arid area have never fully recovered. During World War I, wildlife was severely depleted by German and British troops in what is now Eastern Tanzania.

Unfortunately, Africa's wildlife is not alone. The last wild herds of European Bison were destroyed in Poland by fighting during World War I. The much admired Israeli Army violated their country's game laws by decimating gazelle herds in the Negev desert while on maneuvers. The United States has its own recent examples during the Indochina War. Elephants, wild or domestic, were considered military targets and were napalmed on several occasions.

I have heard some first-hand accounts of the effects of the Vietnamese War animals. While working in the Philadelphia Zoo's lion house, I happened to have an interesting conversation with a Vietnam Veteran. I had mentioned to him that one of the reasons the Siberian Tiger is considered endangered is because its prime habitat, the Amur River Valley, is an area of heavy military activity between the Chinese and Russian armies. I remarked that men with guns tend to use them. He then told me that his unit killed every monkey or ape they came across, because they were told that these animals would attack man. Another veteran related how he saw water buffalo used as targets to test grenade launchers.

War and instability are great threats to the survival of many endangered species, especially large mammals. In an area of military conflict, with a breakdown in Central Government, or with groups of bored soldiers, wildlife will lose, regardless of who is tending the triggers. This seems to occur no matter how strong a nation's wildlife laws are or how well run a park system is. Uganda was at one time a leader in third world conservation.

The next wildlife tragedy may well take place in Iran. Under the Shah, Iran had strong game laws and a model National Parks system protecting the endangered Onager, Asian Cheetah and Persian Fallow Deer. I have yet to hear how they have survived the change in power.

It seems that human nature cannot, or will not, change. Conflict always seems to be taking place somewhere in the world. So, the wildlife of the world must be placed alongside women, children, the elderly and other innocent victims of war.

REFERENCES

- The Tree Where Man was Born*, Peter Matthiessen
The Big Footprints, Hammond Innes
Philadelphia Inquirer, Articles from Associated Press, March and August 1979.

The National Wildlife Federation has opened two "natural resource" clinics in Colorado and Oregon to train future lawyers and wildlife professionals in ways to solve wildlife and environmental problems.

The Colorado clinic is headquartered at the University of Colorado School of Law in Boulder and the Oregon clinic is headquartered at the Oregon School of Law in Eugene.

=====

The skull of an adult gray wolf *Canis lupus* was identified in Wisconsin--the first confirmed specimen in 20 years.

Great Ape *Andemonium*



FREDRIKA AND MACHO
Lowland Gorilla
Gorilla g. gorilla

by
Helen Bathé, Oklahoma City Zoo

Fredrika is a five-year-old Lowland Gorilla. She is sitting on the upper level of the exercise logs. This is situated in the outside viewing area located at the back of the gorilla building. Fredrika beats her chest and watches the falling leaves. She moves down the side of the structure and gathers some of the leaves and moves back to where she was sitting. Fredrika has also pulled some grass and sits there consuming the leaves and the grass. Presently, she climbs down and moves back into the building.

Fredrika is the first gorilla to be born in the Oklahoma City Zoo. Moemba and Kathryn are her parents. She spent the first sixteen months of her life with her mother. During this period, Moemba and Fern and Boma had sight-contact with her. The introduction of the adult gorillas was complete by the time Fredrika was eighteen months old.

The socialization of the group was so complete that people frequently were uncertain as to who the mother of the tiny ape was. It appeared that they all shared in the activities of the day--play being the most prevalent. In play, the gorilla seeks an outlet for its energy and for pent-up excitement. In the afternoon, the females could be seen resting and the four-hundred pound male would sit at one side watching the tiny black figure as she ran, jumped, climbed and beat her chest. Moemba was often seen moving about the cages with Fredrika sitting on his back.

Kathryn and Fredrika were moved to a larger gorilla building with outside viewing area in December of 1978. Moemba was moved in May and occupies the right side of the cage. At the present time, he is separated from the group but has a sight-window located at the upper front of the tunnel-top which runs along the wall. Also, there is an outside location, a tunnel covered with wire, where the group may watch each other.

Fredrika's life changed on the morning of the 14th of February. Kathryn gave birth to her second daughter. That morning, Fredrika was seen to engage in a somewhat dubious but inquisitive behavior. She sat next to her mother and watched the baby. Then she would run into the opposite cage and shout. She did this several times. She was constantly near her mother and the baby. When the baby nursed, Fredrika was seen holding her finger between the mouth and the nipple and then she would lick her finger. She watched each detail in the care of the infant. Many times, her face was only inches away from the baby as Kathy groomed the baby. Kathy was frequently seen with the baby in one hand and her arm around Fredrika's shoulder and stroking and grooming Fredrika's head and arms.

When Macho, (named for the Mountain Gorilla studied by Dian Fossey and written about in the National Geographic publication) was three and four months old, Fredrika was observed carrying the baby around, some-

Fredrika and Macho, continued

times up-side-down and sometimes right-side-up, but with a great deal of cuddling and play-biting from the older sister. Macho would be seen frequently clutching the foot of Fredrika who was trying to climb. She usually sat down. This was of short duration as Kathy was usually seen to move over and pick up the baby. Macho is now eight-months old and she is held and carried around infrequently by Fredrika. A recent sixty-hour study revealed that she was held by Fredrika a total of one hundred twenty minutes. This included time outside where Kathy was not present. The remaining time is spent with Fredrika trying to hold the baby. She sits as close as physically possible--she watches her, touches her, licks and play-bites her, grooms her and tries to hold her. Kathy gently rebuffs her. Fredrika has been seen trying to get Macho to nurse.

The potential for Fredrika being able to raise her future offspring appears to be excellent. However, she is now five years old and is often seen in the following behaviors: turning somersaults, jumping up and down on the tunnel-top and hitting the ceiling with her hands, running up and down on the tunnel-top as well as the floor as she closes her eyes and while shaking her head and showing teeth. Some primate researchers speculate that young gorillas are fantasizing playmates. They have been observed by George Shaller and Dian Fossey (as well as by researchers in captive settings) to close their eyes and bound blindly around chuckling. This may have evolved as a form of play behavior because youngsters, such as Fredrika, may not often have agemates available for playful interaction.*

Recently, Kathryn and Fredrika were sitting on the tunnel-top some few feet apart and were watching Macho who was crawling over and around them. Suddenly, the infant seemed to lose her balance. Both females jumped forward and grabbed the baby. Fredrika continued to hold Macho as Kathy placed her arms around the baby. She then released her hold. Fredrika continued to watch as her mother groomed the small gorilla.

*Ann Southcombe, "Inside the Mind of Michael", *Gorilla, Journal of the Gorilla Foundation*, December, 1978; Volume 2, Number 1. ↗

NEW BOOK GIVES INSIGHT ON COPING WITH OIL AND CHEMICAL SPILLS

The Proceedings of the 1979 U.S. Fish and Wildlife Service Pollution Response Workshop highlights the latest scientific research about the biological and physical impacts of oil and hazardous substances and examines state-of-the-art technology for pollution containment and cleanup. The 218 page Proceedings is a compilation of papers presented by pollution response experts at a training session for Fish and Wildlife Service employees. The Service provides technical assistance during pollution incidents that threaten fish and wildlife or their habitats.

The book is available for \$5.50 from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. (stock number 024-010-00531-9).

A LETTER TO THE EDITOR-IN-CHIEF

I look forward to reading the new issues of AKF as there is always something informative, interesting or inspiring in it (and often all of the above). The October 1979 issue also included something that I found disturbing and discouraging. I am referring to the "Elephant Training and Management" interview with Steve Clarke by Mike Coker.

The particular question and answer that I take exception to is that about women elephant keepers. First, let's look at the question. It reads "A lot of zoos have men and women working elephants. Have you seen some good women elephant keepers? We've had some good ones and some not so effective here." I contend this is a sexist question. If the issue of race instead of sex were substituted in the question like this "A lot of zoos have blacks and whites working elephants. Have you seen some good black elephant keepers? We've had some good ones and some not so effective here."--I'm sure many readers would agree it was a racist question. It implies there is something particular about blacks that may not qualify them for the job.

The question as it was asked implies that there is something particular about women that may not qualify them for the job. It also asks for some exceptions: "Have you seen some good women elephant keepers?".

The answer is much less subtle in its sexism. Halfway through his answer Mr. Clarke admits he has "not observed that many women elephant keepers, but he has already made the authoritative statement that "a lot of women really want to do it (elephant handling), are really enthusiastic, but they seem to baby them (the elephants) so much and not exert (assert) their authority when it is needed."* Which does Mr. Clarke know: "not that many" or "a lot of"? Is his statement about the greater number of women elephant keepers based on fact or personal observation or is it a convenient stereotypical judgement that's been made: In short, does Mr. Clarke's answer reflect good judgement? or pre-judgement (prejudice)?

The last part of the answer states that "in Ft. Worth, we have had a lot of men who weren't very effective either." I wonder what some of the common problems of the ineffective male elephant handlers might be? I wonder if maybe they do "not exert (assert) their authority when it is needed."

By the way, is "baby"ing an elephant anything like "taking time with the elephant" "and showing them attention", something Mr. Clarke stated as necessary in one of his other answers? I suspect it is very much the same thing, just called something different when women do it.

Ellen Leach
Elephant Keeper
Cleveland Metroparks Zoo

*underlining and parenthesis from letter writer.

Editor's Reply:

The question was intended to compare personalities and techniques employed by elephant keepers regardless of sex or color. The article is intended as an insight to elephant management techniques from the standpoint of two zoos. Elephant keepers are talented people; gender is not an issue in the management of elephants.

Mike Coker

Alternatives...Education and P.R.

...a brief look at what some other zoos are doing in this field.

PHILADELPHIA ZOO HONORS SAINT FRANCIS OF ASSISI PATRON SAINT OF ANIMALS

A priest of the Episcopal church conducted a simple ceremony to honor St. Francis of Assisi. He blessed the animals at different areas in the zoo and in the zoo's infirmary.

WHALES SING TO VISITORS AT NEW YORK AQUARIUM

A hydrophone is in the tank of two white whales to amplify the sounds of these whales for visitors. Whales have a variety of sounds which they use for echo-location, food finding, and communication.

INDIANAPOLIS ZOO PUBLISHES NEWSLETTER FOR CHILDREN

The *Giraffe Gazette*, a monthly newsletter for children, is published by the education department of the Indianapolis Zoo. It contains animal news--zoo animals and native species, nature notes and fun activities. The \$5.00 subscription notice could be used as a "stocking stuffer" at Christmas.

"SUNDAY AFTERNOONS AT THE NATIONAL ZOO"

The Education Office of the National zoo has organized events for families on Sunday afternoons. Films, stories, live animals and question and answer sessions with zoo keepers will inform and entertain families from November through March.

THERAPY RETRAINS WOUNDED HAWK TO ROLE AS AMBASSADOR

The Montgomery Zoo *Zebra* carried a feature article about a hawk that was brought to the zoo after being wounded by an automobile. Because the severe head injuries included brain damage, it took extensive retraining to teach the basic skills such as feeding and moving on and off his perch. His commanding air and gentle nature earned him the name of "General" and he was further trained to the fist and is now used as part of the zoo's out-reach program on "Birds of Prey".

LATINO DAY CELEBRATES THE INTERNATIONAL YEAR OF THE CHILD

The National Zoo, the Council of Hispanic Agencies, and the Commission for Latino Community Development sponsored "Latino Day at the National Zoo" to celebrate the International Year of the Child. The event featured the Zoo film with a Spanish translation, Latino music and animal demonstrations with Spanish speaking guides.

NEW BALTIMORE ZOO EMPLOYEE SPECIALIZES IN PEST CONTROL

A long-term, ecologically safe, mice control agent has been hired--a cat.

chapter

Santa Fe Chapter announces
its new officers:

President....Carleton Bailie
Vice Pres....Diana Dearing
Sec/Treas....Marlene Miller
Program Director...
Brack Barker
Project Director...
Alice Miser

Santa Fe Chapter reports
good success with its third
annual "Dog Wash" money
raising project. They even
were on TV!

news

ANIMAL KEEPERS DIRECTORY AVAILABLE SOON

The Animal Keepers Directory will be available from the National Headquarters, National Zoological Park, Washington, D.C. 20008. The cost is \$3.00, with checks made payable to American Association of Zoo Keepers. The Directories will be mailed free to Professional members.

KEEPER ACCOMODATION LIST

By now, you have no doubt read about the Keeper Accomodation List in the last two month's issues of *Animal Keepers' Forum*.

We have received lots of positive feedback from keepers who are enthusiastic about K.A.L. and we hope your chapter will want to participate.

If you would like to be a part of K.A.L. and have not already sent in a contact name and address, how about designating someone in your chapter? Send us your contact's name and the address (preferably your zoo). You keep your own list of local people willing to accomodate a fellow AAZK traveler. That way you can keep on top of changes in address, amount of available room, etc., and match up travelers and hosts according to space, keeper area, interest, etc. Obviously someone with 6 cats would not want to accomodate someone traveling with 3 dogs!

Send us your contact now--we would like to get the list functioning by the New Year.

Chris Parker

Send your contact name and zoo address to:

Keeper Accomodation List K.A.L.
c/o M.T.Z. Chapter AAZK
Metropolitan Toronto Zoo
P.O. Box 280, West Hill
Ontario, Canada M1E 4R5

ZOO RESEARCH PROJECT AIDS ENDANGERED PRIMATES

San Diego Zoo

A major research project to help save endangered monkeys, apes, and other primates by studying their reproductive physiology and behavior is underway at the San Diego Zoo.

Called the "Vanishing Species Reproduction Center," the off-exhibit housing and observation area is "a new departure for zoos and a fairly novel adventure," according to Dr. Kurt Benirschke, director of research and animal care at the Zoo.

The project will concentrate on primate species which are put in danger of extinction by man's clearing of their forest habitats and by exploitation from hunters and traders.

"This marks the beginning of a new era in our search for self-sufficiency," Benirschke explained. "Our intent is for the San Diego Zoo to become totally self-sufficient in our entire animal population, starting with the primates. Everything we display will be bred in captivity."

Dr. Bill Lasley, the San Diego Zoo endocrinologist involved in the endangered primates project, said the San Diego captive breeding studies may eventually benefit all zoos, which in the past have been criticized for taking endangered animals from the wild for display purposes.

"We're hoping to breed successfully an excess of lemurs or langurs, for example, and be able to supply other zoos," Lasley said. "Our hope is no one else will have to go to the wild for primate specimens."

In 1978, the Zoo took seven monkeys from the wild, while 33 were born and survived at the Zoo and a dozen others in the primate collection were pregnant at year's end, according to Mark Bogart, zoologist working on the vanishing species project. Ten years ago, those numbers would have been reversed, Bogart added, with zoos across the nation taking the majority of their new specimens from the animals' wild environments.

Spider monkeys and colobus monkeys were recently added to the first unit of the reproductive center -- called the "primate pad" by Zoo staff-- which will hold up to 150 animals of 8 to 10 different primate species when completed. Douc langurs, three types of lemurs, tamarins, purple-faced langurs and silvered leaf monkeys are waiting to be transferred to the primate pad in the near future.

Isolated from public view and from traffic noise in a canyon behind the Zoo hospital, the primate breeding groups are housed in an open-air structure consisting of six large cages, 19 smaller ones and an office area for food preparation and laboratory testing. The enclosures are built to allow combinations of cages for large groups or separation of small groups and breeding pairs. Some of the cages are fitted with "nest boxes," required by lemurs and other small primates which prefer privacy when raising their young.

The off-exhibit breeding center will give researchers a chance to monitor and treat individual animals, employing techniques used before only in human medicine. Urine analysis, for instance, will be conducted for each animal, producing hormone charts which tell when animals are

Zoo Research Project Aids Endangered Primates, *continued*

pregnant, which ones are ovulating and how the fetus is doing, among other things. Chromosome studies are also planned.

"We also need to study the behavioral aspects of monkey reproduction," Bogart explained. "The social group structures, privacy needs and space requirements will be observed along with our research into reproductive cycles, diseases and other requirements specific to the particular primate species."

Some species, such as the mandrill, produce babies every year on exhibit with little or no human intervention. But other primates cited by Bogart encounter problems such as socially incompatible individuals, non-ovulating females, genetic abnormalities, lack of interest in breeding or failure to care for the young once they are born.

"We plan to breed every female animal every year," Dr Lasley added. "After initial studies we will get into timed matings and possibly artificial insemination."

A timed mating is a method for breeding female monkeys which are socially ostracized from the group and would normally be passed over by the breeding male. By careful testing of hormone levels, Zoo researchers can tell the precise time the rejected female will ovulate and isolate her with a breeding male for a few hours during that short time span.

The San Diego Zoo has conducted successful timed matings with primates in the past. Artificial insemination, however, is as unknown among exotic wild species kept in zoos as it is common among domestic farm animals such as horses, hogs and cattle. Large scale success at artificial insemination of zoo animals will require extensive preparatory studies, Lasley said.

The first unit of the Vanishing Species Reproduction Center was constructed at a cost of \$200,000. An anonymous corporate grant provided \$50,000 of the money and the rest was made up of contributions from Zoological Society of San Diego members.

"It's very rare for any zoo to sink so much money into a project that won't even be open to public viewing," commented Sheldon Campbell, secretary of the Zoological Society board of trustees. "But it shows our commitment to captive breeding as a means of reducing pressure on wild, endangered animal populations."

Aside from saving the endangered primate species still in the wild, the new primate breeding center may eventually show some financial benefits to the San Diego Zoo and to other zoos. The San Diego Zoo will be able to exchange extra monkeys and apes for other varieties of animals from other zoos. And, as captive reproduction makes more and more of the endangered animals available, the high prices asked for rare species will go down, according to Campbell. ↩

New regulations have been adopted by the U.S. Department of Agriculture to simplify license renewal procedures for dealers, exhibitors and others licensed under the Animal Welfare Act. The complete text of the new rules will be published in the Federal Register.

We are deeply indebted to the AAZPA Newsletter for allowing us to reprint portions of this section from their "Positions Available" listings. This is a monthly service to us, for you.

ASSISTANT CURATOR/MAMMALS... requires either a Bachelor's Degree in Zoology, or a closely related field, and two years of supervisory experience in a recognized zoological park or five years experience in a zoological park, three of which must be in a supervisory capacity. Prefer in-depth experience with carnivores and hoofstock plus organizational skills. Responsible for assisting the Curator of Mammals in management and exhibition of mammal collection, administrative duties and research. Contact: Dale Stastny, Personnel Director, Audubon Park and Zoological Garden
P.O. Box 4327, New Orleans, LA 70178

OPPORTUNITY

SKOONK

SUPERVISOR/REPTILES & AMPHIBIANS... supervisory and technical work in operation of the Reptile/Amphibian Department. Incumbent assumes responsibility for the facilities and daily care of the collection. Incumbent supervises three zoo keepers and one assistant supervisor. B.S. degree and three years' experience required. Salary: \$12,120 - \$15,466. For more information and instructions on how to apply, contact: Dudley Brown, Assistant Director, Fort Worth Zoological Park, 2727 Zoological Park Drive, Fort Worth, TX 76110

CURATOR/MAMMALS... require extensive experience in the management of captive mammals and their exhibition. Should possess curatorial experience with proven supervisory ability. Design and implement captive propagation programs, development of new exhibits in addition to routine curatorial responsibilities. Prefer in-depth experience with large mammals (hoofstock), apes and carnivores. Degree in Animal Sciences required. Salary: \$1,308 - \$1,684 monthly. Civil Service, excellent benefits. Send resume to: E. Hagler Director, Kansas City Zoological Gardens, Swope Park, Kansas City, MO 64132.

CURATOR/MAMMALS... seeking an individual to manage a balanced mammal collection. Individual expected to design and implement captive-breeding programs, assist in the development of new exhibits, plus attend to usual curatorial responsibilities. Applicant should possess curatorial experience with a proven supervisory ability. Detailed job description is available on request. Send resume with three references to: W.B. Amand, V.M.D., Director, Philadelphia Zoological Garden, 34th and Girard Avenue, Philadelphia, PA 19104. AN EQUAL OPPORTUNITY EMPLOYER.

ASSOCIATE SUPERINTENDENT/ANIMAL SERVICES... seeking mature individual to assist the Superintendent/Animal Services Department. Applicant should have minimum of two year's college training in appropriate field of study (or equivalent experiences), as well as three to five year's animal keeping experience including no less than two years in a supervisory position. Experience with large mammals preferred. Send resume with references to: W.B. Amand, V.M.D., Director, Philadelphia Zoological Garden, 34th & Girard Avenue, Philadelphia, PA 19104. AN EQUAL OPPORTUNITY EMPLOYER.

ELEPHANT HANDLER AND TRAINER... duties include operation of elephant rides, supervision of riding track employees and daily care and training of elephants. Salary commensurate with experience, 4 weeks' vacation and hospitalization. Interested individuals should send resume stating salary requirements to: James B. White, Personnel Manager, New York Zoological Society, 185th Street & Southern Boulevard, Bronx, NY 10460. AN EQUAL OPPORTUNITY EMPLOYER, M/F

PACHYDERM KEEPER... to participate in husbandry program of Asiatic and African elephants, rhinoceros and hippopotamus and to assist trainer with an elephant program that includes public demonstrations. Elephant experience desirable. Salary: \$10,046 - \$11,794. Excellent fringe benefits. Submit resumes to Tom Foose, Curator of Pachyderms and Ungulates, Oklahoma City Zoo, 2101 N.E. 50th, Oklahoma City, OK 73111.

The new Baltimore Aquarium will have the following two positions available on 1 February 1980:

ASSISTANT CURATOR/EXHIBITS... supervisory position involving design and maintenance of exhibits and related graphics. Must have thorough exhibit knowledge including fiberglass and resin. Aquarium experience preferred.

ASSISTANT CURATOR/HUSBANDRY... supervisory position involving acquisition and display of marine and aquatic fish, birds, plants and mammals. Must have extensive knowledge and experience in exhibiting and maintaining aquarium animals and plants.

The salary for each of the two positions listed above is \$15,000 - \$19,000 annually. Send resumes to: John A. Dinga, Curator, Baltimore Aquarium, Inc., 10 South Street, Baltimore, MD 21202. (301) 752-7740. AN EQUAL OPPORTUNITY EMPLOYER.

ZOO KEEPER II... responsible for care and maintenance of bird collection, plus other duties as assigned. Applicant should have a minimum of two years' experience with background in aviculture from a recognized zoo. Experience with flamingos preferable. A high school education or equivalent is required. Starting salary: \$4.00/hr. Send resume to: Caldwell Zoo, Hayes Caldwell, Superintendent, P.O. Box 428, Tyler, TX 75710.

ZOO KEEPER I... assist in care and maintenance of mammal collection and other duties as assigned. Applicant should have a minimum of one year's experience in a recognized zoo and have general knowledge of mammal husbandry. A high school education or equivalent is required. Starting salary: \$3.50/hr. Send resume to: Caldwell Zoo, Hayes Caldwell, Superintendent, P.O. Box 428, Tyler, TX 75710.

PLANNING A MOVE?

Please send your change of address to

Elizabeth Glassco
Administrative Secretary
American Association of Zoo
Keepers
National Zoological Park
Washington, D.C. 20008



I DON'T CARE IF YOU HAVE WAITED
30 YEARS-- I WON'T BE TIED DOWN
TO A FAMILY

Submitted by:
Zoological Consortium, Inc.
Drawing by:
J. Trigg

INFORMATION FOR CONTRIBUTORS

Animal Keepers' Forum publishes original papers and news items of interest to the Animal Keeping profession. Non-members are welcome to submit articles.

Articles should be typed or hand-printed. All illustrations, graphs, and tables should be clearly marked, in final form, and should fit in a page size of no more than 6"x10" (15 cm. x 25½ cm.). Literature used should be cited in the text and in final bibliography. Avoid footnotes. Include scientific names.

Articles sent to *Animal Keepers' Forum* will be reviewed for publication. No commitment is made to the author, but an effort will be made to publish articles as soon as possible. Those longer than three pages will be separated into monthly installments at the discretion of the editorial staff. The editors reserve the right to edit material without consultation unless approval is requested in writing by the author. Materials submitted will not be returned unless accompanied by a stamped, self-addressed envelope.

Articles printed do not necessarily reflect the opinions of the *Animal Keepers' Forum* editorial staff or of the American Association of Zoo Keepers.

Telephoned contributions on late-breaking news or last minute insertions are acceptable. However, phone-in contributions of long articles will not be accepted. The phone number is 913 272-5821.

DEADLINE FOR EACH EDITION IS THE 20th OF THE PRECEDING MONTH.



MEMBERSHIP INFORMATION



Professional (full-time personnel) \$20.00 annually
Affiliate (part-time keepers, managerial personnel) . . \$15.00 annually
Associate (interested individuals) \$10.00 annually
Contributing/Institutional \$50.00 annually

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AAZK HEADQUARTERS
NATIONAL ZOOLOGICAL PARK
WASHINGTON, D.C. 20008

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**American Association
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Animal Keepers' Forum



Dedicated to Professional Animal Care

FEBRUARY 1980

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Animal Keepers' Forum is a monthly journal published by the American Association of Zoo Keepers, National Zoological Park, Washington, D.C., 20008, for its members. Send all address changes, undeliverable copies and other membership inquiries to AAZK Headquarters, Washington, D.C.

Second class postage is paid at Topeka, Kansas. Return postage is guaranteed.

Items in the publication may be reprinted. Credit to this publication is requested. Order reprints from the Editor.

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NATIONAL ZOOLOGICAL PARK, WASHINGTON, D.C. 20008
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Elizabeth Pine sent in the cover illustration with the question, "Why not some marine life for a change?" AKF appreciates the opportunity to present a variety of animals, the different situations encountered in the work-day of a zoo keeper, and the work and talents of the artists and the zoos they represent. Elizabeth is a pachyderm keeper at the Lafayette Zoological Park in Norfolk, Virginia.

SCOOPS and SCUTTLEBUTT

JIM "SNAKE" GERHOLDT RECEIVES MZG KEEPER EXCELLENCE AWARD

The Minnesota Zoological Garden presented the Keeper Excellence Award for 1979 to Jim "Snake" Gerholdt. He works in the Tropic exhibit and the herpetology holding area of Internal Services. The award is designed to recognize individual keepers who have performed their duties in an exemplary and consistent manner. Congratulations, Jim!

PRIMATE KEEPER RESIGNS POSITION Oklahoma City Zoo

Frederick Dittmar, Primate Supervisor at the Oklahoma City Zoo, resigned December 1979. Fred will be opening his own Photographic Gallery and Custom Frame Shop in Eureka Springs, Arkansas.

This will be quite a change as Fred has been in the "monkey business" for 17 years. While at Oklahoma City Zoo, his major interest has been to establish compatible breeding groups of monkeys and great apes. Special emphasis has been placed on female orangutans and gorillas raising their own infants.

Fellow AAZK'ers passing through Eureka Springs should look Fred up and say hello. He will always welcome the chance to talk about animals and I am sure his shop will be filled with graphic nature pictures.

We all wish Fred well in his new profession.

BALTIMORE ZOO RECEIVES GOLD PROPAGATORS AWARD FOR BLACK-FOOTED PENGUINS

The Baltimore Zoo received the prestigious Gold Propagators Award from the AAZPA for their highly successful Black-footed Penguin colony. The award is given to any institution which breeds any species of bird, reptile or mammal from 50 separate births or clutches. The colony presently contains 53 birds - nearly 1/2 the total in captivity in the US.

ROYAL MELBOURNE ZOO OPENS ARBOREAL PRIMATE EXHIBIT

The Arboreal Primate Exhibit in The Royal Melbourne Zoological Gardens, Australia, was officially opened in December 1979. It is designed for primates which inhabit forest canopies. The complex consists of seven enclosures strategically located along the path of an elevated, covered walkway. The animals in their treetop surroundings are viewed through large angled glass windows. Sections of the walkway not faced with glass are open except for a low handrail.

Gibbon apes, Squirrel monkeys, Spider monkeys, Silvered leaf monkeys, Ruffed lemurs, Ring-tailed lemurs and Cotton-top marmosets are exhibited.

BIRTHS HATCHINGS

ASIATIC WATER BUFFALO CALF BORN IN ORANA PARK NEW ZEALAND *Paul Garland*

Among the first of our spring births is a delightful female water buffalo calf. This is our second birth of this species at Orana Park, but is the first female. The birth took place in the early morning, and from the last recorded matings, we calculate the gestation period as being 329 days.

This is a very important birth for Orana Park (bringing our group to 2.2) as we have the only water buffalo in New Zealand, and with the import ban on ruminants from Australia at present in force, we may be unable to get further animals.

The new calf has been called Koanga, which is Maori for "Spring". Both mother and daughter are doing well.

SIXTH REEVE'S MUNTJAC BIRTH IN 1979 FOR CONSERVATION/RESEARCH CENTER FRONT ROYAL

Kevin Conway

CRC's sixth muntjac *Muntiacus reevesi* birth in 1979 occurred on December 23. The male fawn brings the sex ratio for this year's births to 3.3. The December birth was the second this year for this female. The staff of CRC is pleased that 1979 fawn mortality is zero percent.

KUSIMANSE BIRTHS AT METRO TORONTO ZOO *Vanessa Phelan*

On November 15, 1979, 0.0.2 infant kusimanses came out of their den and placed themselves on exhibit with 2.1 adults for the first time. They were born October 22, 1979.

ROEDING PARK ZOO REPORTS BIRTHS AND AN EXPECTED BIRTH...*Sally J. Smith*

A second Lowland Gorilla birth is expected soon at Roeding Park Zoo in Fresno, California. "Alvila", a female on breeding loan from San Diego Wild Animal Park, and "Fred", a silverback male living at our zoo since infancy, produced a female baby last March after being together little more than a year. The baby, "Alberta" was removed for hand-rearing at 6 days of age when her health deteriorated. When her condition stabilized, she was taken to San Diego to comply with the terms of the breeding loan. Alberta is thriving under their care.

The current pregnancy has been suspected for several months. The pregnancy was confirmed through the use of a Human Early Pregnancy Test Kit, Brand name "Answer" manufactured by Diagnostic Testing, Inc., Although several breedings were recorded, her girth leads us to believe she conceived on the first or second breeding and may give birth in late January or February.

On January 10, 1980, sixteen Jackson's Chameleons were born in an environmental chamber in our new Reptile House. The young are thriving on a diet of baby crickets and beetles in an environment especially created for them.

Other births this month included a spider monkey and Hamadryas baboon.

CHRISTMAS CAME EARLY AT WILD ANIMAL SAFARI.Rick Heithaus

Fourteen animals representing seven species were born in the seven weeks preceding Christmas at Wild Animal Safari, Kings Mills, Ohio.

The first of the new arrivals came as a surprise and was the first offspring for a pair of white-handed gibbons. The baby female was born on the last day of October. She is named Wizzard and is being raised by her parents without any problems.

Eleven days later a male spider monkey was born. Unfortunately, the baby died fifteen days later of head injuries he sustained from other members of the troop.

On November 29, an addix gave birth to a healthy female and at about the same time, a black-footed penguin was hatching--the seventh hatched over the past year.

December 5th saw the birth of twin brown-headed tamarins, the third set of twins born to the same female in a year's time.

Six days later came the birth of Wilhelm, a male white rhino. Wilhelm weighted approximately 100 pounds (45 kg.) and both mother and son are doing fine.

On December 14, Brenda, a lioness, gave birth to five cubs, one of which is pure white. The event was witnessed by two of the keepers. It was the sixteenth offspring for the eight-year-old mother and the 88th lion born at W.A.S. since 1975. The cubs were left with the mother and at this time all five of them are healthy and are taking turns nursing. The white cub is expected to turn to the normal brown color at six weeks of age as our previous white cub did.

The last of the births took place on Christmas Day as Frog gave birth to two lion cubs named Noel and Messiah for the occasion. They are cubs number 89 and 90 with three more litters expected in the near future.

FIRST SUCCESSFUL BEAR BIRTHS AT ATLANTA ZOO.....Alan Sharples

On December 25, 1979, two female Himalyan Black Bear cubs were born at the Atlanta Zoo. They represent the first successful bear births since the Atlanta Zoo was established in 1889. The cubs were discovered at about 10 a.m. by Bear Keeper Constance Noble. They were lying on the floor of the inside den and were immediately removed. Apparently the mother had begun to eat one of them as the feet of one cub were mutilated. This cub died a few hours later. The surviving cub weighed approximately 8.5 oz.(240 gr.) at one day of age and is being given Esbilac every 2-3 hours . A more comprehensive report will follow as the cub progresses.

If anyone has any advice or suggestions on hand-rearing a Himalyan Black Bear cub, please send them to:

Alan Sharples
c/o Atlanta Zoological Park
800 Cherokee Avenue S.E.
Atlanta, GA. 30315

MANDRILL BIRTHS IN M.T.Z'S AFRICA PAVILIONVanessa Phelan

Two female infants were born within our group of mandrills on November 11, 1979. These are second babies for both the mothers. There have been 3 births this year, making a total of 11 animals on exhibit (1.5 adults, 1.1 juveniles and 1.2 infants.) The male was born to "Tanya" in a holding area in August 1979 and was fathered by "Mark". Tanya and her baby were re-introduced successfully to the group some weeks after the birth.

The two females were fathered by "Willy", our exhibit male. All mothers and babies are doing well.

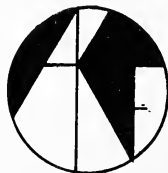
HAMMERKOPS HATCH AT FRANKLIN PARK ZOO

The Franklin Park Zoo announces the successful hatching of five Hammerkops *Scopus umbretta*, probably the first in the U.S. The Hammerkops were relocated from the Walter D. Stone Memorial Zoo in Stoneham to the Franklin Park Zoo in Boston in the fall of 1977. One chick was found in the nest in March 1979 and fledged in May; and four chicks fledged in September.



EDITORIAL

by
Ron Kaufman, Editor-in-Chief



We're looking forward to another banner year at AKF, and we hope you'll join us! *Animal Keepers' Forum* is the first surviving monthly magazine written almost entirely by keepers. AKF is now entering its fifth year of publication and we'll try hard to maintain the quality of content and the style you've come to know.

Keepers and other zoo professionals receive AKF just by joining AAZK. As always, we need the support of more members! If you are a member of AAZK, how about passing around your copy of AKF to other keepers? It's a good way to spread some news and to get more members in AAZK. If you don't have a local AAZK chapter at your zoo, think about starting one up. Other zoo keepers in your area might be interested, too. Becoming an active member of AAZK and a local chapter is one of the best ways we know for animal keepers to help themselves and help their animals.

We thought this might be a good time to explain the dating system used by AKF in identifying its publication date. We receive news items and articles for publication until the 20th of the month. When accepted, they will appear in the issue bearing the name of the following month. For instance, articles to appear in the May issue should be in by the 20th of April. This allows us time to construct the magazine and have it printed. Members will receive the May issue around the middle of May. We do it this way to help preserve the timely nature of many of the news items and some of the articles.

ZOOS OF INDIA AND NEPAL

by
Tom Goldsberry
San Diego, California

In a world walking a tightrope between creeping meatballism and maddening mediocrity, India indeed stands out as a singular country. Its 606,000,000 people live, work, play, and die---quite frequently---on a piece of real estate the size of Europe while its population increases by nearly a million every four weeks. Its borders stretch 2100 miles from north to south and almost 2000 miles east to west. Within this geographical kaleidoscope fourteen separate languages and 544 dialects are spoken.

Almost 100 years ago Mark Twain crowed, "There is only one India". Considering the complexities of this human amalgam; its abject poverty, burgeoning population, and frightening infant mortality rate, one can only add, "Thank God"! Although India is not the only Asian country beset with these monumental social crises, its difficulties are compounded by sheer logistics and the facts of life. The permanent beggar near the Bombay railroad station who waves a grotesquely swollen leg like a mediaeval oriflamme at passersby is more concerned with his elephantiasis than elephants. In the 600,000 mud-hut villages, the farmer worries about monsoons, not monkeys; leprosy, not llamas. Yet, in spite of these almost insurmountable problems, some of which will never be solved, and others like the supposedly outlawed caste system, can only be alleviated, India is slowly grasping the tenet of wildlife conservation.

Comparatively speaking, Indian zoos do not play a major part in conservation and wildlife preservation as do Western zoos. This is due to many reasons, most of them beyond the control of the local zoo staff and management. First of all, very little money is budgeted for animal acquisition; most zoo animals are wild-caught or donated by a wealthy family or politician who, in return expect, and get, special privileges regarding the animal. Second, surplus animal trading between zoos is almost non-existent. These two factors account for the third reason: a reduced gene pool, an absence of young, and subsequent attrition of the breeding group at that particular zoo.

This vicious circle has contributed significantly to the demise of the Bombay zoo. Once an integral part of the proud and colorful Victoria Gardens comprising forty-eight acres, it has now been reduced to eight mangy acres; a haven for night-time muggers and prostitutes. Money is only a small part of the problem here. A whopping forty per cent of all Indian income taxes is collected in Bombay State, the municipality responsible for the city of Bombay. In addition, Bombay claims fifteen per cent of all the factories in India and forty per cent of all of the textile plants, the largest single industry in the country. The tax base is there, but unfortunately so is the bureaucracy.

For the ornithologist Bombay offers birdwatching with a macabre twist. High above the city, in the exclusive Malabar Hills district lie the Towers of Silence. The Towers are maintained by the Parsee sect, an Aryan caste who embrace the Zoroastrian faith, the ancient religion of Syria and Persia. The Parsees neither bury nor cremate their dead; instead, the bodies are laid out in the sun within the compound to be eaten by the vultures. At almost any given hour hundreds of these scavengers can be seen sitting quietly on the walls, hunched over like Supreme Court Justices, patiently waiting for the next entree. Tenants

Zoos of India and Nepal, continued

in the surrounding high-rise buildings often complain of the birds who frequently fly over their apartments and drop chunks of human flesh on their balconies while they're having dinner.

It's a tiger of a different color at the Delhi Zoo.

In 1526, the first of the Moghul hordes exploded out of Central Asia onto the Indian scene and changed the course of its history for the next 300 years. One of the legacies they left behind was the fortress of Puruna Qila (Old Fort). Today, this imposing structure of dazzling red sandstone and multi-colored brick dwarfs the entrance to the Delhi Zoo. In the context of size and sheer massiveness the Puruna Qila is the perfect complement to the huge sprawling 240 acre zoo. And therein lies the problem; it is simply too big. Its immensity, widely scattered exhibits and sizzling 100 degree plus temperature turns a leisurely stroll into an expedition. The problem has been partly solved by the use of trolley buses that transport visitors around the zoo and deposit them at strategic points. About ten minutes is allowed for viewing, then the driver blows a whistle and everyone hops back on the bus and off you go to the next destination. Admittedly not the most desirable way to visit a zoo, but in view of the conditions described, one that you are secretly grateful for.

The Delhi Zoo is, of course, the home of the white tiger. The white tigers first came into prominence in 1951 when a white mutant Bengal tiger was captured by the Maharajah of Rewa in Northern India. Today, nearly thirty years later, only a handful of Western zoos have ever exhibited this fabled animal.

As my wife and I were waiting for Mr. Desai, the Director, to return from lunch, the enterprising eight-year-old son of the white tiger keeper and self-appointed guide offered--for two rupees apiece--to introduce us to his father and view the white tigers. Fortunately, the white tigers are only about 200 yards from the main gate and administration building, and is the first exhibit you see after entering the park. When we entered the service area the three adults and two one-year-old cubs were slowly and systematically demolishing a slab of buffalo meat apiece. Five pair of ice-blue eyes glanced up briefly then the animals continued eating. Unfortunately, the keeper refused to say much about the animals and no amount of coaxing could change his mind. Two weeks later we learned that two cubs had been born to twelve-year-old Homa and fifteen-year-old Hari, thus bringing the world white tiger population (as of May 6, 1979) to 3.32.2.

During our conversation with Mr. Desai, the former Texas A & M graduate had high praise for his animal keepers. Although there is no formal keeper training program, many of the keepers are second and third generation. "This", Mr. Desai explains, "instills pride as well as knowledge." The zoo's collection of over 1000 animals is maintained by a keeper staff of two rangers, two head keepers, twenty-four keepers, forty-one assistant keepers, and three mahouts. Beginning keepers are paid daily for three to four years before being put on a regular paying basis. There are no women keepers.

The Delhi Zoo, like the whole of India, is learning to cope. Many of the wealthier Indians display an appalling apathy toward wildlife: while for the villagers and "street people", those millions whose only home is a corrugated shack, or simply the sidewalk, there is no time for animals.

Zoos of India and Nepal, continued

Time moves slowly in this part of the world but after 5,000 years Mother India is still rolling along and what will happen will happen. With this, we shook hands with Mr. Desai, wishing him "namastey" and good luck, and stepped outside once again into the blistering sun.

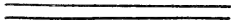
Tom Goldsberry, Coordinator for International Affairs, was privileged to visit India and Nepal in 1979. He shares some of his experiences in a four-part series. Next month, "The Calcutta Zoo".



ALASKA'S RICH VARIETY OF SEABIRDS
PROFILED IN NEW WILDLIFE PORTRAIT SERIES

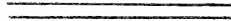
The aerial high-dives of fork-tailed storm petrels and laysan albatross far out to sea, the clownish antics of a group of brightly colored horned and tufted puffines, the frenzy of agitated colonies of noisy black-legged kittiwakes and Arctic terns have all been captured in the U.S. Fish and Wildlife Service's new series of wildlife portraits, "A Host of Seabirds - Alaska."

Each set of six scenes sells for \$5.00 and is suitable for framing. The scenes are 16 x 22, are printed on high-quality paper and mailed flat. The set is available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Specify "Wildlife Portrait Series no. 4" and stock number 024-010-00530-1.



ROEDING PARK ZOO RENOVATES FACILITIES Sally J. Smith

The Roeding Park Zoo, Fresno, California, is beginning several renovation projects in the near future. \$20,000 was donated to remodel the front entrance of the zoo in an African motif, complete with mounded landscaping, rockwork, sculptures, and African plants. Soon work will begin to remodel the Bengal tiger exhibit with earth, turf, pool and rockwork. Moating of the giraffe, eland, and Scimitar Oryx exhibits has just been completed with telephone poles set in the ground, and river rock at the base. The gardening staff has been increased to keep up with all the new landscaped areas. Five permanent zookeepers have been employed to replace the defunct CETA program and fill a vacancy. This brings the current zookeeper staff to 2 Zookeeper II and 9 Zookeeper I.



Russian scientists hope to create a live mammoth using the tissues from some of the pre-historic animals which have been frozen for centuries in the Soviet Far East. A preserved cell from a male mammoth and one from a modern-day female elephant would be mated in the laboratory and then implanted in the elephant, according to Viktor Mikhelson, a Leningrad scientist involved in the project. He said that the problems so far have been to find a satisfactory live mammoth cell to begin the process.

THE KEEPER'S ROLE IN ZOO ANIMAL HEALTH

by
Judie Steenberg

This is Part IV of a series. This article continues the theme of "Keeper, Know Thy Animals" and continues the discussion of Nutritional Requirements.

The use of vitamin and mineral supplements in the diets of zoo animals has been one of the important advances in zoo animal husbandry. Over the years some animals difficult or impossible to keep have become common in zoos and are even reproducing. Most commercial diets contain vitamins and minerals in proper rations. When feeding a natural diet, supplements can make up for poor quality feeds and hay deficient in one, or more, vitamins and/or minerals. A keeper should recognize poor quality hay, know of the need to supplement phosphorous-rich red meat and understand the need for thiamine supplement when feeding certain species of dead fish. Not only is it necessary to know when supplementation is needed but "how much" is required by a particular species must be known, too. An example of this is that marmosets require ten times more vitamin D than do squirrel monkeys. It must also be realized that hypervitaminosis of vitamin D can result in death. A keeper should not only follow instructions on the usage of vitamin and mineral supplements carefully, but also learn why they are needed and what problems can occur if not used properly in sufficient or limited amounts. The keeper should also be sure that the supplement reaches the animals it is intended for. Hand-feeding can be a useful technique to accomplish this with some animals. Supplemented food should be offered first while the animal is the hungriest. When a group of animals is being fed, such as hoofed-stock, supplements must be thoroughly mixed into the feed, rather than just sprinkled on top, to prevent one or two animals from eating all of it.

Trace mineral salt blocks should be available for free-choice usage for many animals, but the blocks should be kept out of the rain if possible to prevent them from eroding.

Feeding the right quantities of food according to the needs of individual animals means being careful not to over-feed as well as under-feed. Obese animals are not "healthy" animals. Careful observation (from a distance so as not to disturb the animal) will help to determine an animal's eating habits and to identify any problems.

In the event diets need modification (an increase or decrease in quantity) it is important that the actual amount being offered is known. With this in mind, keepers should not feed according to "a handful", "a pinch", or by "eyeballing" quantities, but should use weights and measurements.

How to prepare food according to individual needs and where to place it can vary; to some animals it doesn't make much difference, to others it may determine whether or not they eat properly. An example of food preparation is the animal who rejects pieces of orange with the rind left on, but accepts them readily if the rind is removed. A shy animal, even though very hungry, may refuse food unless it can feel secure while eating. Food placed in the hot sun or rain can soon become unacceptable to an animal. Another feeding technique a keeper should be aware of is the number of containers of food offered in reference to the number and social behavior of the animals in a unit. Serious confrontations can occur during competition for food or an

The Keeper's Role in Zoo Animal Health, *continued*

especially subordinate animal can be kept away from the food altogether. The right number of feeding containers, adequately spaced, might be a solution in such problems, or it may be necessary to separate animals during feeding time.

In summary, while a keeper seldom decides what diet an animal will be fed, he or she can make a difference in how the food is stored in the area, how it is prepared, how the feeding is done, how well an animal consumes its food and when and how a change in diet is made. The keeper should be the first person aware of the need to change a diet according to the season, a growing animal, etc. and promptly communicate this information to the person authorized to make diet changes. Changing diets gradually is best to avoid upsetting the animal's digestive system.

There are a dozen basic rules a keeper can use as guide-lines to animal nutrition:

1. Know what and how much to feed
 - under-fed animals are more susceptible to disease.
 - over-fed animals may have health problems due to obesity, problems in reproduction, or to the extreme such as founder.
2. Know proper size food should be offered in. "Usually" the smaller the animal the smaller the pieces of food should be. But, there is occupational value in varying the sizes and shapes of food, too.
3. Know the differences between forages (grass, hays/legumes) and feeds.
4. Feed at scheduled times and according to the animal's feeding patterns. Frequency of feeding must also be followed.
5. Do not feed spoiled foods.
6. Do not feed moldy or dusty, poor quality forage. Be on guard for a few bad bales even in a good quality stack.
7. Shake forage out, checking for thistle, cactus or foreign objects, before feeding hay.
8. If food is rejected, find out why! --too hot to eat, spoiled food, sick animal?
9. Make sure all animals in a group get their fair share of food, water, vitamin/mineral supplements, and when necessary, medication.
10. Keep food and water containers clean.
11. Observe, record, report and act accordingly regarding any changes in diets.
12. Ask questions when in doubt.

DISEASES

A keeper should be aware of the many forms of disease that can affect zoo animals. It would also be helpful to know that diseases are classi-

The Keeper's Role in Zoo Animal Health, continued

classified by their causes. They can be

- genetic (deformities, breeding problems).
- caused by lower plants or animals (bacteria, viruses, parasites, insects, mycoses).
- intoxication (chemical, plant, animal, microbiological).
- trauma (disturbance of tissues, broken bones, cuts, tears, punctures, lameness).
- secondary conditions (disturbances of the circulatory system, innervation).
- static mechanical abnormality (gastro-intestinal obstructions, twisted intestines, intception, telescoping of the intestine).
- metabolic or nutritional (milk fever, deficiencies and excesses).
- neoplasms.
- undetermined causes.

The degree of sickness can be affected by the point of contact (rabies, head or facial bite more serious than a bite in the extremities), the age of the animal (young and old more susceptible), the species of the animal (equine encephalitis not transmittable to bovine), genetic individualism, general state of health (other conditions present?), nutritional state, and climatic or seasonal conditions.

It is not necessary for a keeper to understand all of the causes and degrees of disease, that is the veterinarian's responsibility, but, knowing about the variations and complexities of disease and the disease process will help the keeper better understand the problems associated with zoo animal medicine.

It is also beneficial to be aware of the various ways diseases are transmitted. How a disease organism is liberated from a sick animal, how it enters the host (ingestion, injection or respiration), and how it enters tissue, causing sickness and discomfort, vary. Disease can be transmitted by contact with fecal matter, exposure to a diseased animal (including people), by way of air-borne organisms, fomites (inanimate carriers such as boots, buckets, tools), vectors (living disease carriers such as insects and bats), through bites and scratches received from infected animals, and through venereal or vertical (dam to offspring) routes. Knowing how disease can be transmitted is necessary for the keeper to realize how he or she can take precautions against being a link in disease transmission.

"A zoo veterinarian can't possibly accomplish much without keeper cooperation. Most zoos are just too big for any one person to know what is going on with each animal. The keepers are the eyes and ears of the veterinarian, and when they suspect a problem with one of their charges, they must report it with as much detail as possible" (Porter, July 1975). The history of a sick animal is important to any diagnosis. In volume II, Number 7, of *Animal Keepers' Forum*, Porter gives eleven signs of disease and noteworthy characteristics to be used by keepers as guide lines of what to look for and what a veterinarian may consider significant. Porter also states "that any one sign by itself may be normal for a specific animal, but all should be noted either mentally or on paper." In addition to the overall appearance of the animal, head/tail carriage, etc. the following characteristics should be looked for:

1. Change in behavior - a quiet animal becoming vicious, or an active animal becoming listless, depressed. Collapsing, pain, convulsions or fits.

continued

The Keeper's Role in Zoo Animal Health, *continued*

2. Change in defecation - diarrhea, foul odor, white specks or blood present; increase or decrease in frequency or amount, foreign objects present, straining.
3. Change in urination - increase or decrease in frequency or amount. Absence of urine. Presence of blood or pus; straining to urinate.
4. Discharges - from eye, nose, vulva, penis; amount, color, consistency, and odor are very important.
5. Coughing, sneezing, gagging - how often and how much.
6. Limping or refusal to rise - which leg.
7. Change in appetite or water consumption - eating less or none at all. No interest in food. Drinking more water.
8. Lumps and bumps - size, location, rate of growth.
9. Change in appearance - loss of hair, feathers, etc., dull coat, losing or gaining weight suddenly.
10. Shortness of breath; tires easily.
11. Regurgitation or vomiting - when it occurs in relation to eating; how much, what's present.

"Who, what, when, where, how often and how much are as important to the veterinarian as they are to the journalist." (Porter-July, 1975).

Early symptoms of a disease can be so subtle that they go undetected such as those of a low grade or chronic condition. Often by the time the disease process has reached the acute stage, and the symptoms are strongly evident, the animal is in serious condition. At that point, the trauma of treatment can be as fatal as no treatment at all. Prophylaxis and the early detection of disease can be aided by an observant keeper and the cooperation of all persons involved with the health care of the zoo's animals.

Keepers can make a difference in parasite and pest control programs, the effectiveness of quarantine procedures and the transmission of zoonotic diseases.

Parasite and pest control should be a continuing program in which the problems are identified and eliminated, and, through management practices and the use of regular fecal examination, vermifuges and pesticides, kept at minimum levels or eradicated.

Fecal examination should take place on a regular basis to prevent build-up of parasites in the host animal. When parasites are detected, treatment must be carried out according to the specific instructions of the veterinarian with repeat dosages administered on schedule to complete the worming process. The keeper's role will vary according to the policy of the zoo where he or she is employed. Observing the condition of stools and being alert for evidence of worms should be an automatic part of a keeper's work. A keeper's physical role in parasite control may be to collect the fecal sample and see that it is delivered promptly

The Keeper's Role in Zoo Animal Health, continued

to the person(s) responsible for examining the sample or it might include assisting the veterinarian in giving the medication. When ecto-parasites are the problem, the keeper's involvement will probably include applying a powder or spray and removing the insects.

Through proper food storage and sanitation practices, many pests can be avoided or kept at minimum levels. When pests (rats, mice, roaches) become a problem, they must be eradicated with intensive and sustained efforts, but with utmost caution for the safety of the animals, zoo visitors and zoo personnel. Insecticides and pesticides must be used according to instructions and care must be taken that there are not secondary victims. Containers used for insecticides or pesticides should not be used for food or water containers later on. The preparation (mixing or filling containers) of pesticides should not be done on a food preparation surface. Unused sprays and/or poisons must be disposed of properly, or if they are to be stored, they must be properly labeled as poisons and stored in a safe, non-food area. Traps for rodents should be used carefully and placed so they can not be accidentally tripped by unintended victims.

When quarantine procedures are in effect due to the arrival of a new animal, or in the case of a sick animal to prevent further spread of disease, a keeper should know exactly what procedures are to be carried out. Instructions should be in writing to prevent the possibility of information being misunderstood or passed on incorrectly. When new animals are in quarantine, keepers should be on the look-out for signs of fleas, ticks, mites and worms. It is also the time during which a new animal adjusts to different food and water. Quarantine time can give the newly arrived animal time to build its strength and offset the effects of the stress of having been shipped, before being introduced to an exhibit or other animals. When quarantine is in force due to disease, a keeper should always be aware of the possibility of transmitting disease organisms if proper procedures are not followed.

Zoonoses - infections or diseases that are naturally transmitted between vertebrate animals and man - include bacterial, viral, fungal, protozoic and parasitic diseases. Some of the more commonly referred to zoonotic diseases are tuberculosis, rabies, salmonella and tetanus. Herpes infection, pox, polio, brucellosis, leptospirosis and ringworm are a few other "hidden hazards". In recent years a case of strongylosis in a keeper was reported. As a minimum precaution against acquiring parasites or other diseases, keepers should always wash their hands thoroughly after working with animals and before eating or drinking. It should also be noted that cigarettes can serve as a vector in disease transmission. Keepers should also take care not to transmit disease to the animals in his or her keep, especially in the case of primates which are susceptible to respiratory and influenza-like sickness.

This is Part IV of a series. The next section will include a discussion of Injuries, Capture and Restraint, Diagnosis and Treatment, Necropsy, a Summary, Bibliography and other References.



A \$2 million emergency campaign to save the black rhinoceros and four other rhino species has been announced by the World Wildlife Fund.

WHY DOCENTS?

by
Susan Chan, Docent
Topeka Zoological Park

The dictionary defines Docent as "a teacher; one who imparts knowledge; a guide". While this definition is true, it only tells a small part of a much larger story.

Since the late 1960's, docent programs have sprung up in zoological parks, museums and other educational institutions all across the country. Their major goal has been to serve as a knowledgeable and accessible liaison between their particular institution and the general public.

In a recent survey sent out to docent programs at zoos in various parts of the country, I attempted to find out exactly what makes up a docent program--how are docents trained, what are the objectives and goals of the programs and what types of educational programs do they offer to their communities. The following are some facts, statistics and concepts gleaned from this questionnaire. Keep in mind that the responses came from zoos of varying sizes and facilities and while the profile may not fit every zoo, I believe it to be representative.

First of all, one must consider that zoos themselves have changed drastically in the past several decades. To the benefit of both man and animal, the concept of the "postage stamp" type of zoo collection has all but disappeared. With the advent of the habitat-setting concept, zoos have become not just places to come and look at the animals, but places to come to learn about the animals, their habits, lifestyles and their particular niche in the overall ecological system. While graphics can serve as an educational tool to the zoo visitor, something more was needed to reach the public in a personal and informative way.

So the stage was set for the initiation of docent programs in zoos and their success in instilling in the zoo visitor an awareness of the fragility of nature, an appreciation of all animal life and an interest in the protection and preservation of exotic wildlife has proven them a worthy project.

Most of the zoos responding to the questionnaire began their docent programs in the late 1960's and early 1970's. The programs, all volunteer in nature, range from 26 active docents at the Topeka Zoo to well over 100 at the Houston and Philadelphia Zoos. Both men and women are docents and several zoos utilize their Zoo Explorer Scouts in this capacity.

While docents are not usually professionally educated, they do go through extensive training before contact with the public and are kept up-to-date by continuing education programs at most institutions. Our survey showed that initial training sessions in basic zoology ranged from 18 to 57 hours with additional seminars and mini-courses on specialized areas being taught on a continuing basis. Such classes are usually taught by members of the zoo's staff, experienced docents and in some cases by professors from near-by universities. At some zoos, such as the Cheyenne Mountain Zoo in Colorado Springs, a number of the classes can be taken for college credit.

Continued

Why Docents?, continued

The objectives of the docent programs varied in expression, but not in basic content. The promotion of the zoological park as an educational resource was primary in all responses. The goal of providing a broad-based, comprehensive educational program to people of all ages and through such a program nurturing an appreciation for and respect of all animals was a very close second.

Now, how are these objectives realized? All of the zoos responding to the questionnaire offer docent-led tours. Some are general zoo tours. Others are more specialized such as a tour on animal adaptation, animal survival, ecology, conservation and endangered species. Slide show presentations on various aspects of animal life were also widely used and served as one of the primary "out-of-zoo" educational experiences. Live animal encounters such as the "Wildlife on Wheels" program at the Tulsa Zoo and the "Zoo-2-You" at the Philadelphia Zoo offer the unique experience of seeing, feeling and observing the live animal close-up. "Touch-Town" at the Kansas City Zoo offers similar experiences at the zoo itself.

"Roving" docents are another educational tool used at many of the zoos in our survey. Available to the general zoo visitor, these "Roving" docents can answer questions on specific animals, about the zoo in general and serve as a first-class public relations asset to their institutions.

Stretching beyond the needs of the average zoo visitor, many docent programs have developed or are in the process of developing specialized tours for the handicapped. These include tours for the blind; for the hearing-impaired; or the mentally, emotionally or physically handicapped.

We found in our survey that a close docent-keeper relationship was vital to the success of all programs. Each keeper develops a particular expertise in his or her area and by passing this knowledge along to the docents, helps to keep them well-informed and current. Many keepers assist in docent training, help maintain "teaching collections" of animals, give "behind the scenes" tours and, of course, are always available for the many questions that come up.

In turn, docents can prove helpful to keepers by being keen observers. By observing and reporting any physical or behavioral changes in an animal, the docent may help to detect and correct a problem before it becomes serious.

Other aspects of docent programs include establishing and maintaining zoo libraries, assisting the staff veterinarian, working in the baby animal nursery, helping with fund-raising projects for their institution and perhaps most importantly, serving to promote the zoo as a bountiful educational resource to their community.

Because docents are unpaid volunteers, they have a strong belief in the importance of the work they are doing. Their sense of commitment and dedication buoy them up even when everything seems to be going wrong. Because they love and enjoy the work they do, their philosophy and beliefs tend to spread in a ripple effect to everyone they meet. Eliminating the question "Why Zoos?" is a constant and challenging quest.

Continued

Why Docents? continued

Literally thousands of children of all ages are reached through docent programs each year. By educating these children to the many aspects of animal life and behavior and instilling in them a keen awareness of the interdependence of man and animal, docent programs are hopefully raising a new generation of adults who see conservation and ecology not just as a personal issue, but a global one.

My sincere thanks to the following zoos for their help in gathering information for this article: Topeka Zoological Park, Topeka, Kansas; Tulsa Zoo, Tulsa, Oklahoma; Kansas City Zoo, Kansas City, Missouri; Ft. Worth Zoological Park, Ft. Worth, Texas; Houston Zoological Gardens, Houston, Texas; Philadelphia Zoological Park, Philadelphia, Pennsylvania; Cheyenne Mountain Zoo, Colorado Springs, Colorado; Arizona-Sonora Desert Museum, Tucson, Arizona; and the Henry Doorly Zoo, Omaha, Nebraska.



keeper's alert

INFORMATION PLEASE!

I would like information on experiences (pro or con) with disinfectants/detergents regarding their properties and suspected toxicities when used around exotic animals.

It would be extremely helpful if respondents could identify the disinfectant by brand name, color, and use-dilution, and if they could be specific about animals affected (species, sex, and age class). Of course, if this information is not at hand, I would still be interested in any experiences. I should stress the brand name, how the detergent was used, the species involved, and how the animals were affected are the most important data I need.

I want to use this information for a section of a training manual, but also foresee sharing it with readers in an article for AKF. Apparently very few people have questioned salesmen on disinfectant/detergent use, and the variation in use between zoos and species is tremendous.

Thank you.

Don Moore, Zoologist
Burnet Park Zoo
Department of Parks and Recreation
P.O. Box 146
Liverpool, NY 13088

INFORMATION PLEASE!

If anyone has any advice or suggestions on hand-rearing a Himalayan Black Bear cub, please send them to:

Alan Sharples
c/o Atlanta Zoological Park
800 Cherokee Avenue S.E.
Atlanta, GA 30315

Alternatives...Education and P.R.

...sharing ideas gathered from the newsletters of many zoos.

BALTIMORE KEEPER PRESENTS PROGRAM ON REPTILES IN SIGN LANGUAGE.

A keeper in the Reptile Department of the Baltimore Zoo, Joseph Mellendick, has made several presentations to audiences of people with hearing impairments. Mr. Mellendick is also hearing-impaired and "signs" very well. He is accompanied by two small snakes, a local turtle and some skins and eggs of snakes.

INDIANAPOLIS ZOO REQUIRES UNIQUE REGISTRATION FEE TO SPECIAL DAY

Summer campers from the Indianapolis Zoo had a reunion day and the registration fee was a piece of fresh fruit or vegetable for the animals. The reunion was held during the Christmas vacation for an afternoon of renewing friendships, visiting animal friends and having a good time.

HUMAN POLAR BEARS TEST POOL IN PHILADELPHIA

The Philadelphia Zoo tested out its all-new 300,000-gallon polar bear pool with human polar bears taking the frigid dive in January temperatures. The four human polar bears are members of the Polar Bear Club. The pool is part of the Bear Country exhibit due to open in early spring.

MIMES HELP VISITORS "WALK LIKE THE ANIMALS" AT NATIONAL ZOO

One of the events of the series "Sunday Afternoons at the National Zoo" features short films on animals and the Archaesus mimes who will help the visitors "Walk Like the Animals."

Another event, "To Fly Like a Bird", presents the marvel of flight on film, and then the families attending will be encouraged to create their own birds, planes, and things that fly.

SAN DIEGO CHILDREN'S ZOO ADD ANIMAL FIGURES

Several life-sized, stylized animal figures have been installed in the San Diego Children's zoo to give children a chance to appreciate the actual size of animals from closer than possible with live animals. A 25-foot-long fiberglass reticulated python, installed near the petting paddock, is designed to show people how a live snake is jointed and how large certain snakes can grow.

ZOOS ENCOURAGE ATTENDANCE IN WINTER

A number of the news releases from the zoos deal with the publicity aimed at educating visitors to the delights of winter zoo attendance--special animal exhibits, free admissions on some days or during some months, hand-outs on winter animals and pleas from lonely animals.

WHITE RHINO BIRTH AT METRO TORONTO ZOO Wayne Jackson

Between 1970 and 1972, one hundred and eighty White Rhinos were exported from the Umfolozi Game Reserve in Natal, South-Africa. Twenty of these rhinos were sold to the San Pasqual Wild Animal Park in California. In August, 1974, a pair of the original group, plus a pair that were born at San Pasqual, arrived in Toronto.

The older African-born pair is 11 years old. The younger U.S.-born pair, "Bender" and "Pistol", were born December 19, 1972 and February 3, 1973, respectively. (The 11 year-old female is Bender's mother.) Both the younger rhinos were handraised.

The events leading up to the birth were as follows:

September 19, 1979, the area Senior Keeper, Steve Unwin, noticed that Pistol was bagging up.

September 25, another keeper, Jim Fairchild, saw that she was leaking a clear fluid from her udders. Bender and Pistol were separated at night for the first time since their arrival.

October 11. Pistol had soft feces.

October 12. In the morning, the floor of Pistol's pen (approx. size 15' x 20' or 4.6 x 6 meters) was covered with six inches of dirt and then covered with 2 bales of straw.

Pistol was very aggressive towards keepers. With every step, she squirted milk from her udders. It was noted that her hips lowered and spread and that she dragged her hind feet. She was very interested in her food.

Uncertain if she was going to calve that night, an area Foreman, Duncan Bourne, arranged to return during the night. At 12:15 a.m. on arriving at the Rhino House, he found a newborn calf lying on the floor. The calf was dry and the afterbirth was hanging from Pistol. By 12:30 a.m. the calf was up and standing close to Pistol.

Every time Duncan moved, Pistol charged the front of the pen and then returned to the back with her calf. The calf tried to nurse from the front legs several times, but the mother kept pushing her back towards the back legs. It was thought that at 4:00 a.m. the calf had nursed and at 6:00 a.m. she was seen nursing.

The number of people allowed into the house for the first two weeks was limited. Pistol and her calf became very close. If somebody walked by the front of the maternity pen, not only would Pistol charge - her calf would hit the front bars at the same time.

It is now nearly three months since the birth and both mother and calf are continuing to do well.

The birth of this White rhino female *Certotherium simus* here at the MetroToronto Zoo, marks the first rhinoceros born in Canada and possibly the first second generation White Rhino in captivity.



National Wildlife Week is March 16-22. The theme is "Save a Place for Wildlife."

EDITORIAL

by
Stephen D. Walker
Editor, Tulsa A.A.Z.K. Newsletter

Stop for a moment and take a close look at the animals under your care. Then ask yourself why they are in a zoo rather than in their natural place in the wild. What justifications do we provide for those people who insist we are keeping our charges in little more than an animal prison?

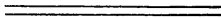
This question is not really so easy to dismiss. It has taken me some time to accept the reality that whenever an animal is removed from the wild, the end use of that animal makes no difference to the environment from which he came--killing him on the spot would have the same results as taking him to a zoo for public display. The environment is still less one animal.

For what reasons then do we capture animals for zoos? First perhaps is our need to fully understand the creatures that so obligingly share our planet. Only in captivity can certain behavior patterns and life cycles be observed. Numerous fish, for example, exhibit radically different color schemes or body shapes in the juvenile stages when compared to adults. Many of these fishes were thought to be two separate species. Captive rearing, however, proved the two were one and the same.

Also, in recent years our need to know has gone deeper, and we are studying the actual physiology of zoo animals. This field is still wide open, but I am sure that in the future, universities and other research organizations will make use of the world's zoo collections.

If we can learn to reproduce the animals in our zoos, we can hope to delay or eliminate altogether the threat of extinction to species whose habitat is being destroyed or altered by man's action. This is perhaps the noblest purpose of zoos today, and we should all make every effort to support captive breeding programs.

Lastly, zoo animals provide enjoyment for millions of people throughout the world as they come to see the natural wonders a zoos has to offer. And, if we plan properly, those same animals can enlighten the public about the world and how intimately man is tied to nature. This in turn might make things a lot easier on those animals still in the wild, and after all, this is what every zookeeper really wants.



Gorilla ToysLinda Ervine, Keeper II, Africa Pavilion, MetroToronto

Our 2.5 sub-adult gorillas have been "testing" large plastic barrels for over three months. These containers were donated by a local car wash and originally held car wax and soap. The two larges barrels are 45 gallon size.

They are used well for throwing, beating, resting and climbing on. The smaller barrel has a few holes (enthusiastic chewing!) but in general all three have held up very well.

+++++

WELCOME to the Columbus, Ohio,
Chapter of AAZK.

chapter

President....Andy Lodge
Vice Pres....Dan Hunt
Secretary....Brad Booth
Treasurer....Ted Spellmire

New officers for the Memphis,
Tennessee chapter.

news

President....Mike Maybry
Vice Pres....Phil Prewett
Sec/Treas....Janice Rozin
Congratulations!

MEMPHIS CHAPTER HAS CONSTRUCTION PROJECT. . . .*Mike Maybry*

The Memphis Chapter, American Association of Zoo Keepers, has recently completed a project for the Memphis Zoo and Aquarium. We constructed a replica of a termite mound of the type found on the African plains. Steel pipe was set in concrete as the basic foundation with reinforcing bar, metal lathing, and chicken wire giving the mound shape--all materials found around the zoo. Colored mortar was hand-applied over the course of several weeks to bring the mound to its final appearance. It is located in the African Veldt exhibit, and is already being utilized by the various species of birds and mammals that live there. A story about our effort appeared in the local paper. In addition to enhancing an animal exhibit, we hope our labors will show people that keepers are indeed interested in their work and are willing to sacrifice their own time in order to improve conditions in the zoo.

San Diego Zoo Keepers Offer Programs. . . .*Mike Kachuba*

The Keepers involved in the San Diego Chapter of AAZK have begun a series of seminars to aid the zoo's Special Tour Department. The seminars deal with such topics as Elephant Handling and Natural History, Primate Reproduction and Natural History, Avian Exhibit Design, Animal Nutrition, and Captive Animal Management.

The Special Tours Department offer behind-the-scenes tours of San Diego Zoo to various groups. These tours often involve keeper participation. We feel the seminars have increased the awareness of the special tours staff and keeper staff of public education in regards to the role of zoos in wildlife conservation.

NATIONAL ZOO CHAPTER ACTIVITIES

National Zoo Chapter has been an active AAZK Chapter since October 1973, although they are now operating without the formal structure of having officers. Bela Demeter reports that there are monthly Keeper seminars, organized by Bess Frank, with Keepers talking about special projects that they are working on. This Chapter has had a successful fund raiser in their annual Halloween Party, and Art Cooper has been keeping the books. The Keepers may again formalize the structure of their Chapter at the January meeting.

Congratulations on your six years as a Chapter,
National Zoo Keepers!

BERNARD FELDMAN APPOINTED TO BOARD OF DIRECTORS

Bernard C. Feldman of the Miller Park Zoo in Bloomington, Illinois, has been appointed to the five member Board of Directors of the AAZK.

NEW REGIONAL COORDINATORS ANNOUNCED

Jill Grade, Director of the Regional Coordinators, announced the appointment of the following to Regional Coordinator posts:

Kathy Rettie from the MetroToronto Zoo has agreed to accept the new position for Canada;
Jane Hansjergen of the Sacramento Zoo will serve the states of California, Nevada, Arizona, Utah and Hawaii;
Karen Starr of the Bronx Zoo is Regional Coordinator for New York;
Herb Kingsbury from the Cincinnati Zoo has the states of Indiana, Ohio, and Kentucky;
Margie Haire from Audubon Park Zoo is RC for Arkansas, Missouri, and Louisiana.

Jill also announces the vacancy of two posts--one for Minnesota, Iowa and Missouri; and the other for Washington, Oregon, Idaho, Montana, Wyoming and Alaska. All inquiries about the Regional Coordinator system should be directed to her.

Jill Grade
Anhauser Busch
P.O. Box 9245
Tampa, Florida 33674

NEW OFFICERS ANNOUNCED

Pat Sammarco is the President of the American Association of Zoo Keepers and Jill Grade is the new Vice-president.

The Boise, Idaho, zoo lost a Bengal tiger when someone fed him meat laced with amphetamines and barbiturates. Veterinarians had fed the 425-pound cat intravenously and rolled him from side to side while messaging him to keep his blood circulating. In spite of their efforts, "Ben Boi" died from suffocation caused by the weight of his body on his lungs.

coming events

AAZPA REGIONAL WORKSHOPS

CENTRAL

March 9-11 Tulsa, Oklahoma
There will be a dinner for all keepers on Monday night,
March 10. An AAZK session will be held March 11, 9-11 am.

NORTHEASTERN

March 30-April 1 Norfolk, Virginia

SOUTHERN

April 13-15 Orlando, Florida

GREAT LAKES

April 27-29 Cincinnati, Ohio

WESTERN

May 4-6 Winston, Oregon

1980 NATIONAL AAZK CONFERENCE

Montgomery Zoo, Montgomery, Alabama October 5-9, 1980

Theme: The Role of Smaller Zoos in the Zoological World

Conference Headquarters: Holiday Inn Capitol. Southern hospitality and gracious accommodations. View historic Montgomery from the beautiful penthouse restaurant. Rates: Single \$23; Double \$29.

Tentative Schedule: Includes a step back into history when city dignitaries welcome you aboard the General Richard Montgomery for a gala evening reminiscent of the old riverboat days. You'll have an opportunity to try your hand at roulette, black jack, poker, etc. You'll be supplied with plenty of "buffalo chips" to try your luck in the tradition of the River boat Gambler.

Field trips will include a red carpet trip to the Birmingham Zoo where you will be special guests of the zoo staff and the Alabama Zoological Society

Y'all Come!!

PLANNING A MOVE?

Since Animal Keepers' Forum has been granted Second Class postage rates, it is not forwarded. Please send your change of address as soon as possible to

Elizabeth Glassco
Administrative Secretary
American Association of Zoo Keepers
National Zoological Park
Washington, D.C. 20008

THE STRUGGLE FOR SURVIVAL

AGENCIES COMBINE FORCES TO SAVE THE CALIFORNIA CONDOR

An unprecedented agreement to initiate one of the most extensive cooperative efforts ever made to save an endangered species--the California condor--was signed in Washington on December 17, 1979, by five Federal, State, and private agencies.

"This cooperative agreement underscores the common concern that the California condor must not go the way of the passenger pigeon," Secretary of the Interior Cecil D. Andrus said. "We are determined to duplicate the growing success with the whooping crane, which continues to demonstrate that human intervention can mean the difference between survival and extinction."

The multi-agency cooperative agreement was made possible when Congress passed a \$500,000 special appropriation to help finance the effort. The National Audubon Society will contribute a like amount over the next 5 years. The funds will be used to begin the full-scale rescue program of increased research, habitat protection, and captive propagation for the remaining condors.

Direct examination of some condors is tentatively scheduled for this coming fall. Research biologists, backed up by wildlife veterinarians and mobile medical equipment, will attempt to capture some condors to determine their age, size, sex, and general health from blood, fecal, and feather pulp samples. The birds will be equipped with wing tags and radio transmitters and will be released soon after capture. These procedures will first be fully tested on similar species this spring and summer. The tags and transmitters will provide information on how many condors there are, their daily movements and foraging habits, and where they nest. Very little information of this type presently is available.

Biologists at the scene will decide at that time whether to keep a few immature birds to form a captive breeding block, to be established initially at the San Diego Zoo and Wild Animal Park and later at the Santa Cruz Predatory Bird Research Group facility at the University of California at Santa Cruz.

BOBCAT EXPORTS APPROVED FOR ALL BUT 5 STATES, PORTIONS OF TEXAS, OREGON

Bobcat pelts taken this season can be exported from all States except Florida, North Dakota, Wisconsin, Massachusetts, New Mexico, the eastern region of Oregon and the high plains ecological area of Texas. Exports had been blocked when the Court issued a temporary restraining order in a lawsuit brought by the Defenders of Wildlife.

We are deeply indebted to the AAZPA Newsletter for allowing us to reprint portions of this section from their "Positions Available" listings. This is a monthly service to us, for you.

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HABITAT SPECIALIST... responsibilities include the design and construction of natural and realistic habitats for wild animals, and execution of ambitious exhibit project. Candidate should be familiar with general construction methods, molding and casting techniques, finishing and detailing methods, some landscaping and project management. A background in natural science and/or art necessary. Salary open. Please send resume stating salary requirements to: James B. White, Personnel Manager, New York Zoological Society, 185th st. & Southern Blvd., Bronx, NY 10460. **EQUAL OPPORTUNITY EMPLOYER.**

EDUCATION COORDINATOR... responsible for administering complete education program. Applicant must be graduate of approved four-year college or university and have obtained degree in zoology, biology or education with a heavy background in the biological sciences. Zoo experience is preferred, but not mandatory. Starting salary: \$11,960 per annum, plus normal fringe benefits. Send resume to: Personnel Department, Gladys Porter Zoo, 500 Ringgold Street, Brownsville, TX 78520.

ZOO KEEPER... opportunity to work with birds, mammals and reptiles. Salary: \$7,000 - \$8,000. Limited number of living quarters available on site. Contact: Pat Quinn or Jan Smith, Benson's Wild Animal Park, 27 Kimball Hill Road, Hudson, NH 03051. (603) 882-2481.

AVICULTURIST/ASST. CURATOR... experienced aviculturist for the St. Catherine's Island Survival Center. Candidate will be responsible for the management of a propagation program for rare or endangered avian species. Salary commensurate with experience, four weeks' vacation and hospitalization. Interested candidates should send resumes to: James B. White, Personnel Manager, New York Zoological Society, 185th Street and Southern Blvd., Bronx, NY 10460. **AN EQUAL OPPORTUNITY EMPLOYER.**

The following positions are available and a personal interview is mandatory for each:

AQUARIST - 2 positions

HANDLER - 3 positions

ANIMAL TECHNICIAN - 1 position

For additional details, contact: Michael D. Marcus, Park Curator, Sealand Aquarium, or Neal L. Gray, Marine Mammal Curator, Oceana, Cedar Point, Inc., Sandusky, OH 44870.

CURATOR/EDUCATION... responsible for developing a comprehensive education program for an expanding zoological garden. Requirements should include either a Master's Degree in Education, Zoology or a closely related field and two years' (including at least one year supervisory) experience in a zoo education program or a Bachelor's Degree in Education, Biology, Zoology or a closely related field and three year's (including at least two years supervisory) experience in a zoo education program. Position will be available February 1980. Salary: \$12,546 - \$17,688. Send resume to Dale Stastny, Personnel Director, Audubon Park and Zoological Garden, P.O. Box 4327, New Orleans, LA 70178.

The following three positions are available at the Brookfield Zoo:

DEVELOPMENT MANAGER... responsible for fund raising for operations and capital improvements, managing membership services and collaborating in promotional programs. Seeking experienced person with ability to work on governmental, corporate and foundation grants, to direct mass mailing campaigns and to coordinate volunteer efforts. Send resume and salary requirements to person below.

REGISTRAR... responsible for accurate maintenance of central animal collection records, supply of data to ISIS, studbooks, documentation necessary in animal transactions and allied duties. Prefer candidate capable of analyzing genetic and demographic data.

FULL-TIME VETERINARIAN...experience working with exotic animals required. Responsible for performing quality veterinary medicine in a large metropolitan zoo. Salary open, usual fringe benefits.

Regarding the above three positions, contact: Mrs. J. Coontz, Personnel Manager, Brookfield Zoo, Brookfield, IL 60513. (312) 485-0263.

"In the end, we will conserve only what we love. We will love only what we understand. We will understand only what we are taught."

Baba Dioum, a conservationist from Africa quoted in a speech by Edward Kohn, General Director of the Minnesota Zoological Garden.

AAZK ACCESSORIES AVAILABLE

BUTTONS

Buttons printed with 'Keepers Care' and a logo are available for fifty cents (50¢) from Larry Sammarco, Lincoln Park Zoo, 2200 N. Cannon Drive, Chicago, IL 60614. 50% of the sale price goes into AAZK's national treasury.

DECALS

The official AAZK decal is available through the Memphis Zoological Park and Aquarium AAZK Chapter. The decal is a black and white reproduction of the AAZK rhino logo, suitable for any smooth, hard surface, especially a car window. Cost is \$1.50 complete, prepaid. Make checks payable to the Memphis Chapter, AAZK, and send directly to Mike Maybry, Decal Project Coordinator, 1887 Crump Avenue, Memphis, TN 38107.

T-SHIRTS

The t-shirts come in a variety of colors and have the AAZK logo on them. Contact Carleton Bailie, 4400 NW 39th Avenue, #124, Gainesville, FL 32601.

INFORMATION FOR CONTRIBUTORS

Animal Keepers' Forum publishes original papers and news items of interest to the Animal Keeping profession. Non-members are welcome to submit articles.

Articles should be typed or hand-printed. All illustrations, graphs, and tables should be clearly marked, in final form, and should fit in a page size of no more than 6"x10" (15 cm. x 25½ cm.). Literature used should be cited in the text and in final bibliography. Avoid footnotes. Include scientific names.

Articles sent to *Animal Keepers' Forum* will be reviewed for publication. No commitment is made to the author, but an effort will be made to publish articles as soon as possible. Those longer than three pages will be separated into monthly installments at the discretion of the editorial staff. The editors reserve the right to edit material without consultation unless approval is requested in writing by the author. Materials submitted will not be returned unless accompanied by a stamped, self-addressed envelope.

Articles printed do not necessarily reflect the opinions of the *Animal Keepers' Forum* editorial staff or of the American Association of Zoo Keepers.

Telephoned contributions on late-breaking news or last minute insertions are acceptable. However, phone-in contributions of long articles will not be accepted. The phone number is 913 272-5821.

DEADLINE FOR EACH EDITION IS THE 20th OF THE PRECEDING MONTH.



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- Associate (interested individuals). \$10.00 annually
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The journal is not available by subscription only.

**American Association
of Zoo Keepers
National Zoological Park
Washington, D.C. 20008**

Second Class
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Animal Keepers' Forum



Dedicated to Professional Animal Care

MARCH 1980

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Animal Keepers' Forum is a monthly journal published by the American Association of Zoo Keepers, 635 Gage Blvd., Topeka, Kansas 66606.

Second class postage is paid at Topeka, Kansas. Return postage is guaranteed.

AMERICAN ASSOCIATION OF ZOO KEEPERS
NATIONAL HEADQUARTERS, 635 GAGE BLVD., TOPEKA, KS 66606

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CANADA

Springtime is coming! And that usually means baby animal time with all the extra work and delight that brings. Andrew Main of the Willington Wild Animal Farm, Willington, Connecticut, draws this month's cover with a keeper bottle-feeding a lion cub to salute both the keepers and the animals.

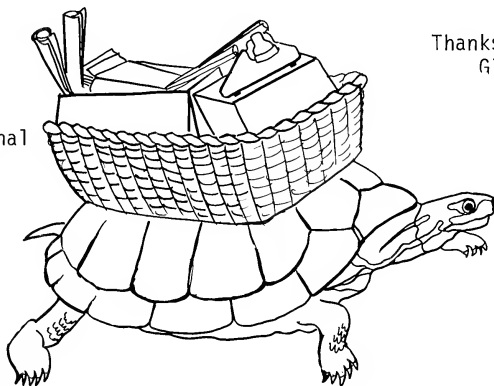
SCOOPS and SCUTTLEBUTT

AAZK NATIONAL HEADQUARTERS MOVING!

The AAZK National Headquarters is moving to the Topeka Zoo. For four years, the headquarters have been housed at the National Zoo, but the National Zoo is remodeling and the space is needed.

The AAZK Board voted to accept the invitation of the Topeka Zoo to locate the administrative staff in the same office the *Animal Keepers' Forum* staff is now using. There are definite advantages to having one address for both the membership and the publication operations.

Thanks to National
Zoo for their
support
for the past
four years!



Thanks to Lee
Glassco and
her work and
organization!

A special thanks to the generosity of the Topeka Zoo
and their support and enthusiasm!

The move will be made at the end of March. The files will be shipped, a new Administrative Secretary will be hired and some new routines will need to be learned. We hope to serve you as capably as the folks have at the National Zoo.

from the President

PAT SAMMARCO

I would like to encourage all keepers to attend the Regional AAZPA Conferences. Dates and places are listed in the Coming Events Section on page 69.

REQUEST FOR NOMINEES FOR AAZK AWARDS

In anticipation of the 1980 AAZK convention, nominations for the Annual AAZK Awards are being accepted. There are three award categories: Excellence in Zookeeping, Certificate of Merit for Zoo Keeper Education, and Excellence in Journalism.

EXCELLENCE IN ZOO KEEPING

QUALIFICATIONS

1. The nominee must be a full-time Animal Keeper employed in any North American Zoological institution or Aquarium.
2. The nominee must have been employed at least two years on a permanent status at a Zoo or Aquarium.
3. The nominee must be nominated by his or her peers who have also been employed at that same Zoo or Aquarium.

NOMINATION PROCEDURES

1. List name, position, institution, years of service in the field and the recommendation of peer or colleague.
2. List outstanding achievements: exhibits, breeding, education, etc.
3. List any extra activities outside of Zoo or Aquarium work: Working with conservation groups, youth, wildlife officials, etc.

SELECTION PROCEDURE

The Awards Committee, consisting of five people, will independently review each nominee.

CERTIFICATE OF MERIT FOR ZOO KEEPER EDUCATION

QUALIFICATIONS

1. Any North American Zoological institution or Aquarium is eligible.
2. The keeper training program must have been in existence for at least a year.

NOMINATION PROCEDURES

This award will be given to the zoo most actively promoting educational programs for zoo keepers -- Keeper training courses, staff seminars, and reimbursement for formal education, etc. If you feel that your zoo merits such an award, please submit a letter of nomination, mentioning specific education programs.

CERTIFICATE OF MERIT OF EXCELLENCE IN JOURNALISM

This award is presented by AAZK for the best article submitted to the *Animal Keepers' Forum* from July 1979 through June 1980. Selection of the best article will be made by the editors of the AKF on the basis of style and content.

Request for Nominees for Awards, continued

Nominations for the Excellence in Zoo Keeping Award and the Certificate of Merit for Zoo Keeper Education will be accepted up to June 1, 1980. Winners will be selected by the Awards Committee. Awards will be presented to the winners at the AAZK National Conference, October 5-9, 1980, in Montgomery, Alabama.

Please send your nomination to
Mike Coker, Awards Committee
Topeka Zoo
635 Gage Blvd.
Topeka, KS 66606

TAMING FERRETS WITH FOOD. USDA Agriculture Research, Vol. 12

Ferrets are generally considered rather fierce animals, unsafe to handle without protective gloves, for they are liable to bite without provocation. But apparently, given the right diet, they can be as docile as any domestic pet. This unsuspected link between diet and disposition was discovered at the National Animal Diseases Laboratory, Ames, Iowa, where large numbers of ferrets are used to check the potency of vaccines destined to protect dogs and other fur-bearing animals against canine distemper.

Newly arrived ferrets, initially fierce and intractable, became tame enough to handle without gloves after being fed regularly on a diet of three parts of fresh horse meat, two of dog meal and one of fresh milk. Since rearing ferrets on this wet diet involved a good deal of work in keeping the cages clean, the menu was changed. But on a dry diet of dog meal, the animals reverted to their original wild behavior. In a confirmatory trial with 92 ferrets, in which 80 were given the full normal (wet) diet and 12 a limited dry one, the former remained gentle, whereas the latter became ferocious until they were fed once more on meat, meal and milk.

EYE SURGERY ON OKLAHOMA CITY ZOO'S SWAN

The only whistling swan from the Oklahoma City Zoo underwent intricate eye surgery at the ultra-modern Baptist Medical Center to remove bilateral cataracts that had robbed the bird of its sight. A medical photography team recorded the surgery through the lens of the microscope used for the delicate surgery.

Keepers had noticed the bird bumping into objects and cowering from other birds. It was removed from the exhibit and sheltered in the health facilities until surgery restored its sight.

The Dickerson Park Zoo, Springfield, MO, will be installing a solar water-heating system to provide tepid water for winter bathing of the elephants.
D. Tuttle, AAZPA Newsletter

THE CALCUTTA ZOO

By
Tom Goldsberry
San Diego, California

You'll never see a T-shirt that says "I Love Calcutta". On the other hand, you'll never see one that says "I was Bored in Calcutta". This incredible city of 7,000,000 was the captial of British India when imperialism was at its zenith, the period that Westerners are usually most familiar with. Remember those legends and symbols that have been romanticized in our literature for 150 years? Queen Victoria, Clive; Kipling, Gunga Din; the East India Company and, of course, the infamous Black Hole of Caluctta.

While many of the more obvious vestiges of British colonialism have been erased since India gained independence in 1947, some of the more pleasant ones have been retained. Cricket and football, two perfect safety valves for the volatile Bengali temperament, are still played almost daily in the city's many parks. Morning and afternoon teas will never be replaced; and a gin and tonic is still the favorite sundowner in this part of the world.

My wife and I breezed into Calcutta's Howrah railway station after an overnight coach ride on the Rajdhani Express from Delhi. The sudden immersion into a city like Calcutta is electrifying. Each waiting platform is literally overflowing with people and belongings. Families jump off one platform, walk across the tracks, then push and pull one another onto the next platform. Bawling children are chased through the crowd by bawling parents, followed in turn by howling dogs. One man is stripped and is casually taking a sponge bath from one of the public drinking taps. Outside of the station I hail a taxi of sorts and we start off for Calcutta proper and a hotel. It's only mid-morning but the temperature and the humidity are already in the 90's.

The 1500 foot long Howrah bridge over the Hooghly river connecting Howrah with Calcutta is jammed with vehicles, animals, and people of all descriptions. Below us on the river the flags of a dozen ships hang limp from their sterns in the sultry air; but I can make out the home ports of a few..."Kobe"... "Bremen"... "Monrovia"... On the other side of the river, the traffic still creeps along but it doesn't matter; it gives us more time to observe. The sidewalks are narrow, leaving more, but not much more, room for the cubbing-den sized hovels that house uncounted numbers of people. From within, the tiny charcoal stoves are cookin' up those ever-lovin', ever smellin' chappaties; and the dense gray smoke from thousands of similar stoves throughout Calcutta fills the air and dims the sun.

Just barely out of the main traffic flow lies a dead dog with a gaping hole in its side. As if by mutual agreement, hundreds of huge black flies stake a claim on the eyes and nostrils, while two large Indian house crows alternate at the entrails, now oozing from the wound. Nearby, two small boys sit on a ditch over the open flowing sewer dipping their toes into the gruesome colored water, chatting idly. No, this isn't one of the sterile antiseptic cities of Northern Europe; this is India, and it's compelling and exhilarating.

After two days of hectic sight-seeing I decided it was time to visit the zoo. The Calcutta Zoo in the Alipore section of town encompasses

The Calcutta Zoo, continued

about fifty acres straddling busy Alipore road. The zoo proper is about forty acres on the western side, while ten acres on the eastern side is occupied by the zoo hospital, audio-visual center, aquarium, zoo store and staff headquarters. The zoo exhibits 339 animals, 1884 birds and 112 reptiles. The physical layout is a pleasant blend of lawns, flowerbeds, lakes, bridges, plants and shrubberies. A new reptile house and sea lion pool is under construction.

The present director of the zoo is Dr. A.N. Guha. Dr. Guha maintains a stiff 6:00 a.m. to 6:00 p.m. visitor schedule 365 days a year. He directs zoo operations from his on-site residence virtually twenty-four hours a day and hasn't had a vacation since becoming director in 1975. Dr. Guha reflects the typical fiery Bengali personality, alternately gruff and curt, and friendly. His staff of 250 is highly organized and disciplined--as I soon found out when we began our tour of the grounds. Immediately upon leaving the administration building he noticed several groundskeepers lounging on the grass at the bottom of the steps. They leaped to their feet as though detonated and saluted. Every employee we encountered that afternoon--animal keepers, groundskeepers, even canteen and snack bar workers--saluted us as we approached their area. Perhaps keepers reading this page now should burn it when finished, or cut it up into little pieces and swallow it, lest any of the more diabolical directors in this country get ideas.

I was still chuckling under my breath when we crossed the road to visit the aquarium. The aquarium was originally planned to open in 1975 to coincide with the zoo's Centenary year, but difficulty in obtaining suitable glass panels delayed the opening until 1977. The 8,000 square foot building now contains seventeen large tanks measuring 8'x4'x4' and forty-eight small aquaria. A central tank serves as a vivarium. There are presently about thirty-eight species of fresh water fish on display.

We approached the first tank, got a glimpse of one fish--and the lights went out. Power failure. This time of year power failures are not uncommon in Calcutta. Dr. Guha roared like a Bengal human, wheeled around, and was halfway across busy Alipore road before I could catch up with him again. The startled groundskeepers, probably thinking we would be in the aquarium for at least an hour, bounced to their feet once more and saluted. This time the return salute was accompanied by a torrent of Bengali. The groundskeepers grabbed their tools and took off like startled fawn in different directions around the zoo. I wouldn't have wanted to have been a stray dandelion the rest of that afternoon.

Next month: The Calcutta Zoo, continued.



The Montgomery Zoo had a problems with rats in the moated monkey island display. A pair of wild mink were released on the island. They killed the rats without harming the display animals, Black-capped capuchins, Spider monkey and Coatimundis. After about five weeks on the island, the mink needed supplemental feeding due to the lack of rats.

C. Clift, AAZPA Newsletter

ZOO KEEPER GENERAL INFORMATION SURVEY

by
Michael R. Maybry

The American Association of Zoo Keepers has embarked on an ongoing effort to assemble information on our profession. During the past year approximately 40 zoos across the country were asked to answer a twelve question survey on areas of interest to zoo keepers. Twenty-one responded. More institutions will be contacted as time allows. A progress report will be made to the membership periodically through the *Animal Keepers' Forum* and at the annual convention.

Space limitations prevent the printing of each survey. A summary of the answers to each question will be presented here along with a list of the zoos contacted and those responding. Persons wishing information on a particular zoo should contact the Keeper Data Chairman. Anyone from a zoo not yet contacted or one contacted which did not respond is welcome to send in answers to the questions. Please try to get your director's help or permission before writing. Periodically all institutions will be given an opportunity to update their information. Hopefully the data collected from this project will enable keepers to compare their situations with those at other zoos and realize that certain "problems" are not unique to their institutions.

1. *How many full-time keepers are employed by your zoo?*

Answers ranged from 65 to 3. This indicated a fairly good cross-section from large to small facilities.

2. *What is the approximate ratio of men to women in the keeper ranks?*

In this time of greater employment of women, it seemed appropriate to see how large a part women are playing in the modern zoo. Answers ranged from 7:1 to 1:1 to 1:2. The majority was 2:1. Only one facility had more women than men.

3. *What are the basic requirements for a person to be hired as a keeper at your zoo?*

All zoos responding, except one, require a high school diploma and some type of animal experience. Several institutions mentioned some college as helpful. Two zoos required applicants to prove they could lift a bale of hay and handle a 50-lb. sack of feed. No one contacted made any mention of testing, other than civil service, to determine degree of animal experience or interest.

4. *What is the base starting salary for a keeper?*

Pay scales ranged from \$3.55 to \$6.80. The one Canadian zoo responding, Edmonton, pays \$7.70 across the board.

5. *What is the current top salary for keepers not in a management position?* \$4.50 to \$9.67.

6. *Are there opportunities for keepers to move into management positions? If so, what positions?*

Responses to this question were varied. All zoos except one had at least one position available for keeper advancement. The dividing point here seemed to be the size of the institution. In the smaller zoos, one could work up from keeper to director over a period of time with the proper aptitude. The larger zoos, however, require PhD's once at a curatorial level. It is unlikely many keepers would reach this plateau.

continued

Zoo Keeper General Information Survey, continued

7. Do you have any formal training for keepers?

Zoos with formal training courses were in the distinct minority. However, about half of the respondents mentioned picking up the tab for related college level courses. Also several zoos said they had tried keeper training classes that fizzled because of lack of "keeper interest". Clearly, this type of attitude on the keepers' part does not help our contention that we are professionals.

8. Do your keepers have any input, formal or otherwise, into the decision making process? Please list all avenues that exist.

Almost all respondents, while stressing that final decisions and, consequently, responsibility, must remain the domain of management, stated that keepers had various means of communicating their needs and desires to their supervisors. Some of these are daily reports, direct contact with supervisor, keeper attendance at staff meetings, "open door" policy with the director, and written recommendation. I personally feel that communication in any form is vital to a smoothly running organization, and a lack of it is the basis for most problems between keepers and management.

9. How many of your keepers worked for other zoos before they worked for you? All responses were either none or a very small percentage of the keeper work force. Unfortunately, hiring policies at many city run institutions make it nearly impossible for someone from out of town to be hired on. City officials need to realize that zoo keeping requires aptitude with interest and should not be confined by the same guidelines as sanitation workers or street sweepers.

10. What benefits are offered to keepers by management?

"Standard city employee benefits" was the answer given by one zoo and pretty well sums up the responses to this question. The main differences were in the number of vacation and sick days granted each year.

11. What is the average number of years that a keeper works for your zoo? The low was 1.5 years and the high 15 years with the mean at 4 years. This coupled with question nine would seem to indicate that many keepers are leaving the profession after only a few years. It is hoped that this average will climb in years to come with our organization helping to raise the self-esteem of keepers.

12. What would you consider the main deficiency in today's average zoo keeper? Several areas were mentioned: lack of concern for animal welfare, unprofessionalism, lack of respect for management, and no appreciation of problems involved in running a modern zoo. On the other hand, most keepers I know or have talked to will level these same charges at management. I think it's time for both sides to sit down, communicate, and realize we're all in this together. The sooner we put these differences behind us the sooner we can proceed with our avowed intentions of preserving wildlife for generations to come.

Zoos that were requested to respond to the survey; those responding are marked by an asterik.

Montgomery*	Cheyenne Mountain*	Arrington's Animal Park,
Phoenix*	Beardsley, Bridgeport, Conn	Idaho
Arizona-Sonora*	National*	Brookfield*
Little Rock*	Jacksonville, Fla	Topeka*
San Diego	Sea Life Park, Hawaii	

continued

Zoo Keeper General Information Survey, continued

Louisville*	Stanley Park, Vancouver
Baltimore	Seneca Park, Rochester*
Minnesota*	Birmingham*
Portland*	Reid Park, Tucson*
Memphis*	Roeding Park, Fresno*
Toronto	Los Angeles
Edmonton*	Denver*
Buffalo	Crandon Park, Miami
Albuquerque*	Busch Gardens, Tampa
Detroit*	Miller Park, Bloomington*



AFRICAN ELEPHANT BILL PASSES HOUSE

On December 1979, the House of Representatives unanimously passed H.R. 4685, the African elephant bill, which imposes a six-month total ban on the importation of ivory into the United States. According to Congressman John Murphy, Chairman, Merchant Marine and Fisheries Committee, "the passage of the elephant bill is one of the greatest environmental measures passed this year to protect our endangered or threatened species."

The African elephant was listed by the Department of Interior as a threatened species under the provisions of the Endangered Species Act of 1973. Although this federal agency action established protective regulations for the species, implementation of the regulations did not completely prohibit nor curtail trade in elephant products. Consequently, Chairman Murphy introduced legislation on 28 June 1979, providing for a six-month ban on the importation of elephants or elephant products.

The primary purpose of the ivory ban legislation is to reduce the immediate threat to the African elephant. In addition, according to Chairman Murphy, "the uncontrolled and unregulated international ivory trade had prevented all elephant conservation and preservation efforts from being effective."

Although the United States cannot enact statutes which will exceed national sovereign boundaries, it can act to regulate the flow of ivory into the U.S. H.R. 4685 will insure that only those nations with good conservation management programs will be eligible for permits to import ivory into the U.S. Following the six-month total ban, the Secretary of Interior may grant import permits to certain nations after a review of their management plans.

Specific provisions of the legislation include:

1. Exempt imports and exports for zoological, educational, scientific or exhibition purposes.
2. Requirement that the Secretary of Interior submit a report to both the House and Senate outlining the procedures and reasons for granting exemptions from the ban.
3. Requirement that all exempted elephant products enter or leave the U.S. only through the ports of New York and Seattle.
4. Subject violators of the Act to a civil penalty of \$10,000 and a criminal penalty of \$20,000 or one-year imprisonment or both.

THE VACCINATION PROGRAM FOR CARNIVORES
AT THE METRO TORONTO ZOO

by
Christine Retallack
Veterinary Technician, Metropolitan Toronto Zoo

At the Metro Toronto Zoo we try to insure that our carnivores are vaccinated against rabies, tetanus, canine distemper, and panleukopenia, as required. All the carnivores are caught up and vaccinated with Trimune⁽¹⁾, a killed rabies vaccine, on an annual basis. The felidae are also given Felocine⁽²⁾, and inactivated panleukopenia vaccine, when they are caught up for rabies vaccinations. The canidae are injected with Vanguard-D⁽³⁾, a modified live canine distemper vaccine. The viverridae, mustelidae, and procyonidae are vaccinated with all three vaccines. The exceptions in our collection are the lesser pandas *Ailurus fulgens* which do not receive the M.L.V. Vanguard-D. We vaccinated them with a killed canine distemper vaccine⁽⁴⁾ until it was discontinued in 1977.

The dosages for all the vaccines range from .5 ml. to a multimillilitre dose depending on the size of the animal. The injections are given in a variety of methods. By far the easiest is when the animal is being handled for some reason. At these opportune times, a subcutaneous or careful intramuscular route is used with a hand syringe. Small carnivores, such as the mongoose *Suricata*, are easily caught in a net, and restrained for injections. Some, such as our group of caracal lynx *Felis caracal*, must be caught up into squeeze (or crush) cages specifically for their annual vaccinations. Other animals, for example the Arctic wolves, are not so easily handled, and they are given all of their vaccinations intramuscularly with a pole syringe that extends to a length of two metres. If the animal is considered a high risk, (i.e. likely to contract the disease) and yet cannot be reached with the pole syringe, it can be vaccinated by using a blow pipe dart, or a CO₂ dart gun, but that is rare.

Tetanus toxoid⁽⁵⁾ is given to the same mammals if this is practical. It is easy enough, when an animal is being handled, to inject it with tetanus toxoid as well as rabies and distemper, but trying to get two pole syringe injections into some is enough of a challenge, without trying to get a third vaccine into it.

Our vaccination program appears to be working out fairly well, as indicated by good animal health. We are working with a laboratory in the United States, sending them available blood serum samples for pre- and post-rabies vaccination titres. We are recording and evaluating the information, and generally are pleased with the increased titre levels shown.

- (1) Trimune killed rabies vaccine, Fort Dodge Laboratories, Fort Dodge, Iowa.
- (2) Felocine inactivated panleukopenia vaccine, Norden Laboratories, Inc., Lincoln, Nebraska.
- (3) Vanguard-D modified live canine distemper vaccine, Norden Laboratories Inc., Lincoln, Nebraska.
- (4) Trioid-Plus inactivated canine distemper, hepatitis vaccine with Leptospira Bacterin, Fromm Laboratories Inc., Grafton, Wisconsin.
- (5) Super-Tet tetanus toxoid, Cutter Laboratories, Shawnee, Kansas.



BALTIMORE ZOO
1979 WATERFOWL PROPAGATION SEASON

by
Steve Amos
Senior Keeper of Birds

The 1979 Waterfowl Propagation Season was one of the finest the Baltimore Zoo has achieved in its history. Of 51 species of waterfowl representing 9 Tribes exhibited at the Zoo (9 species being represented by a single sex only), 33 species produced eggs. Of these 33 species, 23 hatched, and 21 were raised. A total of 1064 waterfowl eggs were produced this year, 618 being fertile, thus giving a 58.1% fertility rate of eggs laid. Of the 618 fertile eggs, 227 were hatched, and 171 were reared, giving a 75.3% rate of waterfowl that were hatched and reared.

The laying season started early this year, with Nene Geese producing eggs in January and February, followed by Red-crested Pochards in March. The season also ran quite late, with Ringed Teal producing late into September. Ruddy Ducks *Oxyura jamaicensis* and Ringed Teal *Calonetta leucophrys* were extremely productive, as the Zoo reared a total of 39 Ruddy Ducks and 41 Ringed Teal out of 51 and 52 birds hatched, respectively. Other hatchings included Marbled Teal, Red-billed, Bahama, and Northern Pintail, Chilean Teal, Chiloe Wigeon, Blue-winged and Argentine Cinnamon Teal, Northern Shoveler, Red-crested Pochard, Redhead, Baer's Pochard, Australian White-eye, New Zealand Scaup, Brazilian Teal, Mandarin Duck, and Wood Duck.

New species of waterfowl hatched at the Baltimore Zoo included a single Nene Goose *Branta sandvicensis* and Comb Duck *Sarkidiornis melanotos*. The Nene or Hawaiian Goose is an endangered species, whose total wild and captive populations amounted to not more than 50 birds at one point in time. Thanks to captive management and breeding, the Nene is now being reintroduced to its natural habitat on the islands of Maui and Hawaii in the Hawaiian Islands. The Nene is a classic example showing that a species can be saved if proper management can occur. The female Nene which was hatched this year was raised, and now been reintroduced with its parents. Unfortunately, the Comb Duck was lost at about two weeks of age. Better results with these two species are expected in the 1980 season.

Reasons for the increased success for this season are varied and many. More consistent management, increased variety of nest boxes, a balanced nutritional diet, new brooding facilities, increased cover (plantings), and most importantly, a "cool" and "wet" summer by Baltimore standards all played a part in the increased rate of production.

Some problems did exist, though, especially with incubation of eggs. Approximately one-third (36.7%) of the fertile eggs incubated were able to hatch, due primarily to high bacterial infestations. The Birds Department is presently experimenting with new sterilization techniques, including hand-washes between handling of eggs during collection (a technique indicated to the Zoo by the Patuxent Wildlife Research Center), egg dips, and fumigation of incubators to combat these bacterial problems. Hopefully, by the time the 1980 season begins, these techniques will be worked out, and a higher percentage of fertile eggs will hatch, further increasing the overall production rate.

continued

Baltimore Zoo: 1979 Waterfowl Propagation Season, continued

Although excellent results were achieved with the waterfowl in their exhibit areas as such, changes are being made prior to the 1980 season to transform the waterfowl collection into zoogeographic regions. The 3-4 acre Waterfowl Lake will house North American species, the Small Duck Pond, as part of the African zoogeographic area, will house African species, while the three Wading Bird Pools will exhibit Eurasian and South American waterfowl species (two pools are needed to exhibit the many South American specimens). At the Waterfowl Lake, the Baltimore Zoo hopes to begin a release program shortly, with a percentage of Maryland species hatched and reared being banded and released from the exhibit area. Until a suitable exhibit can be constructed, Pacific Island and Australian species will not be kept, with the exception of the Nene Geese, which are being moved to a smaller individual exhibit hopefully to increase production and fertility.

With these changes taking place, a great deal of work must be and has been done to allow for suitable habitat. Planting of certain various exotic grasses will allow for more cover and will increase territorial land areas. Greater numbers and varieties of nest boxes are crucial to the success of the waterfowl, as increased species will allow for less areas for breeding and nesting territories to be available. A new rearing yard is also crucial and must be developed to acclimate the young birds before introduction to their exhibit locations, as the old facility has been transformed into one of the zoogeographic areas. With a new rearing yard, and with sufficient boxes and plantings, the 1980 propagation season will not suffer from these many advantageous changes.

Steve Amos was the 1979 President of the Baltimore Zoo Chapter of AAZK, and is a member of various wildlife organizations, including The Wildfowl Trust, The American Pheasant and Waterfowl Society, The International Wild Waterfowl Association, The American Museum of Natural History, and The Chesapeake Audubon Society.



AAZK ACCESSORIES AVAILABLE

BUTTONS

Buttons printed with 'Keepers Care' and a logo are available for fifty cents (50¢) from Larry Sammarco, Lincoln Park Zoo, 2200 N. Cannon Drive, Chicago, IL 60614. 50% of the sale price goes into AAZK's national treasury.

DECALS

The official AAZK decal is available through the Memphis Zoological Park and Aquarium AAZK Chapter. The decal is a black and white reproduction of the AAZK rhino logo, suitable for any smooth, hard surface, especially a car window. Cost is \$1.50 complete, prepaid. Make checks payable to the Memphis Chapter, AAZK, and send directly to Mike Maybry, Decal Project Coordinator, 1887 Crump Avenue, Memphis, TN 38107.

T-SHIRTS

The t-shirts come in a variety of colors and have the AAZK logo on them. Contact Carleton Bailie, 4400 NW 39th Avenue, #124, Gainesville, FL 32601.

THE KEEPER'S ROLE IN ZOO ANIMAL HEALTH

by
Judie Steenberg

This is Part V of a series. Preceding articles have covered the importance of the keeper's self-knowledge, facilities and equipment, the routine, nutritional requirements of animals, and diseases. Back copies of AKF are available, see the back inside cover.

INJURIES

Injuries and illness can result from several causes other than living organisms. Accidents, natural disasters, mismanagement, problems with zoo visitors, vandals, toxic elements, sudden stress, escapes and problems during capture and restraint are other possibilities. Preparedness and prevention can eliminate many problems or minimize the trauma suffered. "The name of the game in good animal husbandry is prevention, and it is a game keepers can play as well as anyone." (Stoskopf-Mar 1976.) In the event of fire, or natural disaster such as a severe storm, tornado or flood, knowing the right procedures, the location of equipment and acting promptly can reduce injuries. Anticipating problems and being aware of developing problems, such as signs of increasing stress, and removing the cause of the problem may keep a hypertense animal from running into a fence or from trying to jump it, for example. If an unusually hazardous situation has occurred, it can be expected to happen again--perhaps not for some time, but not taking precautions to safe-guard against recurrence of a "freak" accident could result in the death of an animal. Examples of conditions that could be fatal are: an animal getting hung up on board, a fence or caught while trying to squeeze through an opening; fighting between competitive males or between aggressive animals; inquisitive tongues, paws or legs, or tails sticking through openings into other units have been bitten or torn off, sometimes resulting in the death of the victim. Protective barriers must be carefully constructed to protect animals from other animals as well as from the public.

Negligence, forgetfulness, thoughtlessness, cruelty, lack of understanding of an animal's behavior, over-confidence on the part of a keeper and not following procedures are the causes of most accidents (Henry Doorly Zoo Keeper's Manual). Other management problems to consider are: improper perches for birds, resulting in foot problems, seasonal considerations (flies/summer, extra-bedding/winter), whitening glass on the front of exhibits so new birds can see it, carefully observing animals when moats or pools are only half-full, not allowing untrained or incompetent personnel to work directly with the animals. De-antlering or de-horning male animals must be done before an incident, not after trouble has occurred and resulted in injury or death. Shipping animals in proper containers and at the best time of the year (spring and fall preferred), and considering the climate at the point of destination can help prevent health problems. Keepers, for the most part, are not responsible for the ultimate decisions in many of the above mentioned situations but, in a diplomatic way, could make mention of potential problems. It is a matter of communication.

Children's zoos, where contact animals are present, have reported (Schneider, 1976) teasing, maiming, overfeeding, fatigue and poisoning from polaroid films as problems in animal health. Keepers in these areas must be prepared to spend time monitoring, or overseeing volunteers, to prevent these problems. It may be necessary to let other work wait while monitoring an area on especially busy days, Monitors must be

The Keeper's Role in Zoo Animal Health, continued

on guard against the stealing of eggs or small animals, too. These things seem unlikely, but they do occur!

Toxic materials can be chemical, plant, animal or microbiological. The approach to toxicological problems is: diagnosis, removal of the source of the toxic material, specific treatment based on diagnosis and non-specific and supportive treatment. An immediate preventive measure that comes to mind is the use of non-toxic paint (non-lead or titanium base) on all cages, especially on monkey, rodent or baby animal units. There is also the possibility that there are poisonous plants in and around hoofed stock pens. The varieties of plants to look for will depend on the geographical location of the zoo. Some harmful plants are purple nightshade, blue-green algae, hemlock, white snake, loco weed and bracken's fern. The time of year, cycle of growth and environmental conditions will effect the degree of toxicity in the plant. The bite of toxic animals (poisonous snakes) or ingesting non-edible animals (toads) can occur too.

CAPTURE AND RESTRAINT

Action to be taken when an animal must be caught depends greatly on the nature of the animal. If an escaped animal is timid and likely to stay away from people, the course of action will differ from what a keeper should do if the animal is dangerous, inclined to be aggressive or stand its ground if approached by an unknowing person (zoo visitor). The time of day an escape occurs, how many zoo visitors are on the grounds, the degree of stress the animal is under and its capabilities must all be given consideration. Ideally the animal should be captured and returned to its enclosure with a minimum of stress to the animal and danger to the zoo public and staff. A basic procedure would be for a keeper to summon help, if needed, keep the animal in sight, confine it to a yard or certain section of the zoo and clear the area of zoo visitors.

The capture and restraint of animals to examine, treat or crate them is not without its problems. It is an area where the inexperienced can add to the problems of all concerned. If asked to help with capturing and crating or moving animals, a keeper should know what it is that needs to be done and how best to do it! Keepers should not experiment with restraint techniques. Methods have been learned for the best way to handle most animals and unless the situation is an emergency, and any help is better than no help, the inexperienced keeper would be wise to carefully observe the procedure and help in minor ways. Personnel involved in animal capture and restraint must "be sensitive to the consequences of every action taken during a procedure" (Fowler 1975-76).

Generally the smoothest, least stressful captures have been carefully planned, proper equipment was ready and in good repair, all personnel were aware of their roles and the procedure was carried out promptly and efficiently in a way that best suited the animal's individuality.

The Safety Manual for Zoo Keepers (Animal Restraint) by Peter Karsten gives several basic safety rules to follow.

- know and treat animals according to their potential danger.
- man/animal relationships - an animal that can be safely approached by one person may react differently to others.
- beware of the tameness of donated pets.

continued

The Keeper's Role in Zoo Animal Health, continued

- know procedure to enter a cage with unsafe animals...make a positive count. Count what you see, not what you don't see.
- control of animal quarters' doors and gates should be controlled by one person and must not be opened or closed unless the person in charge of the operation gives an order to.
- anyone operating doors is responsible for the consequences.
- make every effort to avoid force. Think of ways to move animals smoothly; use trap boxes, shift cages, bait situations, etc.

A good rule to remember is "A safer method for the keeper also means less stress to the animal" (Karsten 1974).

Also worth remembering are:

- to avoid prolonged stress to the animal being captured as well as to the animals nearby.
- keep capture equipment out of sight if possible until time to use it.
- avoid capturing two animals in the same net or trap. In their stressed condition they can easily injure one another.
- once an animal is captured be sure it's secure and doesn't slip the net and have to be re-captured.
- it is best to capture animals at a time of day when there are no or few zoo visitors.
- one should never proceed to capture an animal if they feel unsafe, but should get help.

Although it has been stressed that keepers should watch and learn how to capture animals properly, it is necessary that they also TRY IT. Karsten points out the drawbacks of not trying and of allowing the "gifted" handler to do all of the capturing. "The staff may come to rely on the 'gifted' handler to restrain all difficult species and to make little effort to learn such skills for their own use."

DIAGNOSIS AND TREATMENT

Once a keeper is aware of a health problem, it must be determined if the problem...needs attention later,

should be discussed with supervisors immediately,
is a critical situation and requires immediate attention.

A keeper, by knowing his or her animals well, should be able to evaluate the seriousness of the problem, know whom to notify and proceed accordingly. The keeper must communicate the facts, not elaborations. "Diagnosis and evaluations may be necessary strictly on a keeper's observations." (Nall 1972-73). It can also be helpful for the keeper to be in attendance to answer any questions that may arise during the evaluation or examination of an animal. Species, age and sex of the animal, the number of animals that are sick, the onset (sudden or slow) of the illness, management and nutritional practices, the amount of exercise and frequency of observations can all be helpful information for diagnosis.

After diagnosis, treatment is given by the veterinarian or as prescribed. "Medical treatment should never be undertaken without veterinary approval. No matter how well we know our animals, we are not familiar enough with the medical techniques and medications and may do more harm than good in spite of our intentions." (Lincoln Park Zoo Keepers Handbook) In the event a keeper is instructed, by the zoo veterinarian to medicate an animal, he or she must know:

The Keeper's Role in Zoo Animal Health, continued

- the dosage and how often to medicate.
- the route for administering medication (per os - oral, I.D.- intradermal, sub-Q - subcutaneous, I.M. - intramuscular, etc.)
- medication must be given "on time".

Additionally the keeper should observe the amount of medication ingested if given with food, and watch for the effects of the medication as well as unexpected side-effects. The dosage, time given and initials of the keeper should be recorded on some sort of record such as a "veterinary treatment" card. Other keepers working in the area, supervisors and the veterinarian should be kept informed of the animal's condition and progress.

Non-treatment of an animal can be upsetting to zoo personnel but may be the best route to take for the animal's sake. The veterinarian is trained in disease control, sanitation and in the treatment of sickness or injuries - the total medical care of the animal, and is in the best position to make the decision of when and how to treat the animal.

Another difficult decision is to euthanize an animal rather than treat it and cause it needless pain and suffering. What's best for the animal must be kept in mind.

NECROPSY

"Routine necropsies of all animals which die provide basic information as well as answers to specific problems." (Farnsworth 1974) Valuable information can be gained from necropsy which can aid in preventive medicine. It is the "last chance to gather information on the zoo's most valuable asset; the animals" (Stoskopf Nov. 1975).

Again, it is important for the keeper to provide the veterinarian with as much history as possible. Upon discovering a dead animal a keeper should note the position of the carcass (is it on its side, head turned, part of body caught, near fence, middle of yard). Any circumstance that might have some bearing on the death and the suspected cause should be stated. Supervisors should be advised immediately and the carcass cooled down as soon as possible. Freezing can destroy tissue needed for microscopic study and kills bacteria; the veterinarian should be asked if the carcass should be kept cool or frozen, according to Stoskopf (1975-II (11):7).

The next matter of immediate importance is to determine the possibility of another animal suffering the same fate in the event death was caused from mechanical, exhibit design or social problems. Action must be taken to prevent further occurrence.

SUMMARY

The effectiveness of a keeper's role in a zoo's animal health program is dependent upon many factors.

- | | |
|------------|--|
| Attitude | - the keeper's, zoo management's and the veterinarian's. |
| Awareness | - of the procedures and policies of the zoo's animal health program and, especially, the needs of the individual animal. |
| Prevention | - of problems due to being uninformed, improper techniques and practices, poor nutrition, of |

The Keeper's Role in Zoo Animal Health, continued

- improper use of tools, equipment and lack of upkeep of exhibits and other facilities.
- Observation - of the animals and anything that either directly or indirectly affects them.
- Communications - between all persons concerned with zoo animal health.
- Cooperation - accepting the roles of others, and recording valuable information for their use and future reference.

The administration (Director et al), the Veterinarian and the Keeper share a common goal - the health of the zoo's animals. All concerned should work toward "...an understanding and communication on the evaluation of the health and welfare of each animal in the Zoo. Let us allow each of these three groups of trained personnel to make his contribution to the preservation of our Zoo animals. Dedication and motivation are the rewards of participation."

(Nall 1972-73).

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This is the fifth and final section of this series.



LETTER TO THE EDITOR, AAZK

Re: Sexist Racist Gray Area

While *Homo sapiens americanus* is not supposed to discriminate on the basis of race or sex, other animals certainly do. Large Primates show a preference for bearded men or long-haired women as their keepers. Felines and equines prefer female handlers. Female canines prefer male humans, and, conversely, males like women. Phenomones play a larger part in preferences than we realize, having burnt out our olfactory nerves with strong chemicals. It is best to be the Alpha Animal in any situation, and to understand the social structure of the particular species involved, to get along. Elephants are especially sensitive, social animals and so respond best to a combination of gentleness and firmness, just as humans do. During the years I was a zoo keeper at the Kansas City Zoo (circa 1945-58) I observed freshly-arrived wild-caught lions stalking black children visitors, but ignoring whites. An admittedly racist foreman, wishing to have some "sport," put a young black male keeper on a neck of a large elephant and led her around the zoo grounds for an hour "to see if his knuckles will turn white." The intrepid keeper hung on, and developed into one of the finest elephant handlers in the country. "At night all cats are gray," (and all elephants, day or night.)

Sincerely yours,
Daniel M. Watson
Executive Director
Abilene Zoological Gardens
Abilene, Texas

A Forum is "a medium of open discussion". The ANIMAL KEEPERS' FORUM welcomes articles, letters and items from interested persons. Any writing published does not necessarily reflect the opinions of the editors or of the American Association of Zoo Keepers.

THE STRUGGLE FOR SURVIVAL

TWO FOREIGN CROCODILE SPECIES LISTED AS ENDANGERED: THREE-FOURTHS NOW PROTECTED

Two more crocodylians, the saltwater *Crocodylus porosus* and the American *Crocodylus acutus*, have been brought under the protection of the U.S. Endangered Species Act, ending further commercial trade in this country in products made from their hides. The Florida population of the American Crocodile was listed as endangered in September 1975. This covers the remaining populations of this species.

INTERNATIONAL TRADE IN AMERICAN ALLIGATOR HIDES TO BE PERMITTED

International trade in American alligator hides and hide products will be permitted for the first time in a decade. Under the new regulations, the legal sources of alligator hides or meat are from alligators legally held in captivity, such as those raised on alligator farms; alligators killed by authorized State or Federal employees; or alligators killed in limited hunts which are permitted in parts of Louisiana. Domestic businesses have been allowed access to these hides, now foreign buyer and tanners have similar accessibility. It is hoped that the availability of a reliable supply will result in less exploitation of other endangered crocodylians.

RECLASSIFICATION PROPOSED FOR AN AFRICAN ANTELOPE, THE RED LECHWE

The red lechwe, an African antelope, has been proposed for reclassification from endangered to threatened status. Lechwe populations, now estimated at about 150,000 appear to be stable or increasing in their native countries of South West Africa, Botswana, Angola, Zambia, and Zaire, where they are protected. Under the proposal, the red lechwe could be imported under terms of the International Convention for all but commercial purposes.

THREE PRIMATE SPECIES PROPOSED FOR RECLASSIFICATION

The present CITES classification of the Diana guenon, Yellow-tailed woolly monkey and the Mandrill is Appendix II. The U.S. Department of Interior is proposing to change the classification to Appendix I.

coming events

AAZPA REGIONAL WORKSHOPS

- NORTHEASTERN
March 30-April 1 Norfolk, Virginia
- SOUTHERN
April 13-15 Orlando, Florida
- GREAT LAKES
April 27-29 Cincinnati, Ohio * see next page
- WESTERN
May 4-6 Winston, Oregon

1980 AAZK 6TH NATIONAL CONFERENCE

Montgomery Zoo
P.O. Box ZEBRA
Montgomery, Alabama 36109
(205) 265-3536

- Conference co-ordinator: Laura Strickland
- Conference Headquarters: Holiday Inn State Capitol
- Theme: *The Role of Smaller Zoos in the Zoological World*
- Registrations: \$40.00 per member or \$45.00 non-member

FIRST CALL FOR PAPERS! Deadline will be July 15

If you are interested in presenting a paper, please send an abstract or detailed outline including title or summary. There will also be an evening film session scheduled. Persons interested in presenting a film should submit title, time length and a brief description.

If you need support equipment for your paper or film, please let us know at the time you submit your paper or film.

The dates are October 5-9, 1980. This is a change from the original plans, Laura reports, so take note.

INFORMATION PLEASE!

I would like any information concerning California Sea Lions *Zalophus californianus*. Need information on breeding, prenatal behavior, post-natal behavior and information about formulas for pups and any other information you would like to pass along or exchange.

Thanks
Brenda Lodge
Fresno Chapter
2142 N. Rafael
Fresno, CA 93711

We are indebted to the AAZPA Newsletter for allowing us to reprint portions of this section from their "Positions Available" listings. This is a monthly service to us, for you.

ANIMAL TECHNICIAN... working supervisory position requiring two years' experience in care and maintenance of exotic birds. Supervisory experience preferred. Minimum of Associate Degree in Veterinary Assistance. Starting salary: \$847 per month, plus excellent benefits. Apply to: Earl Unell, Personnel Department, 12th Floor City Hall, 414 East 12th Street, Kansas City, MO 64106.

CURATORIAL TRAINEE/MAMMALOGY.... seeking qualified applicant with advanced degree in one of the zoological or animal sciences. Candidate should possess strong desire to make managing captive wild animals their life's work. Duties require that applicant gain high level of experience in establishing care and feeding techniques, managing large staff, writing for technical and popular audiences and designing exhibits. Submit curriculum vitae to: James B. White, Personnel Department, New York Zoological Society, 185th Street and Southern Boulevard, Bronx, NY 10460. Equal Opportunity Employer.

PACHYDERM KEEPER... to participate in husbandry program of Asiatic and African elephants, rhinoceros and hippopotamus and to assist trainer with an elephant program that includes public demonstrations. Elephant experience desirable. Salary: \$10,046 - \$11,794. Excellent fringe benefits. Submit resumes to: Tom Foose, Zoological Curator, Oklahoma City Zoo, 2101 N.E. 50th, Oklahoma City, OK 73111.

CURATOR/MAMMALS... seeking individual with degree in Biology, Zoology or closely related discipline, with at least three years' supervisory experience, preferably in mainstream zoological park. Three additional years of supervisory experience may be substituted for degree. Responsible to zoo director for overall management of mammal department; must be thoroughly familiar with relevant federal regulations and have knowledge of ISIS records maintenance. Position requires abilities in organizing, supervising, planning new mammal facilities and writing. Send resume and two letters of reference to: John E. Werler, Director, Houston Zoological Gardens, P.O. Box 1562, Houston, TX 77001.

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chapter news

* The Cincinnati AAZK Chapter cordially invites all AAZK members to attend the 1980 AAZPA Great Lakes Regional Workshop hosted by the Cincinnati Zoo. The dates are April 27-29. If funds are a problem, some Cincinnati Zoo keepers have offered quarters in their homes for the length of the Workshop. Steve Taylor from Louisville Zoo will chair an AAZK workshop which is open to all interested individuals. For more information contact Bill Maynard at the Cincinnati Zoo.

+ + + + +

opportunity
skook

AMERICAN ASSOCIATION OF ZOO KEEPERS

FINANCIAL STATEMENT FOR YEAR ENDING DECEMBER 31, 1979

CASH ON HAND JANUARY 1, 1979 \$ 4077.81

INCOME

Memberships, patches, contributions, 14243.04
 T-shirts, share of decals and buttons
 Interest on savings 138.39

TOTAL INCOME \$ 14381.43

EXPENSES

AKF membership share \$ 5630.00
 Wages and taxes (two employees) 2771.45
 Postage for meter 400.00
 Patches 1084.70
 ADT forms 83.67
 Directory printing 600.00
 Brochures 157.68
 Miscellaneous typing 100.00
 Miscellaneous postage 38.24
 Office supplies 94.06
 Meter rental & maintenance contract 193.20
 Meter base rental 259.16
 Calligraphy 58.00
 Printing of stationery, renewal cards, etc 380.40

TOTAL EXPENSES \$ 11850.56

CASH ON HAND DECEMBER 31, 1979

CHECKING ACCOUNT \$ 3821.73
 SAVINGS ACCOUNT 2786.95

TOTAL CASH ON HAND \$ 6608.68

BALANCE SHEET DECEMBER 31, 1979

ASSETS

Cash \$ 6608.68
 Postage 223.94
 Accounts receivable -----
 Inventory
 Patches 750.00
 Office supplies 150.00
 Prepaid expenses
 Lease of postage meter and base 57.61

TOTAL ASSETS \$ 7790.23

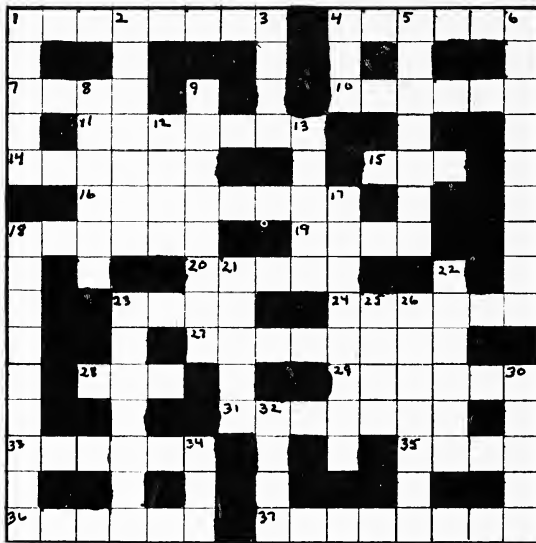
LIABILITIES

Accounts payable \$-----

NET WORTH \$ 7790.23

NATUREWORD

by
Neville Pike
Keeper, Metro Toronto Zoo



1980

CLUES ACROSS

1. Pachyderm
4. Plantain-eater
7. Marsh bird
10. The ostrich is one
11. Okapi relative
14. He belongs to the family Ramphastidae
15. Most birds do it!
16. Named 'earth-pig' by the Afrikaans
18. Smallest known fox
19. Morays
20. Discarded by monkeys
23. What the *Panthera* group can do that the *Felis* group cannot.
24. They belong to the order Thysanoptera
27. Mixture stored in the hive
28. Spider totally dependent on its web for prey
29. Herb of the genus *Eryngium* (var)
31. Primitive gastropod
33. Sponge vents
35. Cow stable (OE)
36. Harpy and booted
37. *Xenicus gilviventris*

CLUES DOWN

1. Great or little
2. Pouched bird
3. Sod
4. Caucasian, Daghestan or Kuban
5. Possessed by infant snakes only?
6. N. American warblers ready for baking?
8. New World counterpart of the Agamids
9. Does this crustacean get sea sick? (2 words)
12. Is it unusual to have steak like this?
13. These seals will hear you coming
17. North American falcons
18. Staple diet for barn owl (2 words)
21. Fairy Bluebird genus
22. Stone or bean
23. Dorsal finned whale
25. A courageous shrew?
26. Colorful trout
30. Salty expanse
32. Blue or black
34. Somali has a wild one



INFORMATION FOR CONTRIBUTORS

Animal Keepers' Forum publishes original papers and news items of interest to the Animal Keeping profession. Non-members are welcome to submit articles.

Articles should be typed or hand-printed. All illustrations, graphs and tables should be clearly marked, in final form, and should fit in a page size of no more than 6" x 10" (15 cm. x 25½ cm.). Literature used should be cited in the text and in final bibliography. Avoid footnotes. Include scientific names.

Articles sent to *Animal Keepers' Forum* will be reviewed for publication. No commitment is made to the author, but an effort will be made to publish articles as soon as possible. Those longer than three pages will be separated into monthly installments at the discretion of the editorial staff. The editors reserve the right to edit material without consultation unless approval is requested in writing by the author. Materials submitted will not be returned unless accompanied by a stamped, self-addressed envelope.

Telephoned contributions on late-breaking news or last minute insertions are acceptable. However, phone-in contributions of long articles will not be accepted. The phone number is 913 272-5821.

DEADLINE FOR EACH EDITION IS THE 20th OF THE PRECEDING MONTH.

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Professional (full-time personnel)\$20.00 annually
Affiliate (part-time keepers, managerial personnel) . .	.\$15.00 annually
Associate (interested individuals)\$10.00 annually
Contributing/Institutional.\$50.00 annually

All memberships include subscriptions to the *Animal Keepers' Forum*. 50% of the member's dues are budgeted for the publication. The journal is not available by subscription only.

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The AAZK National Headquarters has shoulder patches available for \$2.00 and back issues of the *Animal Keepers' Forum* for \$1.00.

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AAZK NATIONAL HEADQUARTERS
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635 GAGE BLVD.
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Animal Keepers' Forum



Dedicated to Professional Animal Care

APRIL 1980

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Animal Keepers' Forum is a monthly journal published by the American Association of Zoo Keepers, 635 Gage Blvd., Topeka, Kansas 66606.

Second class postage is paid at Topeka, Kansas. Return postage is guaranteed.

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SCOOPS and SCUTTLEBUTT

The April cover is a drawing of Charlton, a juvenile Black-footed penguin. Charlton is the first successfully hand-raised penguin at the Riverbanks Zoo, Columbia, South Carolina. He has now been re-introduced to the penguin colony of 13 individuals.

Stephen Baynes of the Riverbanks Zoo is the artist who drew the little fellow. Thanks!

It is appropriate that Charlton is the "Cover Animal" for this AKF because the first two Conference '79 papers that appear in this edition are both about penguins. Gary K. Clarke's Keynote Address is also included. More conference papers will follow in the next several journals.

Animal Keepers' Forum has increased to 24 pages for the last five issues. This is because you, the members, have contributed more articles (four pages of Births and Hatchings for this month!), and with the dues increase, more money is available. We hope to continue to grow in numbers, in enthusiasm, and in professionalism by the sharing of knowledge and discoveries.

from the President

from the President

Pat Sammarco

The transfer of the National Headquarters from the National Zoo to the Topeka Zoo has now been completed. Brenda Jarboe has been hired as Administrative Secretary.

I am also pleased to announce the appointment of Bernie Feldman to the position of Chapter Affairs Coordinator.

Mike Crocker has accepted the appointment as the Chairperson of the AAZK Awards Committee. Please direct all awards nominees to

Mike Crocker
Dickerson Park Zoo
3043 North Fort
Springfield, MO 65803

The Committee is now accepting nominees for the Excellence in Zoo Keeping Award and the Certificate of Merit for Zoo Keeper Education. See page 50 of the March issue of AKF.

WE'RE GETTING IT TOGETHER

(WE HOPE)

We (Ron, Mike, Lois and Brenda) are working hard to keep things going smoothly during the transition of the move of the National Headquarters from the National Zoo to the Topeka Zoo. We appreciate your help in addressing all correspondence to the AAZK Headquarters, Topeka Zoo, 635 Gage Blvd., Topeka, KS 66606, and your patience if it takes a bit of time. Thanks.

BIRTHS HATCHINGS

TWIN AARDVARKS BORN AT THE CINCINNATI ZOO *Michael W. Dulaney* *Head Keeper, Nocturnal House*

On February 28, 1980, the Cincinnati Zoo's three and a half year old female armadillo gave birth to twins. As far as we know this is the first recorded birth of twin armadillos in captivity. The mother of the twins was captive born in the Point Defiance Zoo, Tacoma, Washington. The first-born, a female, weighed 1,860 grams at birth and was born at 1:55 p.m. The second birth occurred at 4:10 p.m. The second infant, a male, also weighed 1,860 grams.

The babies were removed from the mother's enclosure due to the lack of maternal instincts she exhibited. On March 30, 1980, the male infant succumbed to pneumonia. The autopsy revealed that the lungs of the animal were full of blood indicating that we were probably dealing with some kind of an internal problem which developed into pneumonia.

The remaining female infant seems to be responding well. During her first week she has gained 250 grams. She receives four feedings a day between the hours of 8:00 a.m. and 9:00 p.m. No feedings are done between 9:00 p.m. and 8:00 a.m. for in the wild the adult armadillo, being nocturnal, is out feeding and leaves the youngster in an underground burrow during the nights. Due to the extremely dry and wrinkly skin of the baby we found it best to keep her in an incubator set at 80-85° F. with an 85-90% humidity. Even at these settings we occasionally have to apply Nivea Skin Lotion to prevent drying and cracking of the skin.

TWO SABLE ANTELOPE BORN IN MEMPHIS. *Michael R. Maybry*

Memphis Zoo and Aquarium recently recorded the births of two sable antelope -- both female. The calves' sex was extremely important as we had recently lost one of our three females and of the remaining two, one is twelve years old.

The first calf was discovered nursing in her stall when the keeper arrived on his morning rounds. She seemed alert and strong and we have had no problems. The second calf, born five days later, was not able to stand under her own power. She was tubed three times during the first night and on the subsequent morning was observed nursing on her own. Both calves have continued to thrive and are awaiting warm weather to explore their outside area.

MANED WOLVES BORN AT OKC ZOO *Marcia A. Clevenger*

Two Maned Wolves *Chrysocyon brachyurus* were born at the Oklahoma City Zoo on 3 February 1980. The Zoo exhibits 1.3 of these rare canids and has recently purchased 2.0 to add to their breeding program. This was the female's first birth and she is taking excellent care of the pups. The pups (unsexed at present) had opened their eyes by 17 February and appear to be thriving.

Another significant addition to the OKC Zoo collection is the birth of a Spectacled Bear *Tremarctos ornatus*. The cub is being raised by the Mother in an off-exhibit den.

AFRICAN FAT-TAIL GECKO HATCHING AT THE KNOXVILLE ZOOLOGICAL PARK. . .
Karen Baker, Reptile Keeper

On February 28, 1980, our first African Fat-tail Gecko *Hemidactylus* *caudicinctus* hatched. A second egg was opened 6 days after the first's hatching and a full-term gecko was found dead. The pair of eggs were laid December 21, 1979, in a moist sphagnummoss box. The eggs were removed and placed in two bowls. The medium was 50/50 by weight vermiculite and water. The bowls were covered with plexiglass and kept in styrofoam incubators. The temperature remained at 28°C with an average relative humidity of 80%. Incubation time was 70 days. The hatchling is in perfect condition, weighing in at 2.8 gm., .2 gm more than the initial egg weight. On March 1, the youngster ate its first meal of baby crickets.

So far we have had 5 pairs of eggs dropped approximately 18 days apart. Three of the pairs have gone bad. Our fingers are crossed over the last pair. More eggs should be on the way.

Following deposition of the first eggs, we separated the male and female. After about a month the female was reintroduced to the male and copulation was observed. Briefly mating behavior proceeded as follows: the male and female investigated each other with tongue flicks; the male vibrated his tail very rapidly then bit the skin of the female--bite sites varied from tail, sides, back of neck. While side by side and while the male had a good grip on her neck, he twisted his tail under hers and copulation took place. This grasp lasted approximately 10 seconds. After a short week together the female was removed and the procedure repeated.

Diet of the adults consists of crickets offered twice a week. Once a week the crickets are dusted with a vitamin supplement. A pink mouse is offered once a week. In addition, an emulsion of Cod Liver Oil and calcium lactate is dropped (1 drop) on their noses. This is done every 2 weeks for the female and once every 3 weeks for the male.

Separation of sexes seems to be a key factor in inducing mating behavior. Incubating eggs also appear to require a high humidity to keep from collapsing. We have found only one paper published on these animals. Apparently not much is known about their behavior. It is our hope to study the breeding habits, possibly utilizing video filming of activities for later analysis. If anyone has information on these interesting cat-like lizards, please pass it along.

A BIRTH AND A BIRTHDAY AT WOODLAND PARK ZOO Harmony Frazier
Nursery Keeper

On the afternoon of January 25, 1980, a male Orang Utan was born at Woodland Park Zoo in Seattle, Washington, This was the first offspring for his mother Melati who is on loan to us from National Zoo. The infant is the second offspring from his father Towan, our male twin.

Since Melati showed little maternal interest in the infant and would not carry him, he joined his half sister, Birute' in the Zoo Nursery.

Birth weight was recorded as 3 lb. 15 oz. He is an extremely strong and muscular infant and is now 5 lb. 11 oz.

continued

Although he has acquired the nickname "Rusty", we are considering a more suitable Indonesian name.

Birute' celebrated her 1st birthday on March 4, 1980. We began introduction of the two infants to each other at that time and they are now spending some time together daily. We are hopeful that the resulting interaction will make their eventual return to the adult group an easier process.

1.2 BACTRIAN CAMELS AND 0.1 REEVES MUNTJAC INITIATE 1980 BIRTHING SEASON AT CRC, FRONT ROYALKevin Conway

Spring arrived at the Conservation and Research Center on February 22, 1980, with the birth of a male Bactrian Camel *Camelus bactrianus*. The first of a possible five camel births this spring, the baby experienced some difficulty standing and nursing until 72 hours after birth. During the initial 72 hours, the calf was fed either mother's milk or an evaporated milk and water mixture. The second and third births, both females, occurred March 8th and 11th. Both female calves have been standing and nursing within hours of birth.

The first Reeve's Muntjac *Muntiacus reevesi* birth for 1980 occurred March 6. The fawn is a female and appears healthy.

POLAR BEAR CUB AT BROOKFIELD ZOO

Brookfield Zoo welcomed a polar bear cub on March 6, 1980, when mother Snowball, 14, brought her new baby out from the maternity den into the outside grotto. This is the fifth offspring born to Snowball.

The cub was first heard in the den on December 3, so is now three months old. To ensure the safety of the baby, keepers drained the grotto pool and lined it and the deep space moat with 40-some bales of straw.

GILA MONSTER BABIES EXHIBITED AT PHILADELPHIA ZOO

Three Gila monsters were hatched at the Philadelphia Zoo on November 19, 1979, and have been placed on exhibit after a four-month acclimation period.

BACTRIAN CAMEL BORN IN BROOKFIELD ZOOAnn Petric

On March 6, 1980, Brookfield Zoo welcomed their second Bactrian camel born in 32 years. The male calf is the first offspring of female Lynn who is also Brookfield born and only three years of age. The sire, Benjamin, is 8 years old and also the father of Lynn. The 80 pound newborn was weak and unable to stand unaided for 18 hours. He received dextrose via a bottle which he suckled eagerly. Once he was able to stand, Lynn was hand-held while he was guided to her udder for nursing bouts. This proved amazingly successful even though he needed support and aid in walking. Presently, he is still receiving supplemental bottles of evaporated milk diluted 1:1 with water, although we hope to discontinue the feedings in the near future since he is now nursing from Lynn independently and shows a good weight gain. His birth brings the Brookfield herd count to 2.3.

BIRTHS AND HATCHINGS, *continued*

BALD EAGLES LAY TWO EGGS AT THE COLUMBUS ZOO. Yvonne Clippinger

The Columbus Zoo's Bald Eagles *Haliaeetus leucocephalus* George and Georgina have done it again. On February 18, 1980, the bird department personnel checked the nest of George and Georgina and discovered one egg had been laid. The nest was checked again on February 30, 1980, when the second egg was observed. The pair of Bald Eagles are presently incubating the eggs and will raise the eaglets when hatched.

Department personnel are monitoring the behavior of the Eagles from two main observation points. One observation point is a telescope that has been set up in the Curator's office approximately four hundred feet from the Eagle Aviary. The other point is an observation tower that is approximately thirty feet high and twenty feet from the exhibit. All behavior patterns and feedings are being recorded in a daily log.

To date all is going well, the female doing most of the incubating during the day and the male taking over incubation at night. If the eggs are fertile, it will be the second successful hatching of Bald Eagles at the Columbus Zoo. The first was in 1978 when one eaglet hatched and was raised by both parents.

If anyone would like more information on the 1980 Bald Eagle Propagation Program at the Columbus Zoo please contact

Yvonne Clippinger / Bird Department
Columbus Zoological Gardens
9990 Riverside Drive
Powell, Ohio 43065

BLACK JAGUARS BORN AT BROOKFIELD. Bruce Brewer

Brookfield Zoo's population of black jaguars doubled with the birth of 2 female cubs on November 17, 1979. Mother, Solo (b. Jan. 77), and cubs Duo and Tombi are on exhibit, although separated from father, Hoover (b. June 1977). Even though this is her first litter, Solo's maternal care is excellent.

TWIN TAMARINS BORN AT TOPEKA ZOO Connie Cloak

Topeka Zoo had a St. Pat's day surprise -- twin cotton-headed tamarins born in the Tropical Rain Forest Building. The male had died last October probably within a few days of impregnating mother "Pinochle". Since male tamarins normally carry much of the responsibility for raising young, we are interested in watching how the new mother is coping. She and the other two young adult females are inexperienced with young. For the first two days, the "aunts" held the babies much of the time, but one proved inept, trying to scrape the babies off of her back and screaming incessantly. Pinochle now refuses to let her hold them and seldom allows the other female to, either. Both aunts, however, continue to groom the young and stay near the mother all the time. The group is free-ranging in the Rain Forest exhibit.

We would be very interested in hearing from others who have had experience raising single-parent tamarins. Please contact: Connie Cloak, Topeka Zoo, 635 Gage Blvd., Topeka, KS 66606.

FIRST SUCCESSFUL OTTER BIRTHS AT ELLEN TROUT ZOO . . . Linda Goodman

During the morning rounds on February 26 and 27, 0.0.4 baby river otters, *Lutra canadensis*, were discovered in one of the otter dens. This is the first successful birth of river otters recorded here. Mother and pups are doing fine.

INFORMATION PLEASE!

The Lafayette Zoological Park is interested in husbandry and breeding information concerning the slow loris *Nycticebus coucang*. Any information would be greatly appreciated. Please send any information to:

Connie Waterstradt
Lafayette Zoological Park
3500 Granby Street
Norfolk, VA 23504

A RARE SUBSPECIES OF THE SARUS CRANE

by
Kerry Hoffman
Aviculturist, International Crane Fdn.

The Eastern Sarus Crane *Grus antigone sharpii* is an endangered subspecies of the Indian Sarus crane *Grus a. antigone*. Formerly distributed throughout Burma, Thailand, Cambodia, Laos, Vietnam, and the Phillipines, the Eastern Sarus is now in serious danger of extinction. Recent attempts to locate the bird in the Phillipines have failed, leading many experts to believe that the Eastern Sarus may now be extinct in Southeast Asia. However, in 1966 the first recorded sighting of the Eastern Sarus was made in Northern Australia where they have established residency. Today, this small, nonmigratory flock may be the total representative of the wild population.

In March, 1974 the International Crane Foundation received 4 adult Eastern Sarus Cranes from Australia. Two of the birds formed a pair bond and the female began to lay eggs in 1975. She consistently laid infertile eggs despite our attempts to artificially inseminate her. In 1978 she laid her first fertile egg and on July 29, 1978, "Tasady" was hatched in the ICF hatchery. In 1979, two Eastern Sarus chicks hatched. The first was incubated artificially but the second egg was treated differently.

For the first two weeks the egg was incubated in a forced-air incubator at 99.75° F. It was then switched with an infertile egg in the nest of a pair of Indian Sarus who incubated it for the next two weeks. The egg was then pulled and it hatched 6 days later in ICF's hatchery.

Future breeding efforts with the Eastern Sarus may involve a foster parent program using captive Indian Sarus to hatch and raise Eastern Sarus chicks. The Indian Sarus is not endangered and is found in many zoos and private collections around the world.

Through a captive propagation program, the International Crane Foundation hopes to reintroduce the Eastern Sarus crane to protected areas of the Phillipines.



WHAT YOU GET FOR YOUR TWENTY BUCKS

by
Gary Tibbetts
President, AAZK Chapter of Rio Grande Zoo
reprinted from the Good Gnus

I was recently asked why the AAZK dues went up to twenty dollars a year. My answer was the obvious, that everything is going up and AAZK must run in the black. The next question was, "What do I get for my twenty bucks?" Not being particularly glib, I answered materialistically, "*Animal Keepers' Forum* magazine, an AAZK patch, and the Directory." My answer bothered me and for the rest of the day that question was on my mind. That night as I wrote down my thoughts it seemed to me that the most important thing we get as members of AAZK is an opportunity. This opportunity is to further ourselves professionally and to support an organization that believes zoo keeper work can be professional.

Professionals are not people who are seeking status, power for power's sake or other abuses of authority. The betterment of work conditions is as much their concern as is the smooth running of the operation. Central to the idea of professionalism is that their work involves a body of knowledge that can be gained or added to. The work then is not seen as menial but includes mental activity. Time is scheduled so that meetings, lectures, programs and readings can be incorporated into one's daily activity.

The professional uses a body of knowledge as a tool to perform the job at ever higher levels. As knowledge increases so does the professional's competence. Competence is also gained by involvement and taking the difficult choice over the easy one, thus testing oneself. A professional then is one who is not just a member of an organization but an active member, involved in as many activities as can be fit into one's schedule. The goal would be to make themselves and the job better.

The philosophy opposed to the professional attitude is probably best stated as, "The world owes me a living." People excuse their laziness with thousands of excuses. Choices are egocentric and usually are made with the immediate consideration being, "what's best for me." Since difficult choices are only taken by accident, these people are seldom tested to see their capabilities. Without this self-testing, a person doesn't know his or her potential and often a crisis of self confidence occurs. Then the choices change from "what's best for me" to "what's easiest for me." This path leads to even less self-testing, and indecision characterizes the person at this point. Due to not knowing what they can do, choices become impossible. This path seems to me to be very frustrating and a dead end.

A person is aided to become a professional through involvement in professional activities, through the growth of self-confidence, and through the attainment of knowledge; membership in the AAZK can further this development. What you get for your twenty bucks is the opportunity to change your question from "what do I get?" to "what can I do to make the organization better so that I may grow professionally? This to me is a great value for twenty bucks.



Ed. Note. Thanks, Gary, you said it so well; we couldn't have done better.

THE CALCUTTA ZOO

PART II

by

Tom Goldsberry, San Diego, California

After all of the personnel problems (described last month) had been disposed of, Dr. Guha and I resumed our walk through the main zoo. Dr. Guha was in fine humor now as he pointed out some of his favorite exhibits. One was the two female Galapagos tortoises, fully grown when the zoo was opened in 1875 and now estimated to be over 150 years old. Another interesting exhibit was an entire herd of blackbuck *Antelope cervicapra* white variety. A favorite with the visitors was the three-month-old Indian rhino calf, the first one born at the Calcutta Zoo in ninety years.

One of the most successful conservation attempts has been made with the propagation of the Manipur brow-antlered deer *Cervus eldi eldi*. Found only in the Southwestern part of the Lake Logtak in the Indian State of Manipur, *C. eldi eldi* is the rarest of the three species of Southeast Asian deer, although the other two are also entered in the Red Data Book. At one time the Manipur deer was protected by royal edict and the penalty for killing one was amputation of a hand. This not only helped preserve the deer but was a sure cure for recidivism. Dr. Guha estimates the present world population of Manipur deer to be thirteen in the wild and eighty-five in zoos.

Among the rarer birds at the Calcutta Zoo are the Bengal green pigeon *Treron hoenicoptera* and the Pompadour green pigeon *Treron pompadora*.

The Calcutta Zoo has been a part of the West Bengal scene for 104 years. Bengalis are proud of their zoo and support it. This support is reflected in gate attendance which has steadily grown until now it boasts almost 3,000,000 visitors annually. The zoo was entirely self-supporting from gate receipts until 1971, when in the face of spiralling food costs, the zoo reluctantly sought assistance from the State government. Today the zoo is still funded primarily by zoo attendance but also receives annual grants from the State. During the mild Calcutta winter, when the temperature dips into the 70's, 30,000 Sunday visitors are not unusual. On one Sunday in December, 1977, attendance hit a record 70,000. As staggering as this figure may seem to North Americans it is still far short of Ueno's (Tokyo) mark of 100,000 and Peking's unsubstantiated claim of 200,000 for a single day.

Around the turn of the century, Carl Hagnebeck and other zoo pioneers experimented with hybridization (Crandall, 1964). Nowadays, that practice is officially frowned upon but occasionally one does sneak through. These are usually "tigons", tiger father and lion mother; or "ligers", lion father and tiger mother. At Calcutta in October, 1972, a female tigon was born in the sixth litter to a male Bengal tiger and a female African lion. In March, 1974, a second female tiger, Rudrani, was born to the same parents. When Rudrani matured she was placed with Devabrata, a male Indian lion. Six weeks before I visited the zoo a male cub, called a "litigon", was born to this pair. Mr. Guha and I looked in on the mother and cub from behind an iron-grated door separating the main yard from the cubbing den. The litigon was wrestling with a bone almost as big as he was, a leftover from his mother's lunch. He immediately stopped playing and ran over

The Calcutta Zoo, Part II, continued

to inspect us. The litigon and I stared at each other for perhaps a full minute until he actually broke out into what appeared to be a most capricious grin; then he ran back to his bone. The whole time Rudrani had sat quietly on her haunches eyeing us calmly but alert. When we left the area, amidst much saluting, Dr. Guha said I had been the first person, outside of staff and local press, to have seen this phenomenon of a second generation hybrid birth.

The feline area was the scene of a bizarre happening in October, 1967. A male Indian lion inadvertently was shut in with his keeper in the holding den. The keeper was severely mauled and subsequently died. In addition to a government pension awarded to his family, the widow was offered her late husband's job as keeper. She accepted, and today she cares for the same animal that once devoured her husband at Happy Hour. Incidentally, she is the only woman keeper on a force of sixty.

Before leaving Calcutta a word must be said about the Indian Museum. Founded in 1784 as the Asiatic Society of Bengal, the Museum was officially endorsed with the passage of the Indian Museum Act of 1866. The present building was then constructed and the collections opened to the public in 1875. Interesting exhibits include specimens showing the evolution of elephant teeth, plaster casts of the Peking man skull, and the skeleton of a 10½' Great Irish Elk *Megaceros hibernicus*, for some curious reason exhibited in the crustacean hall. The most popular exhibit among the visitors were the "freaks": a kitten with one head and two distinct bodies; a young goat with eight eyes and two ears; a goat with one median eye; and another young goat with eight legs and four ears.

It was a good time to leave Calcutta.



Next month: Nepal, Mt. Everest, and Thoughts on Tibet.

AN OPEN LETTER TO ALL ZOO KEEPERS

As I assume the responsibilities of Coordinator for Chapter Affairs, I should like to continue the fine work of Pat Sammarco and her predecessors. To this end I need your cooperation.

I am now inviting all keepers who are interested in forming AAZK chapters to please contact me. Any active AAZK chapter that has projects or events that promote the life of the chapter for self-awareness or self-support, please send me the details. There is much to be gained in the zoo keeping profession through the sharing of chapter activities with other chapters.

The AAZK has developed the Regional Coordinator system that encourages chapter formation. May I ask the RC's to keep aware of keepers or chapters in need of any information to promote chapter formation or growth. I need your input to keep the records as updated and informative as possible.

Thank you.
Bernie Feldman, Coordinator for Chapter Affairs
Miller Park Zoo, PO Box 3157
Bloomington, IL 61701

conference.....79

Portland, Oregon

THE VALUE OF THE CAREER KEEPER

by
Gary K. Clarke, Director
Topeka Zoological Park

The following presentation was the keynote speech at the Fifth National Conference of the American Association of Zoo Keepers in Portland, Oregon, on 27 September 1979.

My thanks to Steve McCusker for that so-called introduction. The Washington Park Zoo must be the only Zoo in the country to have a turkey for a General Curator. Not only that, but he failed his fecal examination.

Warren Iliff, your Director, should feel very proud of the Washington Park Zoo, as it is undoubtedly the best Zoo in Portland. Incidentally, I still have some Zoo Power buttons left, and would like to distribute them before I leave this evening as they set off the alarms when I go through airport security.

As I look out into the audience and see Mike Dee of the Los Angeles Zoo (everyone knows Mike Dee), I am reminded of the fact that as a youngster Mike's parents took him to a different Zoo each week . . . but he always managed to find his way back home.

I recall the very first National AAZK Conference held in May of 1970 -- at the World Famous Topeka Zoo. My Keepers were privileged to host that historic meeting. Now, nearly a decade later, I am honored to be the keynote speaker at your Fifth National Conference.

Over the years our Keepers at the World Famous Topeka Zoo have actively participated in the AAZK: on committees, as Regional Coordinators, attending conferences, presenting papers, serving on your Board, and of course as Editors of the *Animal Keepers' Forum*. I am quite proud of their active role in your professional organization. It has been good for them, good for our Zoo, and hopefully they have contributed to the professional growth of AAZK.

I have followed the AAZK since its inception and the first letter I received from Richard Sweeney in 1967. I have seen AAZK go through good times and bad, and I well remember the ruptured rhino phase. I think that AAZK has matured and at this meeting truly became a professional organization. My congratulations. You should all feel very proud, and a great deal of credit should go to your committees, your Board, and your President, Dennis Grimm. It is not an easy job.

I have thoroughly enjoyed this conference. I very much like the structure of the meetings, with papers presented in the morning, and workshops/demonstrations at the Zoo in the afternoon. It is refreshing to see the papers devoted to the subject that is of most interest to all of us -- animals! The quality of the papers was superb and an excellent reflection on the professional caliber of your members.

The Value of the Career Keeper, continued

I look forward to their publication in the *Animal Keepers' Forum*.

Special recognition should go to the Portland chapter of AAZK for hosting such an outstanding meeting, and particularly to Jonolyn Smith for putting together such an outstanding program. If she would step forward at this time, I would like to present her with the Good Egg Award complete with inscription just for her.

In the Zoo world, Portland is known for its elephants, and rightly so. From now on it will be known for its Keepers as well. I have been coming to the Washington Park Zoo since the early 1960's, and I am so impressed with what is happening now at the Zoo. The day-to-day operation of the Zoo is a team effort, and we have to look no further than our host Zoo here in Portland for a shining example.

And it is you -- the Keeper -- who is so essential to that success. I know that sometimes you feel that you put up with a lot of crap, but that is important. I would like to refer to an article by one of our Keepers in Topeka, Connie Cloak, titled "More Than Just Shovelling", published in our magazine ZOO, Volume XV/1, 1979, in which she eloquently deals with the subject of excrement, and how important it is in the daily care of captive wild animals. I wrote a short comment to accompany that article which reads as follows:

"One of the things I learned when I was an Animal Keeper was the importance of feces. The first question should be, 'Is there any?'

"I recall when we had our first giraffe birth in Topeka that the baby did not defecate for a week. We were able to take the necessary measures to start the normal elimination process and today that giraffe, Sunflower, is alive, well, and raising a baby of her own. However, had it not been for our observant Keepers meticulously examining bedding materials for newborn giraffe meconium (the first fecal material that is expelled after birth), we may very well have lost Sunflower.

"As a Keeper I frequently was the object of ridicule by my non-Zoo friends for being what they called a 'manure shoveler.' In my opinion, Connie has eloquently described the importance of a natural biological process, and the significance it holds for all of us who work with animals."

The strength of a Zoo -- and for that matter of the AAZK -- is the Career Keeper. This is the Keeper who dedicates his or her life to the animals and the Zoo. Zoos are ever-changing, and are extremely fluid and dynamic institutions. Career Keepers provide that essential element of stability. Their experience, their knowledge of the animals, and their knowledge of the historical activities within the Zoo are so important as the institution undergoes change, and brings in new people. As a demonstration of the Career Keeper, may I ask everyone in the audience who has been a Keeper for over a year to stand up; that includes most of you. Now, remain standing as we count up the years: five, eight, ten, twelve, fourteen, sixteen, seventeen, eighteen, nineteen! Even in this small sample we see a large percentage of Career Keepers, and we all know of other instances where Keepers have served at Zoos for three or four decades. My congratulations.

Being a Zoo Keeper is a unique privilege. I relish the genesis of my Zoo career, and the early days I spent as a Keeper. Several years

The Value of the Career Keeper, continued

ago, I put my feeling in writing, and would like to close by sharing those thoughts with you:

There are a few individuals in this world who are able to do what they really want to do in life and still be able to make a living. I would consider Animal Keepers in this category. Working in a Zoo is an extremely demanding situation. It is not a job, it is your entire life. You eat, sleep, drink, breathe and live ZOO! You lead a super-charged existence and it totally consumes your energies, but it's the greatest privilege in the world.

As a youngster, I had tremendous admiration and respect for the Keepers at the Zoo; I still do. On my 16th birthday, I applied for a Keeper position at the Kansas City Zoo and was very disappointed to learn that you had to be 18 years old. So, on my 18th birthday, I again applied and was accepted as one of many for summer work. Well, before the end of the summer, most of the rest of the applicants had gone "over the hill", as they used to say at the K.C. Zoo. But I stuck with it, even though I was doing everything except actually caring for animals.... picking up litter, sweeping sidewalks, scrubbing out the seal lions' pool, chopping weeds on the African Veldt (and it was as hot as Africa) and painting, painting, painting!

Finally, I was selected to fill in for one of the regular Keepers during his two week vacation. Wow! Here was my chance. It was a great initiation and the animals taught me many things in a brief time. From then on, I was privileged to work in all areas of the Zoo with a variety of species. Regardless of how much formal educational background one may have, or how extensive one's reading may have been (and both of these are most important), the only way to really learn how to work with the wild animals is to do so. The animals themselves are the greatest teachers in the world.

It is not only a great privilege to be a Keeper, but a tremendous responsibility. Not just because you are responsible for the care of your animals, but because your actions represent your Zoo and your attitude influences others. The Zoo visitor may never see the Director, but they almost invariably see the Keepers -- the Keepers at work, and in relationship to their animals.

As a Keeper, I listened to the visitors' comments, I answered questions and I wanted the visitors to appreciate the animals and understand the purpose of the Zoo. As a Zoo Director, I can accomplish these goals to some extent through educational labels, a Zoo Guide Book and periodical magazine, graphics, Docent programs and mass education through the Zoo's radio and television programs. However, you as the Keeper are the most important aspect of accomplishing this goal, because you relate to the visitor on a one-to-one basis -- the most effective means of communication. But, you have to want to do this from within. You have to want to be a good Keeper.

Consider your responsibilities seriously. Accept the challenge eagerly, and relish the privilege of being a Keeper.



conference.....79

Portland, Oregon

AN INITIAL STUDY ON THE BEHAVIOR OF HUMBOLDT PENGUINS IN CAPTIVITY

by
Cindy L. Pemberton
Washington Park Zoo, Portland, Oregon

Abstract

A colony of thirteen individual penguins, seven males and six females, were observed on a regular basis over a nine week period, from June 24 through August 28. A total of 80 hours of observational data was collected by means of a time sampling method of data collection. These data were then used to compile a basic behavioral repertoire of the species. These data were analyzed using an independent T test to compare breeding and nonbreeding pairs on various pair-related behaviors. Breeding versus nonbreeding status was determined by the presence or absence of obvious breeding behavior. Following this analysis, significant behavioral differences were identified relative to breeding and nonbreeding status.

The study presented here is two-fold, involving: (1) an outline of the basic behavioral repertoire of the Humboldt Penguins, *Spheniscus humboldti*; and (2) specific focus on possible behavioral differences between breeding and nonbreeding pairs of birds.

There are 18 species of penguins (Simpson, 1976), covering a range extending from the Antarctic, as far north as the equator (Murphy, 1936). Most available behavioral information is for only a few species of penguins. The remaining species are generally dealt with through similarities to and associations with those species that have been studied in depth. *Spheniscus humboldti* is one of these penguin species about which little specific information is known.

Spheniscus humboldti ranges along the Pacific coast of South America along the shorelines of Peru and Chile (Murphy, 1926), Humboldt Penguins show no breeding seasonality, nesting year-round (Jorday, 1978) in and among the shoreline rocks. Humboldt Penguins depend primarily on krill, small squid and other small marine forms as a source of food (Stonehouse, 1975). In recent years man has exploited these birds and their nesting habitats as a source of guano, used in commercial fertilizers (Simpson, 1976). In addition to their commercial interaction with man, *Spheniscus humboldti* are commonly found in zoo exhibits. Unfortunately their response to captivity has not been entirely adaptive.

The mortality rate of penguins in transit and in zoos is high and reproductive success has been limited (Simpson, 1976). In general, there has been a widespread problem of incomplete and often nonexistent captive breeding behavior in most species of captive penguins (Simpson, 1976). It is in response to this general concern and the specific concerns of the Washington Park Zoo regarding the incomplete breeding success of their colony, that this study was undertaken.

An Initial Study on the Behavior of Humboldt Penguins in Captivity, con.

It was hypothesized that there were behavioral differences between breeding and nonbreeding pairs and that these differences are consequential and/or causal relative to breeding and nonbreeding status.

Method

Subjects. The Washington Park Zoo colony consists of thirteen Humboldt Penguins, seven males and six females. The birds were identified in pairs by color-coded wing bands: red, green, yellow, blue, brown, white and a solitary male tagged with a green and yellow striped band. Males were banded on the right wing and females on the left. The birds averaged between 65 and 70 cm. in height and weighed between 3.6 and 4.5 kg.

Maintenance. The Washington Park Zoo Penguinarium is an enclosed exhibit. Air temperature is maintained at approximately 12.8° C. and water temperature at 5.6° C.. The exhibit is a fresh water exhibit. Stonehouse (1968) states: "Penguins need fresh water to keep their blood and other body fluids at the right concentration levels..." The birds were fed twice a day, at 11:00 a.m. (Vitamin fortified) and again at 1:00 p.m.

Data Collection. Data collection was based on a time sampling method set at 20 second intervals. Observations were made on the male and female members of a specific pair only, during an observation time period. Time periods and pair order was varied at random between 9:00 a.m. and 5:00 p.m.

Ethogram

Observations were based on a 32 category behavioral ethogram. The ethogram was subdivided into three major groups: solitary behaviors, pair behaviors and location. The behavioral categories were based on a long term study of the Washington Park Zoo penguins by Donna Stewart and were modified after Harrison (1965) and Ainley (1974).

Table I includes a description of the two major behavioral groups, solitary and pair behaviors. Location was recorded as: (01) Land, (02) Water, and (03) Nest. Two additional items, (Cs) Can't see, and (Oth) Other were recorded when necessary.

TABLE I

<u>SOLITARY BEHAVIORS:</u>	<u>DESCRIPTION</u>
Stand	Lack of locomotion or directional body movement.
Locomotion	Directional movement, walking, Includes both normal and slender walks (Stonehouse, 1975).
Wash	Preening activity in the water.
Swim	Nonwashing water locomotion
Self-groom	Preening activity/plumage maintenance. Includes: combine, billing, wiping, nibbling and oiling.
Comfort movement	Body activity involving: shakes, bobs, rubs, flaps, ruffles, scratches, stretches and yawns.
Honk	Loud vocalization, throat extended.
Threat	Noncontactual, aggressive interaction between two or more penguins. Includes: vocalization, stares, head swings and bobs, gapes and charges.

continued

An Initial Study on the Behavior of Humboldt Penguins in Captivity, *con.*

TABLE I, *continued*

SOLITARY BEHAVIORS:	DESCRIPTION
Attack	Contactual aggressive interaction between two or more penguins. Includes: bill jabs, wing/chest thrusts.
Dive	Transitional move from land to water.
<hr/>	
PAIR BEHAVIORS: *	DESCRIPTION
Pair Stand	Lack of locomotion or directional body movement, within 30 cm of mate.
Pair Locomotion	Directional movement, walking, in same direction and within 30 cm. of mate.
Pair Wash	Preening activity in the water, near or with mate.
Pair Swim	Water locomotion in same direction, within 30 cm. of mate.
Pair Self-groom	Independent preening activity, near mate. (30 cm.)
Allopreening	Mutual preening activity, one bird actively preens another, (i.e. mate) Concentrated at head and neck areas.
Pair Comfort move	Body activity engaged in independent of, yet near mate, 30 cm.
Pair Honk	Simultaneous honking vocalization, by a pair.
Pair Threat	Noncontactual aggressive interaction between pair members
Pair Attack	Contactual aggressive interaction between members of the mated pairs.
Pair Threat Other	Noncontactual, aggressive interaction displayed by a pair directed toward another individual or pair.
Pair Attack Other	Contactual aggressive interaction displayed by a pair, toward another individual or pair.
Bow	Simultaneous head lowering of a pair toward each other, often cited in greeting (Stonehouse, 1975).
Mutual Dibble	Frontal bill interaction, body elongate, vibratory.
Arms Act	Premounting behavior, male approaches female from behind, vibrates wings against her sides, head alongside hers. Cited as occurring only in the nest (Stonehouse, 1975). However these birds frequently engaged both in and out of the nest.
Mount	Copulatory behavior, male balances on female's back.
Nest Manipulation	Manipulation of nesting materials, rocks, sand, etc.

*Pair behaviors were determined on the basis of a 30 cm. distance limit between members of a pair.

continued

Results

In analyzing these data with respect to frequency of occurrence of breeding and nonbreeding birds, behavioral differences were evident. To simplify analysis, five categories of comparison were chosen from the 32 category ethogram. These five were of the most frequent and most closely related to pair-bond formation and potential breeding behavior. Comparisons between the existing breeding and nonbreeding pairs were made using an independent T test. It should be noted that frequency values for the breeding pairs were adjusted to a 1:1 ratio with the nonbreeding pairs due to the unequal distribution of the pairs relative to breeding and nonbreeding status (4 breeding and 2 nonbreeding pairs). Table II show the frequency values of the pairs for the five chosen behavior categories and the corresponding T values.

TABLE II

The T values indicate both direction and significance of the frequency differences observed in column two of Table II.

<u>BEHAVIOR</u>	<u>TOTAL #</u> (Breed)-(Nonbreed)	<u>'T' VALUE</u>
Allopreening (A1)	(13.5) - (84.0)	-3.2621
Mutual Dibble (MD)	(4.5) - (22.0)	-1.8410
Pair Honk (PH)	(51.5) - (23.0)	2.1410
Pair Threat Other (PTO)	(20.0) - (9.0)	1.5057
Arms Act (AA)	(7.0) - (3.0)	1.0753

D.F. = 37

Critical 'T' Value = 2.0210

*Note: Ratio of total # values adjusted to 1:1, due to uneven distribution of breeding and nonbreeding pairs.

Discussion

Table II displays the frequency of occurrence of allopreening between pair members of both breeding and nonbreeding pairs. As these figures show, the nonbreeding pairs displayed a significantly higher frequency of allopreening than did the breeding pairs. Mutual dibble, like allopreening, showed a higher frequency value for the nonbreeding pairs, although this value is not statistically significant as indicated by the T score (-1.8410). In contrast, pair honk occurred with significantly higher frequency in the breeding pairs. Likewise, pair threat other showed a higher frequency of occurrence in the breeding pairs, as did arms act. However, these frequency differences cannot be considered statistically significant and therefor only indicate direction.

continued

An Initial Study on the Behavior of Humboldt Penguins in Captivity, con.

Based on these data, the original hypothesis is supported. There are behavioral differences between breeding and nonbreeding pairs of birds. However in response to the consequential and/or causal nature of these differences, it is believed that they are not the cause of breeding versus nonbreeding status, but instead are a behavioral consequence of that status. From this point of view these differences would represent a part of the behavioral repertoire of the pair at a particular stage of pair-bond development. Simpson (1976) states that a sufficiently developed pair-bond is a prerequisite to mating behavior.

With this in mind, the results (Table II), can be explained by the following: Allopreening and mutual dabble are cited as behaviors often engaged in as a form of aggressive sublimation (Harrison, 1965). Aggressive sublimation is a behavioral process of redirecting the natural aggressive tendencies that one animal has toward another at close proximity (Cooper, 1972). Harrison (1964) also states that allopreening and mutual dabble are activities engaged in with a higher frequency during early pair-bond development. Consequently, the higher frequency of these behaviors exhibited by the nonbreeding pairs occurs in response to the level of pair-bond development of the nonbreeding pairs. This then was responsible for the lack of adequate breeding behavior exhibited by these pairs.

The higher frequencies of pair honk, pair threat other, and arms act exhibited by the breeding pairs can then be explained as behaviors corresponding to a well established pair-bond relationship.

Therefore, it is postulated that the nonbreeding pairs could reach a level of pair-bond development sufficient to facilitate breeding behavior at a later time. However, further study is necessary to substantiate this claim.



LIST OF PRINTED MATERIAL ON BIRDS OF PREY NOW AVAILABLE

The Society for the Preservation of Birds of Prey now have compiled a "List of Books, Papers, Articles on Birds of Prey Comprising a Library Collection". It is one of the largest collections of published material on birds of prey ever assembled.

The collection is housed at the Conservation History and Research Center, University of Wyoming, Box 3334, Laramie, Wyo. 82071. The list is available from the Society of the Preservation of Birds of Prey, P.O. Box 891, Pacific Palisades, CA 90272. It is free of charge.

conference.....79

Portland, Oregon

HAND-REARING ADELIE PENGUINS AT SEA WORLD, SAN DIEGO*

by
Frank Twohy, Sr. Aviculturist
Sea World, San Diego

Since November 1976, the Hubbs-Sea World Research Institute and Sea World have been involved in the captive propagation of Adelie penguins *Pygoscelis adeliae*. To date (5-22-79), 43 captive bred Adelie chicks, as well as 150 adult Adelies, are maintained at the San Diego facility.

In November of 1976, 50 pairs of Adelie penguins and 40 Emperor penguins *Aptenodytes forsteri* were collected in the vicinity of Ross Island, Antarctica and returned to San Diego by a specially chilled USAF C-141 Starlifter. A second group was transported in November of 1977 along with 80 freshly laid Adelie eggs. While the field team was on the ice during the 1977-78 austral season, the Adelies collected in 1976 commenced nesting on schedule.

The freshly laid, imported eggs were artificially incubated from the time of collection to hatching using self-contained, field incubators in the Antarctic and a Petersime Model 4 incubator once the eggs were returned to San Diego. Incubation temperature was 36.5°C. dry bulb; wet bulb temperature was 14.6°C. Sixty-seven eggs ultimately hatched and twenty-two of these are presently in the San Diego colony.

As it was necessary to hand rear all of the young from the artificially incubated eggs, an artificial diet was developed. Initial testing of this diet was carried out on Leach's storm petrels *Oceanodroma leucorhoa*. A number of these petrels were successfully raised from 2-3 days of age to fledging on a slightly modified diet. On December 12, 1977, the first Adelie eggs commenced pipping. In a very short time, it was clear there would be many chicks to raise. Thus, an identification system was designed.

Once the chicks dried off and fluffed up in the hatcher, they were marked and removed to a bank brooder. Banding consisted of tying different colored embroidery thread to either flipper; i.e., red right, red left, green right, green left, etc. As the hatchings increased, it became necessary to use two colors on the same bird; i.e., right red-orange, left red-orange. Other techniques such as painting the toe nails with different colors and marking the down were attempted but this was not feasible. Great care and attention was required to insure that the identification thread did not restrict blood flow to the flipper and as a result, the thread often had to be changed every few days as the chicks grew.

Initial brooding temperature was maintained at 35°C for the first 14 days. All brooding facilities were disinfected twice daily with a

*This paper deals primarily with the techniques developed to hand-rear Adelie penguins at Sea World, San Diego. However, a Humboldt penguin was successfully reared in 1979 using the same technique with minor modifications.

Hand-rearing Adelie Penguins at Sea World, San Diego, continued

free iodine solution (Betadine*). The brooder used was a Petersime bank model with 1.0 m x 1.25 m wire mesh trays. The trays were covered with towels to provide better footing for the birds and to absorb the liquid portion of the feces.

Diet and Preparation: Formula was prepared as needed. Some specific guidelines were developed for food handling and preparation.

1. All formula and perishable ingredients were refrigerated at +4°C until just prior to preparation or warming.
2. Any frozen ingredient was thawed as quickly as possible with cold water and immediately used in the formula.
3. Once the formula was removed from refrigeration, it was used immediately or discarded. (The formula was divided into several small containers.)
4. Formula was warmed in a water bath to approximately 35°C. (Not to exceed 38°C.)
5. Once the formula was warmed, it was fed immediately. If the temperature dropped below 35°C, it was discarded and a new batch warmed (i.e., it was not reheated).
6. No formula over 24 hours old was used.
7. All utensils and equipment were disinfected with Betadine.

Formula Ingredients:

- 440 gms Herring *Clupea harengus*, bone-free fillets, including liver and roe.
- 440 gms Northern Pacific Zooplankton *Euphasid pacifica*.
- 80 gms Drained brine shrimp (when available)
- 300 cc Water
- 300 cc Half and Half cream
- 30 cc Salt Water
- 1.5 cc Predigested protein*
- 2 Sea Tabs*
- 500 mg Thiamine hydrochloride*
- 2,000 IU Vitamin E*
- 6 Dicalcium phosphate capsules*

All ingredients were homogenized in a high speed commercial blender. It was necessary to remove the vitamin E and dicalcium phosphate from the capsules to avoid blocking in the feeding syringe. Herring liver and roe were removed from the fish during filleting. Once the formula was blended and refrigerated, it would have the consistency of a thick milk shake. It was then divided into a number of small containers (100 cc) that were tightly capped and stored at not more than +4°C, but not less than 1°C.

Feeding Equipment: Prior to feeding, organization and pre-setup of equipment was needed. A scale of at least ±1 gm accuracy was used. We found that a pan balance with internal weighting worked well. A digital readout scale with adjustable damping was most suitable. A form for recording pertinent data was developed (figure 1, following).

Hand-rearing Adelie Penguins at Sea World, San Diego, continued

was 83 gms.) At 500 gms the chicks were introduced to small (35mm x 8 mm) strips of herring and squid *Loligo opalescens*. The Humboldt chick was started on strips of herring and squid at 700 gms, also another feeding was dropped as with the Adelies and the amount of solid food at the other two feedings was increased. In addition, a 100 mg B₁ tablet was given.

At 1,500 gms for the Adelies and 1,500 gms for the Humboldt, all formula was stopped and only fillets were fed. The vitamin regime was changed to 100 mg B₁ twice a day and 1/2 Sea Tab per day. At 1,700 gms for the Adelies and 1,900 gms for the Humboldt, the fillets were stopped and the birds started on whole Columbia River smelt *Thaleichthys pacificus* or Capelin *Mallotus sp.* and squid, minus the pen.

At 2,800 gms, the Adelie and Humboldt vitamins were changed to the standard adult dose: 100 mg B₁ and 1 Sea Tab per day.

Thermal Requirements: Both species must first be brooded and then slowly cooled over the entire growth period. From hatching to about 35 days of age, the temperature was gradually reduced to +5°C for the Adelies and to +15°C for the Humboldt, who was then acclimated to ambient temperatures. If the down was fouled with feces, it was possible to bathe them in warm water and dry with a warm air hair dryer. As the molt commenced, the Adelie chicks were then further reduced in temperature to -2°C to -5°C. If any signs of chilling occurred (shivering, etc etc.), they were removed and warmed at ambient temperature. They were not allowed to swim until they were fully feathered. Most chicks including the Humboldt, were fledged at 8 to 9 weeks of age.

Introduction to the Colony: Introduction was done slowly. The young were released into the colony for short periods - i.e., approximately one hour. If any adult harassment occurred, they were separated. It was not until they were swimming and maintaining themselves through the day that they remained with the colony at night. Once the birds were integrated into the colony, hand-feeding continued as the young initially experienced difficulty in competing for food. The hand-feeding continued until the immatures achieved total independence.

- * Dicalcium phosphate capsules, Thiamine hydrochloride and Vitamin E available through: STAR ICE BRAND, manufactured for Interstate Drug Exchange, Inc., Plainview, Long Island, NY 11803
- * Sea Tabs available: Pacific Research Laboratories, Inc., P.O. Box 1877, El Cajon, CA 92002
- * Predigested Collagen Protein available through: Twin Laboratories, Inc., Deer Park, NY 11729
- * Betadine Solution distributed by: The Purdue Frederick, Co., Norwalk, CT 96856

Acknowledgments: This work was supported in part by the Office of Polar Programs, National Science Foundation (Grant #NSF 762-0746). I am grateful to Frank S. Todd and Lanny H. Cornell, D.V.M. for valuable suggestions concerning the manuscripts. Scott Drieschman's help was more than invaluable.



coming events

AAZPA REGIONAL WORKSHOPS

SOUTHERN

April 13-15 Orlando, Florida
Jill Grade is hosting the AAZK Conference. She will try to arrange housing for keepers if contacted immediately. She will also arrange to pick up keepers who will fly into the Tampa airport. There are free tickets to DisneyWorld for conference goers on April 13. Jill can also arrange a tour of Busch Gardens.

GREAT LAKES

April 27-29 Cincinnati, Ohio

WESTERN

May 4-6 Winston, Oregon

1980 AAZK 6th NATIONAL CONFERENCE

October 5-9, 1980 Montgomery, Alabama
P.O. Box ZEBRA
Montgomery, Alabama 36109 205 265-3536

Conference co-ordinator: Laura Strickland

Conference Headquarters: Holiday Inn State Capitol

Theme: *The Role of Smaller Zoos in the Zoological World*

Registrations: \$40.00 per member or \$45.00 non-member

CALL FOR PAPERS: Deadline will be July 15

AAZPA ANNUAL CONFERENCE

September 14-18, 1980 Radisson Hotel, Chicago, Illinois

IN MEMORIAM

Sandra Mulford of the Crandon Park Zoo, Florida, died in an automobile accident. Miss Mulford was an active supporter of several organizations in the animal field and an excellent zookeeper.

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Brookfield AAZK Chapter's 1980 officers are:

- President....John Stoddard
- Vice-Pres....Lucy Gemlo
- Secretary....Ann Marie Greco
- Executive Secretary.... Dennis Grimm

chapter

news

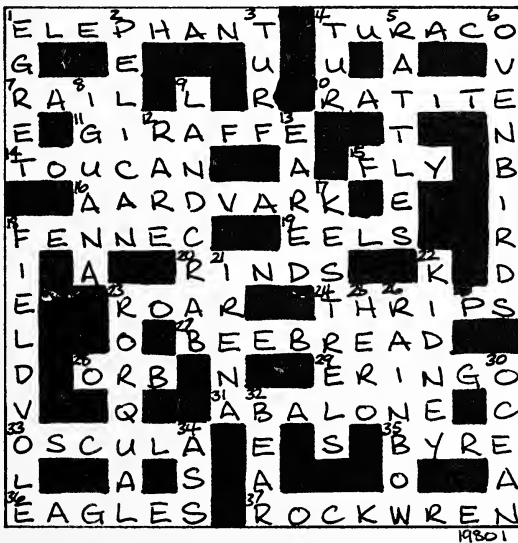
1980 officers for the Rio Grande AAZK Chapter are

- President....Gary Tibbetts
- Vice-Pres....Dan Malcolm
- Secretary-Treasurer.... Becky Rouse

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This is the answer sheet for the crossword puzzle run last month. Neville Pike has submitted two more that will be included in future AKF's.

NATUREWORD



Neville Pike, Keeper, Metro Toronto Zoo

We are indebted to the AAZPA Newsletter for allowing us to reprint portions of this section from their "Positions Available" listings. This is a monthly service to us, for you.

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SENIOR KEEPER... responsible for care and management of primarily native live animal collection. Prefer at least an Associate degree in Animal Science and two years' experience as animal keeper in zoo or nature center (additional experience can be substituted for degree). Must have ability to supervise four other keepers and act as liaison between keepers and management. Salary: \$9,360 - \$10,218, plus benefits. Contact: Melville C. Thomason, Director, Western North Carolina Nature Center, Gashes Creek Rd, Asheville, NC 28805. (704) 298-5600.

REPTILE KEEPER.. full-time position. Preferred qualifications include Associate or four-year degree in animal science or biology field. Recent negative serum sensitivity test required. Minimum of two years' experience with diversified venomous herpetological collection. Keeper or related experience may be considered as substitute for educational requirement. Starting salary: \$4.68/hour, plus hospitalization, vacation, sick and personal benefits. Submit applications to: Frederick L. Paine, Curator of Birds and Reptiles, Buffalo Zoological Gardens, Delaware Park, Buffalo, NY 14214. EOE.

The following two positions are available at the Crandon Park Zoological Garden:

ELEPHANT KEEPER.... five years' experience in handling and training of Asiatic and African elephants. Responsible for care and maintenance of elephants, as well as their training for public educational programs. Salary: \$9,500 - \$11,126.84, based upon proven ability. Position available 1 March 1980.

REPTILE KEEPER... person specialized or interested in crocodylians in breeding program. Starting salary: \$9,500 per year. Position available immediately.

For the above listed positions, please contact: Crandon Park Zoological Garden, 4000 Crandon Blvd, Key Biscayne, FL 33149. Al Fontana (305) 361-9445 or Bill Zeigler (305) 361-2515.

ANIMAL MANAGEMENT RECORDS SPECIALIST... responsible for setup and maintenance of animal management records as appropriate for a major collection. Will prepare permit applications, maintain literature bibliographies, and actively assist a computer specialist in the implementation of a mini-computer based animal records system. For details contact Mary O'Neill, Personnel, Minnesota Zoological Garden, 12101 Johnny Cake Ridge Road, Apple Valley, MN 55124.

ASSISTANT CURATOR/BIRDS & MAMMALS... must supervise bird and mammal keepers and assist Curator in directing the performance of docents, volunteers, aides and interns. Applicant must be ecologically oriented and have basic knowledge of birds and mammals and their husbandry. A minimum of two years of progressively responsible experience in an accredited zoo is required. A bachelor's degree in zoology, wildlife management or a related field is also required. Salary: \$14,040 - \$19,440, with full benefit program. Send resume in confidence to Gary Williams, Personnel Manager, Arizona-Sonora Desert Museum, Route 9, Box 900, Tucson, AZ 85704.



INFORMATION FOR CONTRIBUTORS

Animal Keepers' Forum publishes original papers and news items of interest to the Animal Keeping profession. Non-members are welcome to submit articles.

Articles should be typed or hand-printed. All illustrations, graphs and tables should be clearly marked, in final form, and should fit in a page size of no more than 6" x 10" (15 cm. x 25½ cm.). Literature used should be cited in the text and in final bibliography. Avoid footnotes. Include scientific names.

Articles sent to *Animal Keepers' Forum* will be reviewed for publication. No commitment is made to the author, but an effort will be made to publish articles as soon as possible. Those longer than three pages will be separated into monthly installments at the discretion of the editorial staff. The editors reserve the right to edit material without consultation unless approval is requested in writing by the author. Materials submitted will not be returned unless accompanied by a stamped, self-addressed envelope.

Telephoned contributions on late-breaking news or last minute insertions are acceptable. However, phone-in contributions of long articles will not be accepted. The phone number is 913 272-5821.

DEADLINE FOR EACH EDITION IS THE 20th OF THE PRECEDING MONTH.

Articles printed do not necessarily reflect the opinions of the Animal Keepers' Forum editorial staff or of the American Association of Zoo Keepers.

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Associate (interested individuals)	\$10.00 annually
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Animal Keepers' Forum



Dedicated to Professional Animal Care

MAY 1980

Editor-in-Chief: Ron Kaufman
Executive Editor: Mike Coker
Managing Editor: Lois Bogia
Editorial Assistant: Diana Brey
Art Consultant: Elaine Shea

Animal Keepers' Forum is a monthly journal published by the American Association of Zoo Keeper, 635 Gage Blvd., Topeka, Kansas 66606.

Second class postage is paid at Topeka, Kansas. Return postage is guaranteed.

AMERICAN ASSOCIATION OF ZOO KEEPERS
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"Freezer" the polar bear cub and keeper Kathy Rettie were a popular attraction at Metro Toronto Zoo, Toronto, Canada, during the summer of 1979. There was frequent newspaper and TV coverage. This drawing is a copy of a news photo and was done by Paul Harpley, a new Keeper IV currently working in the Eurasia section. Paul is quite well known as a wildlife artist and is having an exhibition of his drawings in the spring of 1980. Kathy's article appears on page 103.

SCOOPS and SCUTTLEBUTT

DAVE KAHN NAMED "KEEPER OF THE YEAR"

The Lincoln Park Zoo, Chicago, Illinois, has named Dave Kahn their "Keeper of the Year." Congratulations to you, Dave!

NEW ELEPHANT EXHIBIT AT WASHINGTON PARK ZOO. . . . Roger L. Henneous

On April 8 at 10 a.m., the Washington Park Zoo, Portland, Oregon, put into service its new elephant exhibit.

The 3/4 acre sand-covered yard includes an 80,000 gallon pool and is connected to the old barn by the first hydraulically powered squeeze chute for elephants ever built. This new exhibit, financed by local tax levy, represents a \$670,000 expenditure and makes Portland's elephant facilities second to none!

Completion of the elephant facility signaled the beginning of a 1.4 million dollar Primate expansion project that will on completion in 1981 give our chimp troop a large moated outdoor exhibit, a glassed-in Orang exhibit and a lemur island.

Both of these projects are the result of over three years of planning with architects, construction consultants, zoo staff and keepers. Happily, in both cases, keeper input was not only sought and encouraged, but expected!

OKLAHOMA CITY ZOO OPENING GALAPAGOS EXHIBIT

The first educational museum and animal housing exhibit of the Galapagos Island in the world will be open to the public during May at the Oklahoma City Zoo. A museum gallery contains education graphics on the geology, climatology, biology and zoology of the islands and items in a Darwin Museum. Graphics relating to the Galapagos tortoise include a cutaway model of a tortoise egg nest, a map of the islands depicting the range of the tortoises on the various islands and actual shells of tortoises to touch. The tortoise viewing area is adjacent with lava rockwork, waterfall, heated pool, an area of special sand for nesting and plants typical of the regions. The area also contains a Galapagos dove aviary and a lava lizard exhibit. The flamingo room has a heated pool and waterfall and the birds can go in and out through a waterway during good weather.

BIRTHS HATCHINGS

TWIN LESSER GALAGOS BORN AT JAPAN MONKEY CENTRE. . . .Koji Nakashima

Twin Lesser galagos *Galago senegalensis*, one male and one female, were born on January 12th, 1980 as the third and fourth babies in the Japan Monkey Centre. Both of them were cared for by their parents. Now they are growing as big as the parents.

The first baby, a female was born on October 6th, 1978, and the second female was born May 10th, 1979.

Also, in this year, two Night monkeys were born.

THREE ROSEATE SPOONBILLS HATCHED AND TWO HAND-REARED AT NATIONAL ZOO

Three roseate spoonbills *Ajaia ajaja* were hatched the third week in February at the National Zoo's Bird House. Two of the chicks are of particular interest because they are the first spoonbills to be hand-reared at NZP.

Through feeding modifications and a team effort by all the Bird House keepers, the chicks are doing well and their development is just a step behind their parent-reared sibling.

These chicks are only the second hatched since the spoonbill pair came to NZP in 1973. This year, the Bird House crew encouraged nest building by supplying materials for the adult pair. They also placed a safety net under the nest after it was built to prevent possible mishaps. Keeper Mary Noël extensively researched the spoonbills' diet with Zoo nutritionist Olav Oftedal to find a substitute for the typical regurgitated food. Animal specialist and project director John Mallen has been keeping meticulous records of the chicks' growth, development, and food consumption. He has found that baby spoonbills eat much more than had been assumed. (Presently, 20cc of a mixture that consists of ground sea trout, bird of prey diet, and vitamin and mineral supplements is deposited four-times-a-day in the spoonbills' throats with a modified syringe.)

The spoonbill chicks will remain in the Bird House for a time and then be sent to the Conservation and Research Center to become the start of a new breeding colony, hopefully.

HAVE YOUR CRAKE AND BREED IT, TOOPhiladelphia Zoo

The Philadelphia Zoo has become the second institution in the United States to hatch successfully the red-and-white crake, a small, little-known relative to the crane. Two chicks were hatched in mid-March. They have a special incubation box and will be placed on exhibit in the Zoo's Bird House when they are old enough.

The red-and-white crake, one of the smallest of the rails, is found throughout most of North and South America. Although rails are found on six continents, not much is known about their behavior in the wild because of their secretive nature.

from the President

Dear Fellow AAZK Members,

Thanks to you, AAZK has a new national board composed of five very enthusiastic Keepers. We will be working to keep AAZK the fine organization it is while continuing its progress as a professional association. The AAZK national board's purpose is to guide the association in the directions indicated by the membership. We welcome your ideas. Your ideas will be discussed at Board Meetings at Montgomery.

We owe many thanks to the National Zoological Park and to the Friends of National Zoo for their support over the last three years. They gave AAZK a foothold by providing office space and a grant for secretarial expenses. During these years, AAZK has grown and is now self-sufficient. We regret leaving National Zoo, but their construction involved the office space. This forced us to establish National Headquarters elsewhere. Because of this, we are losing a good friend and very competent Administrative Secretary, Lee Glassco, and her advisor Bela Demeter.

The World Famous Topeka Zoo has been a foster home for most of the existence of AAZK. With the continuing support of Director Gary Clarke, the national headquarters have now moved there. This move will make the association's office work and publication work more efficient. With the new office comes the appointment of a new Administrative Secretary. The board has hired Brenda Jarboe. Brenda is experienced in office business. Lee and Brenda have done a great job of getting the AAZK records moved. Many thanks to them.

There have also been some changes in AAZK Administrative personnel to take some of the burden from present members of the board and to increase membership participation. Bernie Feldman of Miller Park Zoo will be taking over my old job of Chapter Affairs Coordinator as well as continuing as the DATA form Coordinator. Phil Prewett of Memphis Zoo will be doing the work of keeping all the Regional Coordinators coordinated. This was previously the duty of Jill Grade, our new Vice-president. Please help these Keepers help you.

The 1980 AAZK National Conference is shaping up to be one of the best. Laura Strickland is putting a lot of time into providing delegates with good facilities for meetings, as well as the waterholes and tours. As this year's conference is growing near, it is time to present bids for the next. The AAZK board will consider bids for the 1981 National conference through July 1980, selecting the site in August. Because planning takes time, the site for the 1982 conference will be chosen at the Montgomery meeting of the board. Bids will be accepted through September: for the 1982 conference.

Whether your facility is large or small, it is a great place for a conference, both as an experience for fellow Keepers and as a fund raiser for both national AAZK and your chapter or zoo. Since it does take a cooperative effort on the part of many individuals, chapters will be given preference in choosing the site, but this should not exclude small zoos without many members from submitting bids. A single zoo or aquarium, large or small, or a cooperative effort by more than one facility will all be considered.

Please send a letter describing the facilities available for the conference, including hotels and price, meeting rooms, banquet rooms, zoo and other tours and possible pre- or post-conference activities. The

Letter to all AAZK Members from the President, continued

bid must be accompanied by a letter signed by chapter officers, or conference committee members, and the zoo director, indicating the agreement that profit from the conference will be shared evenly with national AAZK.

Because of the consideration of two conferences simultaneously, please be sure to make it very clear that you are bidding for one, the other, or both (in the case of losing the bid for 1981, you may still wish to be considered for 1982.) Send bids to me, and if photocopying allows, to each of the AAZK board members before the end of July for 1981 bids, and before the end of September for 1982 bids.

At the AAZPA mid-year board meetings held in conjunction with the Tulsa Workshop, AAZK Past-president Dennis Grimm again proposed a special membership classification within AAZPA for Keepers. We are requesting a similar category in AAZPA for Keepers as AAZK's Affiliate category-- a more active but non-voting membership. This issue will come to membership vote at the AAZPA national conference. Please send comments to Dennis Grimm, who is acting as our membership representative.

Thank you for making AAZK the professional association it is.

Sincerely,

Patricia E Sammarco

HAVE YOU SENT IN YOUR NOMINEE FOR EXCELLENCE IN ZOO KEEPING YET?

AAZK ACCESSORIES AVAILABLE

DECALS

The official AAZK decal is available through the Memphis Zoological Park and Aquarium AAZK Chapter. The decal is a black and white reproduction of the AAZK rhino logo, suitable for any smooth, hard surface, especially a car window. Cost is \$1.50 complete, prepaid. Make checks payable to the Memphis Chapter, AAZK, and send directly to Mike Maybry, Decal Project Coordinator, 1887 Crump Ave., Memphis, TN 38107.

T-SHIRTS

The T-shirts come in a variety of colors and have the AAZK logo on them. Contact Carleton Bailie, 4400 NW 39th Ave., #124, Gainesville, FL 32601.

BUTTONS

Buttons printed with "Keepers Care" and a logo are available for fifty cents (50¢) from Larry Sammarco, Lincoln Park Zoo, 2200 N. Cannon Drive, Chicago, IL 60614. 50% of the sale price goes into AAZK's national treasury.



REPORT ON AAZPA EASTERN REGIONAL WORKSHOP

by
Kevin Conway

The Lafayette Park Zoo in Norfolk, Virginia was the host of the AAZPA Eastern Region workshop held March 30 to April 1. A number of topics were discussed at the workshop including: development or renovation of zoos, various husbandry techniques and zoo horticulture. Legislative action and the ISIS record system were also workshop topics.

Congressman G. William Whitehurst spoke on behalf of his bill H.R. 55-91, The National Zoological Foundation Bill, urging the delegates for their support of his bill. Mr. Whitehurst was unable to remain for a question and answer period which many delegates had looked forward to. Later in the workshop Robert O. Wagner, Executive Director AAZPA, suggested that those interested in Congressman Whitehurst's bill should review a copy of the bill before supporting or not supporting the legislation. It was suggested that H.R. 55-91, if enacted, might extend more federal control over zoological institutions in the United States.

On the final day of the workshop, the delegates received a tour of the Lafayette Park Zoo conducted by Superintendent Tom Livers and his staff. The zoo is presently undergoing renovation and some new exhibits are a Virginia farm area and a small/delicate animal, Nocturnal animal building.

Approximately 100 delegates attended the workshops during the three day period. As regional coordinator I represented AAZK at the workshop; utilizing speaking time and a display table of AAZK items to make the delegates aware of the organization. Delegates were very interested in the Animal Data Transfer form and depleted my supply of AKF's and other materials by the end of the workshop.

ZooAmerica Inc. at Hershey Park, Pa. bid for and was accepted by the delegates as the site for the 1981 AAZPA Eastern region workshop.

ATTENTION ALL ELEPHANT KEEPERS

For all keepers with aching backs induced by trimming toe nails with a farrier's rasp -- there's light at the end of the tunnel! Six months ago on a trial basis, we at the Washington Park Zoo decided to try a little automation to replace the rasp.

We started using a Skil Model #914, 4½ inch right angle grinder with a sanding pad and 24 grit aluminum oxide disks by 3M.

After a six month trial, I'm happy to say we are sold. The machine has reduced our time on nails by 60% and this keeper's aching back by 90%. We suggest starting with the rear feet to condition the animals, as with anything new, it takes a little convincing, but we've encountered surprisingly little resistance.

Grinder, sanding pad and three dozen discs were less than \$100.00 and is small and light enough to be used with one hand, if necessary.

Yours for better elephant care,
Roger L. Henneous
Senior Elephant Keeper
Washington Park Zoo

CARE AND EXHIBITION
OF AN ORPHAN POLAR BEAR CUB

by
Kathy Rettie
Keeper II, Metro Toronto Zoo, Canada

In May 1979 we received an orphaned female polar bear cub from the Canadian Wildlife Service. The cub, weighing 20 pounds, was put through a mandatory four week quarantine and her condition checked thoroughly by the vets. On June 15, at 8:30 a.m. a snarling crate containing a 50 pound bear named "Freezer" arrived at the maternity den of the polar bear house.

Freezer was nervous of the adult polar bears and distrusted people, so it was decided that a keeper would spend the summer with her to help her adjust to captivity.

Freezer and I spent our first day together staring at each other through the bars of her cage. On the second day, keeping in mind stories of her temper tantrums during quarantine, I took Freezer into the maternity display with me for 1½ hours, then sat on a crate in her cage for the rest of the day. We were a bit nervous of each other. While she constantly sniffed me, I was busy watching to be sure that her mouth was tightly closed while it was pressed against my leg! I was glad that I had on heavy coveralls when Freezer suddenly jumped up and bit my arm. I ended up with the biggest bruise I've ever had, but I felt that if that was the worst she could do at this time, there wasn't much to worry about. This was the only injury I received in our 2½ months together.

Teaching Freezer the meaning of the word "NO!" did not take too long. A sharp tap on the nose with a broom handle accompanied by the verbal command got the point across and she eventually responded to verbal discipline.

Freezer was given empty disinfectant containers, rubber pails, logs and browse to play with. When she was small she used her pails for trampolines. (One pail survived the whole summer!) She loved to rip a rotting log apart, then roll in the debris and emerge looking like a brown bear. When given browse she would roll on her back and play with it until every leaf was torn off the branches.

On the 9th day, the windows having been whitewashed the afternoon before, Freezer spent the entire day in the maternity display. It was the first time she had been in this display while the four adult bears were in the adjacent display. They were very curious, and sniffed and banged at the sheet metal covering the gate which separates the displays. Freezer hid behind me. For the first time she allowed me to touch her. By the end of summer she loved having her back scratched.

Towards the end of June, Freezer and I went into the main exhibit together. She had to learn to swim. Because polar bears have oily fur which sheds water and traps air bubbles making them buoyant, we were not concerned about her sinking and possibly drowning. She did, however, have to learn to close her mouth underwater. To encourage her into the pool, I threw a ball in and she chased it, falling into the water. After doing a very awkward version of the dog paddle, she tired and relaxed floating with her head underwater. After she went through 3 balls in

Care and Exhibition of an Orphan Polar Bear Cub, continued

2 days, I decided to use pails instead. For several weeks Freezer would try to grab the pail in her mouth and breathe at the same time. She would swim to me and sit beside me until she stopped coughing before returning to get the pail.

On July 1, Freezer met the public. Her first reaction was panic, but she soon got brave enough to take a closer look. After two days she decided that people weren't so bad. In fact attacking through the underwater viewing windows and jumping at the windows of the maternity display were favoured activities. Another of Freezer's new routines was to "help" clean the maternity display before the 9:30 deadline by putting her paw over the drain to plug her shallow pool and by tugging on the hose while I tried to wash the exhibit. From 9:30 a.m. till 11 a.m., she entertained the public with her swimming lessons and from 11 until closing she lounged in the maternity display.

After a few weeks of dog paddling on the surface of the pool, Freezer found that she could dive to a depth of three feet to retrieve a pail which I held underwater with the broomstick, but only if she pushed off from the edge of the pool. It wasn't long before she was diving to the bottom of the pool to pick up rocks thrown in for her to fetch.

On July 19, it came to my attention that Freezer had grown when she climbed onto the highest rock in the display. Until then I had felt safe knowing that I could get well out of her reach if necessary.

On August 8, Freezer decided that one hour was enough swimming for her and she headed through the maternity holding to the maternity display to find that the door was closed. She threw one of her legendary temper tantrums. It was the first one I had seen and I was glad she was taking out her frustrations on inanimate objects!

By this time Freezer weighed close to one hundred pounds and it was decided that she was getting potentially dangerous. It was also decided that rather than keeping her in solitary confinement for 3 years until she would be big enough to hold her own against our 1,000 pound male and his 3 females, we would try to find a zoo with a young male. September 3 was to be my last day in the display with Freezer to give her time to learn about being a bear before being sold. I spent less time playing with her to get her used to amusing herself.

In the days that followed Labour Day weekend it wasn't easy to clean the bear displays and watch Freezer waiting to go out with me. I gave her as many toys as I could and when possible asked other keepers to work with the bears. She seemed to adapt quickly and it wasn't long before I found myself playing with Freezer and feeding her hydroponic barley through the bars of her cage whenever I got a chance.

On October 24, Freezer walked into her crate to eat as she had been doing for the past 2 weeks and the door shut behind her. We loaded her onto a van and took her to the airport. She did not enjoy her trip and the last I saw of her was a snarling crate riding away on a fork-lift destined to the Ruhr Zoo in Germany.



NEPAL, MT. EVEREST, AND THOUGHTS ON TIBET

by
Tom Goldsberry

This is the conclusion of a four part travelogue of Tom's trip to India.

Kathmandu is one of those savory travel names that roll off the tongue like sugar. It's hard to believe that Kathmandu, like the rest of Nepal, has only been open to foreigners since 1950. Prior to that time only a stray scholar, members of the British Geological Survey Team, or an occasional adventurer had ever penetrated this remote mountain kingdom. Since that time, however, tiny Nepal has made a quantum leap into the 20th century. In 1955 it joined the United Nations and in 1965 the first road connecting Nepal and India was constructed.

In the 1960's Kathmandu was often the overland terminus for many young people making their way across Asia. Many of them liked what they saw in Nepal and, thanks to an amazingly tolerant government, which requires only that they spend a minimum of five rupees per day (12NR=US\$1), and cool it on the drugs, they now make their home in Nepal; most of them clustered around "freak street" in Kathmandu. It's not unusual to see a young European or North American walking meditatively down the street with a pair of Adidas sneakers peeking out from under a saffron robe.

In 1968 Thai International established the first jet connections with Nepal and the country began its still modest flirtation with foreign tourists. For the present at least it still retains its charm and quiet dignity aptly befitting one of the few small countries in the world who never felt the tentacles of colonialism. It was within this simple framework that the Central Zoo in Kathmandu was founded; its nine acres having been donated by a former benevolent queen who wished nothing more than that her people should enjoy and appreciate the country's highly varied animal life. And the setting couldn't be better. There are bigger zoos in the world. There are also better zoos in the world. But no other zoo in the world can boast of lying in the shadow of the awesome Himalayas.

The 700-animal collection contains no outstanding specimens. But the sixty species represented there are all indigenous to Nepal and Northern India, and this is the main objective of the zoo. A walk through the pleasant surrounding and a look at the well-cared for animals is after all, what most zoos are about. Its large lake stocked with native fish is surrounded by a network of meandering paths that interconnect amidst neatly labeled specimens of native flora. At one end of the lake stands a statue of the woman who made it all possible.

Maintaining the zoo's quiet tempo and characteristic of most of the Nepalese people is the zoo's pleasant director, Dr. M.N. Shrestha, (UC-Davis). Thirtyish and soft-spoken, Dr. Shrestha is my prototype of what a zoo director, circa 1900, used to be -- before the razzle-dazzle of finances and politics became the order of the day. At Central Zoo there is always time to stop and explain the Himalayan bear to a group of school children from a distant village; and the telephone, the bane of businessmen everywhere else in the world, here, is a necessity but not a master. The fifty keepers or "sweepers" as they are called, including five women, are also courteous, and although language was a definite barrier at this point, a smile and a handshake is universal and speaks volumes.

continued

Nepal, Mt. Everest, and Thoughts on Tibet, continued

If the Himalayas can be described as awesome when viewed from the foot hills, then the superlative to describe them from an airplane has yet to be invented. This fact has not been lost on the enterprising Royal Nepal Airlines who operate three morning "mountain flights" to Mt. Everest each morning, weather permitting. My wife and I arose one morning at the insane hour of 4:15 to make the 6:00 flight. At 7:30 we boarded a two-engine British-built Avro and were on our way. After boarding we were handed a long printed card with the profiles of the mountains in this part of the range that we would see on our hour-long flight to Everest. At first everyone was apprehensive because of the thick cloud cover around us. Knowing we would be refunded our fare should the pilot decide we would not be able to see anything was small consolation to the thirty-two passengers, many of them like ourselves, who had journeyed halfway around the world for the privilege of seeing the highest mountain in the world.

As we climbed slowly but steadily through the thick clouds, I, like the proverbial bear, wondered what was "on the other side of the mountain". If you're like me, when you were younger, you much preferred daydreaming over a World Atlas to reading the insipid adventures of Dick and Jane and their scruffy pets. Also, if you were like me, you felt a tingle every time you saw the magic name T-I-B-E-T spread across the page. This almost inaccessible country had remained virtually unchanged since the days of Marco Polo when, in 1950, their tranquility was abruptly shattered by the Chinese Communists. In 1959, a pitiful uprising was brutally suppressed leaving upwards of 10,000 dead in the capital city of Lhasa alone; and forcing the Dalai Lama and thousands of his followers to flee the country. Their only "crime" had been that of naivete: they had actually believed that they could subsist merely by minding their own business and hoping the rest of the world would do the same. They paid a heavy price for their error.

During our stay in Delhi I had spent many hours in the Tibetan market stall along Janpath street bartering and talking with some of these remarkable people. Their broad handsome faces were a welcome contrast to the dour and unpredictable Indians we had met. Later, at the Tibetan Refugee Settlement at Jawakhel in Kathmandu, I had again talked with many of the refugees as they sat cross-legged in warehouses weaving rugs with intricate designs of ancient origin. The younger ones were now getting a formal education while the older people were doing what they did best. And still dreaming of that land "the other side of the mountain".

While sitting there lost in thought and hoping my dysentery wouldn't flare up again, there was suddenly a gasp from the passengers. We had broken through the cloud cover and slowly unfurling on the port side of the plane were the towering and transcendent Himalayas. Within a few minutes we were abreast of 19,550 foot Chhoba-Bhamare, the peak that dominates the ancient trade route between Northern India and Tibet. I was still thinking of the Land of Magnificent Snows.

As soon as the initial shock had worn off all that could be heard was the clicking and whirring of cameras. The passengers on the starboard side of the plane sat patiently and craned their necks toward our side of the cabin, knowing that after we had seen 29,028 foot Mt. Everest the plane would make a U-turn and the range would be on their side. On these mountain flights it's customary for the stewardess to take the

Nepal, Mt. Everest, and Thoughts on Tibet, continued

passengers, two at a time, forward to the cockpit, and get a pilot's-eye view. As luck would have it, just as we entered the cockpit, Everest, the name that evokes a timeless tranquility, a sense of all that is superlative, loomed into view in front of us.

Laden with snow and sparkling brilliantly in the crystalline morning sunlight, Chomolungma, as it is called in Tibetan, was redoubtable even in this region of 25,000 foot peaks. In the pellucid mountain air every crease and rivulet of snow appeared to have been etched on the perpendicular slopes by some gigantic engraving tool. A few hundred feet below the black shadowed summit a ring of clouds encircled the mountain, lending a halo effect and accentuating the jagged peaks closer to us. Slightly to the east rose Everest's little brother, 28,208 foot Kanchenjunga, the world's third highest mountain. At this point another hour's flight would've brought us to the borders of the fairy tale kingdoms of Sikkim and Bhutan.

The return flight was silent. Most of the passengers were either out of film, out of words or both. Occasionally we could catch a glimpse of a *yurt*, or nomad tent, nestled on a barren plateau below us. At this time of year these people would be returning to the mountains with their yak herds after spending the winter in the comparatively mild Kathmandu valley. As we disembarked once again in Kathmandu each passenger was presented with a placard confirming the fact that today, he or she, had visited Mt. Everest. Too touristy? Perhaps. But once you've returned to the Western rat race -- in which the rats always seem to be winning -- it's nice to occasionally glance up at that placard hanging on the wall and remember that one brief hour when you were on top of the world.

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INFORMATION PLEASE!

I am studying the zoos of the world and taking a strong interest in the American Zoo's leadership in the areas of Zoo-Design and Education. I am collecting Zoo materials and would appreciate a guide book or any publications (brochures, posters, annual reports, or emblems) to introduce me to your Zoos. I hope that any sympathetic Zoo people will furnish this data. Thank you.

Mr. Yoshi. Yonetani
c/o ZooDel
2-15, Nagate 1-chome, Nada-ku
KOBE 657
JAPAN

TECHNOVIT

APPLIED TO AN ELAND

by

Randy McGill

Detroit Zoo

**Veterinarians
and
Keepers.....**

Note from author: Without the assistance of the keeper on the exhibit, Dick Legel, and the zoo veterinarian, Dr. William K. Appelhof, this article would not be possible. To them I extend my gratitude.

On 14 September 1979 a new technique to treat hoof problems was initiated at the Detroit Zoo. Technovit, an acrylic for repairing of equine or bovine hoof was used to treat an abscessed hoof of a female eland. The animal was originally examined, treated, and separated from the rest of the herd on 9 May 1979. The outer claw of the left forefoot was found to be badly abscessed with a pus pocket. The hoof was treated with Stronger Iodine Tincture and packed with gauze pad, Kling band tape, Elasticon, and Kopertox.

The foot was examined and redressed on 20 May and 7 July with no improvement noted. An associate veterinarian suggested trying Technovit on the animal's hoof. Technovit is a kit which contains 6 wooden blocks 6 cm. thick, shaped similiarly to the claw of a hoof; a can of Technovit liquid, a jar of Technovit powder, some mixing cups, and some applicator sticks.

The eland's weight was estimated at 295 kg. (650 lbs.). A projectile syringe of 7 ml. (0.7 gm xylazine) Rompun 10% injection was used to immobilize the animal. It took 49 minutes for the animal to become tranquil enough to safely allow the injection of 6 ml. (0.006 gm. etorphine) M-99 with a hand syringe. The animal soon got up and pressed her body forcibly against the stall doors in blind determination to escape. Finally, 23 minutes later the eland became flat-out recumbent.

The bandage that had been applied 7 July was removed. The sole of the foot was reamed out with the handle of a B & D scalpel in lieu of a curette, which would have been preferred, but was not available. The foot was cleansed with Nolvasan Solution and Strong Iodine Tincture was applied to the whole sole. The pus pocket, that had been seen during previous treatments, was no longer in evidence. The outer claw was then bandaged in the same manner as before (gauze pad, Kling band tape, and Elasticon) except no Kopertox was applied. The sole and adjoining hoof wall of the inner claw was then roughened with a rotary sander. The same area was then degreased with chloroform.

Technovit liquid was mixed 1:2 with Technovit powder to form a thick paste. The paste was applied to the sole and hoof wall of the inner claw as well as to one of the wooden blocks. The block was then placed on the claw and held in place manually until the paste had hardened (about 5 minutes). Be sure to note that the block is applied to the claw opposite the infected one. The theory is to take the pressure off the damaged claw.

A problem was detected in that the eland's stall was a lightly sanded cement floor and the wooden block would probably act as a ski on this surface. A piece of rubber matting was cut in the shape of the wooden block and applied to the block using the Technovit paste. The eland was standing in less than a minute following an IV injection of 6 ml. (0.012 gm. diprenorphine) M-50-50. *continued*

Technovit Applied to an Eland, continued

It took about half a day for the eland to adjust to the block. Prior to the application of the block the animal would swivel on the abscessed foot when she walked. With the block the animal could walk straight and was more mobile.

On 19 October the eland was immobilized with a projectile injection of 7.5 ml. (0.75 gm. xylazine) Rompun 10% solution. 35 minutes later 6 m. (0,006 gm. etorphine) M-99 was injected with a hand syringe. The animal paced aimlessly for 40 minutes, at which time it was taken to the ground through the use of ropes and keeper force. The bandage was removed from the outer claw. A liberal amount of Strong Iodine Tincture was applied to the sole area employing a saturated gauze sponge, which was wedged up into the deep recess of the sole. The claw appeared to be healing well, so it was decided not to redress it. The Technovit block was left on the inner claw. The animal was standing in less than a minute after an IV injection of 5 ml (0.01 gm. diprenorphine) M 50-50.

On 27 October the block fell off the foot. Since the block was intended to be on the hoof for approximately 6 weeks there was no reason to put it back on. It took about 3 days for the animal to adjust to the unblocked foot. It continued to walk better than prior to the application of the block. However, due to a general deterioration of the animal's health (not related to the hoof) and its obvious inability to rejoin the herd, it was euthanized on 20 November.

The post-mortum, conducted at Michigan State University, discovered chronic osteomyelitis (a bone infection) of the 3rd phalanx which led to the dissolution of the 3rd phalanx. In this case Technovit could not have been a long term remedy, however, it did demonstrate that it could be a successful treatment for more common hoof problems.

*Technovit, Acrylics for repairing of Equine or Bovine Hoof, is imported by Dr. Jorgensen Laboratories; Loveland, Colorado.



SERVICE PLAN MAPS WHOOPING CRANE RECOVERY

A popular symbol of endangered wildlife, the whooping crane *Grus americana* stands to benefit from a Fish and Wildlife Service-approved recovery plan. Management actions by the US and Canada, in response to increasing public concern for the crane, have resulted in a gradual increase in their numbers from a dismal low point of only 21 birds in 1941, to 119 in both wild and captive populations.

According to the Whooping Crane Recovery Team, the plan's prime objective of removing the whooping crane from Endangered status could be met by (1) increasing to at least 40 nesting pairs the wild population that migrates between breeding grounds in Canada's Wood Buffalo National Park and wintering grounds at the Aransas National Wildlife Refuge in Texas and (2) establishing at least two additional, separate, and self-sustaining populations numbering at least 20 nesting pairs each.

Among the recovery methods outlined in the Service's plan are habitat management, law enforcement, captive propagation and cross-fostering. The plan also calls for identification and protection of stopover sites along the migration route.

conference.....79

SOCIAL BEHAVIOR OF THE CAPTIVE SNOW LEOPARD

Panthera uncia

The following is a brief synopsis of a grant proposal submitted by Helen Freeman, Curator of Education, at the Woodland Park Zoo, Seattle, Washington to The Wildlife Preservation Trust. (The grant was approved in July, 1979.) The grant will allow Ms. Freeman to conduct a comprehensive computer study on the breeding and behavior of the snow leopard, *Panthera uncia*. Some of the questions being tested are: Is the snow leopard monogamous? How strong is the pair bond? Is there paternal care, if so, is there a distribution of the parental duties? Is there a strong seasonality in the male's sexual cycle as well as the female's? When is sexual maturity reached in males and females and how does this affect the relationships between individuals in the group? All of these questions affect how snow leopards are managed in zoos. What is learned will have direct application for the survival of the captive population.

In addition to the Woodland Park Zoo in Seattle, data is being collected at the Washington Park Zoo (Portland, Oregon), the Brookfield Zoo (Chicago), the Bronx Zoo, and the Calgary Zoo. This is an excellent example of the sharing of information among zoos.

Jill D. Mellen
Research Coordinator, Washington
Park Zoo, Portland, Oregon
Program Chairman, 1979 AAZK Conference

Principal Investigator: Helen Freeman
Woodland Park Zoological Gardens

Abstract: The snow leopard is classified as an endangered species by every country in which it is found. The few that are left inhabit areas which are among the most inhospitable habitats in the world. Little information is available on the behavior of snow leopards in the wild. This study will increase our basic knowledge of the species by setting up a system to:

- Direct and coordinate a data band on the social behavior of the snow leopard,
- Examine changes over time in activity patterns and reproductive activity of pairs,
- Develop a computer program using the Statistical Package for the Social Sciences.

Detailed Project Description: A broad-spectrum behavior code with high inter-observer reliability has been devised and tested. A preliminary SPSS computer program using this code has been developed.

The snow leopard behavioral data will be sorted on duplicate magnetic tape at the University of Washington Academic Computer Center, and analyzed with SPSS programs developed by the University of Chicago.

SPSS is particularly suited to use by behavioral scientists, and allows flexibility in manipulating and examining data. Many operations can be performed through this system, from simple ordering, sampling and display of data through sophisticated regression and factor analysis programs. Furthermore, tape data storage and use of a commonly available

Social Behavior of the Captive Snow Leopard, continued

system such as SPSS will allow easy transfer of the data band to other computing locations in the United States.

A pair-sampling method for data collection is used, and the behavior of both the male and female are recorded simultaneously at twenty-second intervals. The code is exhaustive in that the subjects are always recorded as doing something, even if the behavior is one of inactivity or out-of-view. The behaviors are not mutually exclusive because a subject may be doing more than one behavior at the same time. The behaviors which occur simultaneously are noted on the code sheet. Proximity relationship is also noted.

Although infrequent behaviors of short duration can be missed using scan sampling, previous studies have shown that, with the snow leopard, very little information is lost using twenty-second intervals. There is a higher incidence of inter-observer reliability with scan samples and, in addition, it is a method that is particularly suited for activity cycle studies. By using a pair-sampling method, it is also possible to collect specific social interactions.

There are three time periods for data collection: 7 a.m. to 11 a.m.; 11 a.m. to 3 p.m.; 3 p.m. to 7 p.m. When the number of participating zoos is finalized, the amount of observation time for each observer will be determined. This will be approximately one to two hours per week.

Each observer will be supplied with:

1. Behavior code
2. Data collection sheets
3. Worksheets for tallying behaviors
4. Total tally sheet for each observation period.

Prior to the start of data collection in November, I will visit each zoo and meet with the observers and appropriate zoo staff. At this time a 35 mm slide program illustrating the behaviors will be reviewed and discussed. A ½-inch video tape will be shown so that observers can practice taking data.

Time-table: November 1979 through March 1980

Budget:

Keypunch operator	
42 hours @ \$12/ hour (includes verification)	\$ 504
Consultant	
SPSS consultant, 40 hours @ \$12/ hr.	480
Computer Account Time	
University of Washington CDC Computer	300
Data Storage on Magnetic Tapes	<u>100</u>
	\$ 1,384

Funding source for the above is The Wildlife Preservation Trust International, Philadelphia, Pennsylvania.

Additional matching funds for computer time are available through the University of Washington, Department of Psychology. *continued*

Social Behavior of the Captive Snow Leopard, continued

Snow Leopard Pair Sample Study
Behavior Code 1979-80
Helen Freeman
Woodland Park Zoological Gardens
5500 Phinney Ave. , No., Seattle 98103
Phone: 625-4550 (area code 206)

Solitary Behavior

- 100 Sedentary; lying, sleeping, dozing, no movement
- 105 Stand; a transitional behavior between sedentary and active
- 110 Pace, covering same area in stereotypic manner
- 115 Locomote; directional movement
- * 120 Auto-groom
- 130 Headrub inanimate object
- 140 Solitary play; includes leaping and jumping alone
- 150 Roll on back
- 155 Claw sharpen
- 160 Eat or drink
- 161 Urinate or defecate
- 165 Sniffing inanimate object
- 170 Mark horizontal surface; scraping with hind legs
- 171 Mark vertical surface; spray
- 172 Tail flag
- * 173 Phlemen

Social Behavior

- * 200 Social sedentary; within 30 cm of mate
 - * 205 Social stand; standing within 30 cm of mate
 - 210 Social pace; both pacing within 30 cm of each other
 - 215 Social locomote; together with a directional movement
 - * 220 Social groom; one animal is grooming the other or both are 220
 - * 225 Being groomed; one animal is being groomed
 - * 230 Social headrub or cheekrub
 - 235 Being head or cheek rubbed
 - * 240 Social play; includes chase, rolling, wrestling, ambush, cuff
 - 250 Agressive swipe or bite
 - * 260 Mount ventral ventral
 - * 261 Mount ventral dorsal
 - * 263 Mount unspecified
 - * 265 Sniffing anogenital area
 - * 266 Being sniffed in anogenital area
 - * 267 Nape or ear bite while mounting
- 399 Not visible
400 None of the Above

Vocalizations

- * 300 Snarl
- * 305 Growl
- * 310 Caterwaul
- * 315 Prusten

* indicates behavior may occur simultaneously with other behavior; note both behaviors.



conference.....79

Portland, Oregon

INCIDENCE OF LEPTOSPIROSIS

IN CAPTIVE RHINOS

by
Phil Prewett
Houston Winbigler

On June 10, 1979, the Memphis Zoo experienced the death of a ten-year-old female Black Rhinoceros; ten days later the death of an eight-year-old male occurred. All evidence indicates these to be the first documented cases of Leptospirosis in captive Black Rhinos. In the wild there has been only one reported case.¹ That animal was found down and unable to stand. It was euthanized and the necropsy revealed the presence of Leptospirosis by culture.

Hopefully this presentation will encourage keepers to work as closely as possible with their veterinary staff in the attentive observations of their charges.

Leptospirosis, commonly referred to as Weil's disease or the red water disease, is primarily transmitted through the urine of an infected animal (especially rodents) and usually enters through a mucus membrane or a cut. Although there are five strains, pathologists detected two *Leptospirosis canicola* and *Leptospirosis icterohemorrhagicae*, through postmortem blood testing on the Memphis animals. The bacteria which cause this disease are not hardy and die quickly when exposed to only moderate heat, light or even slightly acidic soil conditions.

Leptospirosis is not uncommon in domestic animals. It affects the kidneys and liver, causes loss of coordination, abortions and massive breakdown of blood. It is because of clotted blood and serum voided that it is referred to, especially by ranchers, as the red water disease. The disease and ensuing death is not uncommon in cattle but has little affect on horses. In goats it frequently brings on abortion storms. It should be noted that, prior to the Rhino deaths at the Memphis Zoo, the round barn, a rodent-infested hoofed-stock compound which also serves as a central feed storage area of the mammal section, had already sustained the losses of a Rocky Mountain Goat and a Siberian Ibex. These deaths were both attributed to Leptospirosis.

Both the aforementioned Black Rhinoceros, Snoopy and her mate Punion, who was imported in 1973, were quartered in the Pachyderm building, which also houses their eight-month-old male calf, another adult female Black Rhino, a breeding pair of White Rhinos, and single African and Asiatic Elephants. Three stalls, one holding area, and two outside lots which were surfaced with crushed limestone were provided for the Rhinos, and Snoopy and her calf were allowed access to the outside lots alternating with the other animals. The inside facilities were cleaned and washed daily and periodically steam-cleaned and scrubbed with Rocal-D disinfectant. Sanitation for the outside lots consisted of removing unused hay and fecal matter and the routine cleaning of a large pool.

continued

Incidence of Leptospirosis in Captive Rhinos, continued

The Black Rhinoceros' lot also contained a man-made mud wallow, which was equipped with no provisions for drainage and had degenerated into a cesspool of dung and muck capable of harboring any number of pathogenic micro-organisms. Subsequent to the death of a second animal, however, this wallow was dug out, limed, filled with a layer of limestone and topped with sixteen inches of sand. This sand pit has now been utilized by all residents of the building.

The first Black Rhinoceros to die, Snoopy, was born in the Denver Zoo in 1968. She arrived at the Memphis Zoo in 1969 and was joined shortly by another female born in the St. Louis Zoo. In 1973 the herd was completed with the addition of a wild-caught male from Rhodesia whose estimated age was four years.

No significant medical problems were detected until May of 1977 when Snoopy exhibited some degree of ataxia, constipation, and large clots of blood found in pools of urine. She received at this time, Gentocin, vitamin K, Azium, and vitamin B complex injections; but she was still displaying symptoms after a week and it was decided that a more thorough examination should be made. On May 24, 1977, she was immobilized with M-99, given a thorough examination, administered the same drugs and supplements, and received a large enema. Results from the tests indicated slightly elevated liver function, and she was also slightly anemic.

Upon the assumption of her recovery, she was again placed with the male and was bred repeatedly. Toward the latter stages of gestation she was separated from the other Rhinos, and on November 7, 1978, she delivered a healthy male calf.

On June 8, 1979, the female again showed signs of constipation and she went off her feed. By the next afternoon she was voiding reddish urine and showing signs of ataxia. She had already started to wean her calf, so it was decided that the two should be separated. Snoopy, who was usually fiercely protective of her calf, stayed in a prone position while four people entered the stall to rope and remove her calf. When the calf was restrained, Snoopy staggered to her feet, made a wobbling effort to charge, and fell back down. After this, she was darted with 15 c.c. each Genotocin, Azium, vitamin K, and Vitamin B complex.

At 11 p.m. she was observed to be on her feet walking. She was, however, found at 6:30 a.m., June 10, lying dead in her enclosure.

A necropsy was carried out that morning, and although her overall appearance was healthy, her body cavity was filled with red fluid; her bladder was filled with dark red urine; the liver, though not enlarged, was of an orangish color and extremely friable; and her kidneys, showing extensive perirenal edema, displayed, upon cross section, pinpoint hemorrhages. Upon the completion of the necropsy, the cause of death was determined to be from hemolytic anemia, and specimens were sent to several pathology labs to determine the cause of this condition.

Prior to being shifted to another lot on the afternoon of June 20, 1979, the adult male Black Rhinoceros appeared to be very lethargic and displayed poor locomotion and marked uncoordination. During routine

Incidence of Leptospirosis in Captive Rhinos, continued

cleaning and inspection of the lot, the keeper noticed a large pool of reddish-brown urine. Immediately he was placed under observation, separated from the female with whom he was sharing the lot, and the veterinarian was summoned. While attempting to shift this animal into an indoor stall, he collapsed and died.

Preparations for conducting a post-mortem examination were made at once. A necropsy was performed that evening, and with the exception of excessive bone deterioration (asymptomatic to Leptospirosis) the necropsy revealed the same information as the one conducted after the first death, ten days prior. The animal had died of a hemolytic anemia.

While awaiting the results of tests, the Pachyderm complex was placed under a strict quarantine. The doors were closed to the public, daily disinfecting of the entire building was initiated, and the building was placed off-limits to all zoo personnel except the mammal curator, his assistant, and the zoo veterinary staff. All Rhinos were kept inside and their lots were covered with a layer of lime as a precautionary measure.

During this interim period, tests were conducted for blood parasites, E.I.A., Clostridia, anaplasmosis, copper poisoning, fungi, tuberculosis, and a heavy metal screen was conducted; all tests came back negative. Blood was also taken from the remaining two Black Rhinos and the two elephants. An attempt to take blood from the White Rhinos was made but only the male was cooperative. In addition to the sanitary measures mentioned in the preceding paragraph, as a protective measure, all Rhinos were put on Lixotinic, an iron supplement, and began receiving tetracycline with their feed. It should be mentioned here that the red blood count on the remaining female Black Rhino had at this time begun to drop. It decreased from what seems to be a normal thirty-five, to twenty-seven, to twenty-five, to a low of twenty-two.

Nine days after the death of the second Rhino, results from some of the blood tests were received from Kord Animal Disease Laboratory in Nashville, Tennessee. These indicated that the male Black Rhinoceros died of a hemolytic anemia as a result of Leptospirosis. The titer for *Leptospirosis Canicola* was moderately high, and was extremely high for *Leptospirosis Icterohemorrhagicae*. This diagnosis, which is based on the Microscopic Agglutination test, uses live leptospire and is considered by experts to be the most acceptable and accurate leptospirosis serology yet developed. This diagnosis of Leptospirosis is based entirely on serology.

We, however, using a culture, were unable to find active leptospire in any tissue. Immediate diagnosis was not possible in the first subject due to the delay between death and necropsy. The rapid destruction of blood components made detection virtually impossible. Even in the second death, the massive and rapid breakdown of the blood made it of limited value. In fact, blood from this male was injected into a goat and a sheep but failed to produce a higher blood titer.

Following the results of the tests, all animals in the building were vaccinated against all five strains of Leptospirosis. Each animal received a double dose of killed Leptospirosis vaccine except the Rhino calf who received what is considered to be a normal dose. It is, at this point, noteworthy that the Asiatic elephant displayed a moderate titer for *Leptospirosis Icterohemorrhagicae*, but after her vaccination she displayed an extremely high (one to eight thousand) blood titer.

Incidence of Leptospirosis in Captive Rhinos, continued

After this outbreak of Leptospirosis, to eliminate any rodent problems, all of the grain entering the Pachyderm building is immediately placed in rodent proof containers. Although the animals at the Pachyderm building have been vaccinated, not enough is known to maintain a regular schedule of inoculation for Rhino.

Schenkel, R. and Schenkel-Huliger, L. Ecology and Behavior of the Black Rhinoceros *Diceros bicornis*: A Field Study, *Journal of Zoo Animal Medicine*, March, 1979. Vol. 10 #1.

Verlag, Paul Paneg. Hamburg and Berlin, W. Germany; 103, 1969.

Note from the authors: Our special thanks to Dr. Mike Douglas, D.V.M., Memphis Zoo and to Drue Bauer, Pachyderm Keeper.



** 4th Reptile Symposium on Captive Propagation & Husbandry is to be held June 13-15, 1980 at the Ramada Inn, Monroe, LA 71201. Pre-registration information available from Lynn McDuffy, Host Committee, LA Purchase Gardens & Zoo, Box 123, Monroe, LA 71201. 318 322-8966.**

SNOW BABIES FIND NEW HOME

by

Dianne Devison

Keeper II, Nursery, Health Unit, Metro Toronto Zoo

On January 10, 1980, two female Polar Bear Cubs arrived at Metro Toronto Zoo. The cubs were orphaned by an Inuit hunter who shot their mother. We can only assume that our mild Canadian winter brought the female and her cubs out of the den so early in the winter. When the cubs were discovered by the hunter, they were loaded onto his snowmobile and taken to an R.C.M.P. Officer in Sanikiluaq, a hamlet on the Belcher Islands, North West Territories. The Officer was having trouble getting the cubs to nurse and contacted the zoo. We agreed to take them. They were flown to the zoo the next day. The cubs, age about two and one-half months old, were in good health. They were placed in a hospital quarantine for a thirty day period.

With a little encouragement, both nursed well. Several baby nipples were tried and it was found that they accepted a lambs' nipple best. They were fed four times per day; running shifts from 7 a.m. to 10 p.m., on a formula of 1:1 Carnation Milk and distilled water, rice pablum and vitamin drops. After about one week of this diet, we ran into a loose fecal problem and digestive upset. The milk was changed to Esbilac but the smaller bear continued to have problems. The shifts were extended to midnight to keep a closer eye on her. After two weeks of medication and close observation, she was well enough to join her sister in the viewing nursery.

The two cubs quickly outgrew the nursery that had been prepared for them. Six weeks after arrival the two cuddly blue-eyed balls of fluff of 16 and 18 pounds had turned into two balls of fury of 29 and 35 pounds. They are thriving on a meat, dog chow, and milk mixture from a dish and now reside in the Polar Bear maternity exhibit.

DINGELL REQUESTS GAO STUDY OF MARINE MAMMAL COMMISSION

Congressman John Dingell (D-MI), the primary author of the Marine Mammal Protection Act of 1972, has formally requested a General Accounting Office (GAO) study of the Marine Mammal Commission.

The Commission is charged with the responsibility of conducting a continuing review of the condition of marine mammal stocks, reviewing methods for their protection and conservation, researching and developing standards for humane means of taking marine mammals, and conducting research programs to obtain optimum sustainable levels of marine mammal populations. The study will "look at how well each particular marine mammal species is being managed and whether such management has benefited or degraded certain species."
AAZPA Newsletter

DEPARTMENT OF AGRICULTURE PUBLISHES RULE ENDING DESTRUCTION OF ILLEGALLY IMPORTED BIRDS

On 15 January 1980, the Department of Agriculture (DOA), Animal and Plant Health Inspection Service (APHIS), published in the Federal Register a final rulemaking which will terminate the destruction of birds illegally imported into the U.S. Effective 15 January 1980, all birds in a healthy condition which are illegally imported into the U.S. may now be sold at public auction. Prior to the new USDA-amended import regulations, illegally imported birds were destroyed due to inadequate quarantine facilities.

It should be noted that endangered or threatened species of birds will also be allowed entry under the new amendments. Although the new regulations restrict the sale of such birds to private individuals, the birds are eligible to be transported to permanent quarantine facilities. Such permanent facilities may include zoological institutions designated by the Department of Interior.

Persons interested in obtaining copies of the new bird regulations are urged to write: Import Staff, APHIS, USDA, 6505 Belcrest Road, Hyattsville, MD 20782.
AAZPA NEWSLETTER

DELHI BEGINS EFFORT TO SAVE WHITE TIGER

Urgent efforts have begun to establish new centers for breeding India's fabled "white tiger," thereby ensuring the survival of one of the rarest of wild animals.

J.H. Desai, director of the Delhi Zoo, announced this week that young white tigers are, for the first time, being loaned to other zoos with the intention of cross-breeding them with ordinary yellow males. There are believed to be only 37 white tigers in captivity throughout the world.
Washington Post

The World Wildlife Fund announced recently that it has reached an agreement for cooperation in conservation with the People's Republic of China. China has also agreed to become a State Member of the International Union for Conservation of Nature and Natural Resources and has agreed to accede to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
Environmental Conservation

+++++++
New Officers for the Knoxville Zoo
AAZK Chapter in Tennessee

chapter

President.....Valerie Baifield
Vice-pres.....Frank W. Griffin
Secretary.....Chris Hallwernt
Treasurer.....Chris Norris

Congratulations!

The Memphis Zoo AAZK Chapter, for the second year, assisted their Educational TV station, Channel 10, with their fund drive by attending their phones for one night.

news

The Memphis Zoo Chapter also had the privilege of listening to Mr. Ted Schorman, Jr., of the African Wildlife Preservation Fund, Inc., at their March meeting.

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INFORMATION ON LEGISLATION

Both houses of the Congress have approved of a conference committee's report on S. 1143, the Endangered Species Act Amendments of 1979. The principal issue in conference was the differing versions of provisions for the Endangered Species Scientific Authority, the U.S. body established under the Convention on International Trade in Endangered Species (CITES). CITES requires that participating countries establish a scientific authority to advise which species can be traded without contributing to their extinction. The Senate did not alter the existing law under which ESSA was independent, but the House established the Secretary of the Interior as the authority. The conference committee solution, ultimately adopted by the Congress, designates the Secretary as the scientific authority but makes a multi-disciplinary group, a new International Convention Advisory Commission, an independent entity. If the Secretary, as the scientific authority, does not accept recommendations of the Commission he must explain why, in written form to the Commission and published in the Federal Register.

The Endangered Species Act was re-authorized after the Congress approved an exemption in an appropriations bill which called for completion of the controversial Tellico Dam in Tennessee, notwithstanding any other law. Construction of the dam had been blocked in an attempt to save the endangered snail darter.

From the Federal Register

On April 2, 1980, an action was taken, the final rule-listing as Endangered with Critical Habitat for the Plymouth Red-Bellied Turtle in Massachusetts. The turtle is known only from Plymouth and Dukes Counties in Mass. The summary states that the action is being taken "because the number of this species is low, the habitat is subject to alteration, turtles have been reported as being harassed by people, and predation could be a negative factor in the continued survival of the species." The ruling provides full protection of the Endangered Species act of 1973, as amended, to this species. The effective date of the action is May 2, 1980.

THE STRUGGLE FOR SURVIVAL

FEDERAL PERMIT SOUGHT TO REMOVE REMAINING ENDANGERED DUSKY SEASIDE SPARROWS FROM THE WILD

The U.S. species closest to extinction -- the dusky seaside sparrow -- may be taken into captivity for safekeeping and propagation under a proposal by the Florida Game and Fresh Water Fish Commission.

Last spring, only 13 of the 1-ounce songbirds were found in the annual survey of their habitat in or near the St. Johns National Wildlife Refuge near Cape Canaveral. Three of these were captured in September and placed in captive breeding facilities at the Commission's Wildlife Research Laboratory at Gainesville. The permit proposes taking the remaining birds into captivity to prevent further losses and to protect the genetic pool, including an experimental effort to freeze-dry sperm for possible future use.

THE ONES THAT GET AWAY: HARMFUL EXOTIC FISHES SPREAD AND CAUSE INCREASED ENVIRONMENTAL CONCERN

Scientists are concerned about the destructive potential of increasing numbers of foreign fishes in U.S. waters, since some species have a capacity for environmental devastation.

Eighty-four exotic fish species have been found in U.S. water. Of these, 39 have established breeding populations with 8 showing rapid or major expansion in the past 6 years. These statistics are from a recent survey contracted by the U.S. Fish and Wildlife Service's National Fishery Research Laboratory at Gainesville, FL. The lab was established in 1977 to assure, through intensive research, that new imports will not be destructive to water systems, and to study species already established to determine whether they are likely to spread over major geographic areas.

"We're concerned about the introduction of each new foreign species without adequate research because of the possible ways they can affect healthy water systems," says Dr. James A. McCann, who directs the Gainesville lab's activities. "They may prey on native fish, compete for food, hybridize, carry new parasites and disease, and alter the natural environment so that native species cannot thrive. Some species pose a direct danger to humans."

Some of the species involved are the walking catfish, the grass carp, four tilapia species, the oscar and the black acara.

coming events

AAZK CONFERENCE AT MONTGOMERY, ALABAMA

Date: October 5-9

Conference Headquarters: State Capitol Holiday Inn, \$23 single and \$29 double rooms.

Registration: AAZK Members: \$40 AAZPA Members: \$50 Non-members of either group: \$60.

Remember! Deadline for papers is July 15. Papers will be limited to 20 minutes with a 5 minute question period. Schedule of papers will be in the August issue of the *Forum*. A discount of \$20 will be granted to each individual whose paper is chosen for presentation.

Registration forms will be in the June issue of the *Animal Keepers' Forum*.

Late registration after September 1 will be: \$50 for AAZK members, \$60 for AAZPA members and \$70 for non-members.

There will be a non-animal auction the night of the banquet. Any items you wish to bring for the auction should be turned in to Mark Ratliff on your arrival.

Laura Strickland, Conference Co-ordinator
Montgomery Zoo
P.O. Box ZEBRA
Montgomery, AL 36109

AAZPA ANNUAL CONFERENCE

September 14-18, 1980 Radisson Hotel, Chicago, Illinois.

INTERNATIONAL CONFERENCE FOR ZOO HORTICULTURE

August 24-29, 1980

Sugarloaf Conference Center, Temple University, Chestnut Hill, Philadelphia, Pa. The conference is designed to deal with the need of horticulture in modern zoos. For further information, write: (Chuck Rogers, Curator/Horticulture, Philadelphia Zoo, 34th St. & Girard Ave., Philadelphia, PA 19104. (215) 243-1100.

From the Federal Register

Participating nations in CITES will meet again in February 1981 to consider further amendments to Appendices I, II and III. The Dept of Interior is requesting information from interested parties on animal and plant species to determine if the U.S. should propose any amendments for consideration at the meeting. Amendments may include additions to the appendices, deletions from the appendices, or transfers from one appendix to another. All information and comments received by June 3, 1980 will be considered. Address correspondence to:

Office of Scientific Authority
U.S. Fish and Wildlife Service
Washington, D.C. 20240

Attn: Dr. Richard L. Jachowski



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Animal Keepers' Forum publishes original papers and news items of interest to the Animal Keeping profession. Non-members are welcome to submit articles.

Articles should be typed or hand-printed. All illustrations, graphs and tables should be clearly marked, in final form, and should fit in a page size of no more than 6" x 10" (15 cm. x 25½ cm.). Literature used should be cited in the text and in final bibliography. Avoid footnotes. Include scientific names.

Articles sent to *Animal Keepers' Forum* will be reviewed for publication. No commitment is made to the author, but an effort will be made to publish articles as soon as possible. Those longer than three pages will be separated into monthly installments at the discretion of the editorial staff. The editors reserve the right to edit material without consultation unless approval is requested in writing by the author. Materials submitted will not be returned unless accompanied by a stamped, self-addressed envelope.

Telephoned contributions on late-breaking news or last minute insertions are acceptable. However, phone-in contributions of long articles will not be accepted. The phone number is 913 272-5821.

DEADLINE FOR EACH EDITION IS THE 20th OF THE PRECEDING MONTH.

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Animal Keepers' Forum



Dedicated to Professional Animal Care
JUNE 1980

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Animal Keepers' Forum is a monthly journal published by the American Association of Zoo Keepers, 635 Gage Blvd., Topeka, Kansas 66606.

Second class postage is paid at Topeka, Kansas. Return postage is guaranteed.

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Mike Crocker of the Dickerson Park Zoo in Springfield, Missouri, is the cover artist for this June issue. Mike illustrates a keeper and animal enjoying each other and the opportunity to be outside on a warm spring day. Thanks, Mike.

SCOOPS and SCUTTLEBUTT

CHECK LIST FOR ALL KEEPERS

Have you

- [] Nominated a keeper for the Award for Excellence in Zoo Keeping? *see page 50, March AKF.*
The new deadline for the Excellence in Zoo Keeping Award is July 15.
- [] Registered for the AAZK National Conference?
see Coming Events, this issue.
- [] Submitted any items for the consideration of the Board of Directors? *send to President, Pat Sammarco.*
- [] Considered bidding for a future conference to be hosted by your zoo? *see page 99, May AKF.*
- [] Written a paper for the AAZK National Conference?
\$20 off your registration fee! Papers do not need to follow the theme of the conference.

SHEDD AQUARIUM NAMES NEWSLETTER

The John G. Shedd Aquarium in Chicago, Illinois, conducted a Name-the-Newsletter contest and chose the name *WaterShedd*. Watershed means "a crucially important time or event." The staff was delighted with the double meaning and significance of the name.

PHILADELPHIA OPENS BEAR COUNTRY

Bear Country opened in April at the Philadelphia Zoo. It is a naturalistic exhibit housing three species of bears -- polar bears, sloth bears, and spectacled bears. Pools, streams, shade trees and artificial rocks are integrated into the exhibit. Nine cubbing dens with closed-circuit TV are available.

Each outside area has been specifically landscaped to meet the needs of the species it contains. A large pool with an acrylic panel to let visitors watch the polar bears beneath the surface is featured in that area. Spectacled bears have been given access to large, living trees within their exhibit. Portions of the sloth bear exhibit contain logs and root systems for them to dig in and investigate. A fourth enclosure will be used to separate individual animals as needed. Underground dens will provide the bears with privacy, a controlled temperature and solitude.

BIRTHS HATCHINGS

GOLDEN LION MARMOSETS BORN AT FOLSOM ZOO Laurie Trechsel

The Folsom Children's Zoo, Lincoln, Nebraska, is proud to announce five births of the endangered Golden Lion Marmosets this spring. One set of triplets was born March 2, 1980. The mother would only take care of two. Regretfully, an attempt at handraising the third failed. A second set of twins was born May 5, 1980, bringing the total number of successfully reared offspring to eight since we first acquired our two pair on loan from NZP in October of 1978. The four young are doing well, with the juveniles of last year becoming involved in the raising of this year's young.

RARE TORTOISE HATCHED AT ATLANTA ZOO Alan Sharples

A rare Radiated Tortoise *Geochelone radiata* hatched at the Atlanta Zoo, Atlanta, Georgia, on March 11, 1980. The egg, along with one other, was laid on November 3, 1979. Two more eggs were laid on March 11, 1980, and are being incubated at a temperature of 80°F. (27°C.)

The hatchling weighed 23.5 grams on day 1 and had a large yolk plug. At the same time the carapace measured 4 cm. by 3.6 cm. wide. On April 5, 1980, the hatchling weighed 29.9 grams (after eating). The adult pair were received as young adults on January 1, 1969. At the present time none of the tortoises are on public exhibit.

SPRING BIRTHS AT CONSERVATION AND RESEARCH CENTER . . . Kevin Conway

The animal staff at CRC, Front Royal, Virginia, has been busy this spring keeping up with numerous mammalian births. Since February the following species have produced offspring: 1.4 Bactrian Camels *Camelus bactrianus*, 4.4 Oryx *Oryx dammah*, 2.5 Pere David's Deer *Elaphurus davidianus*, 1.3 Binturongs *Arctictis binturong* and 0.0.2 Golden Lion Marmosets *Leontideus rosalia rosalia*.

THREE WHITE BENGAL TIGERS BORN AT CINCINNATI ZOO

Three white Bengal tigers were born at the Cincinnati Zoo, Ohio, on April 21, 1980. They are the Zoo's 10th, 11th and 12th births. They were born to a brother-sister pair..

RARE GOELDI'S MARMOSET BORN AT BROOKFIELD

The U.S. Fish and Wildlife Service seized ten rare Goeldi's marmosets and requested that the animals be held by Brookfield Zoo, one of the few zoos that has ever kept this species. In the almost three years that Brookfield has held the colony of marmosets, it has more than tripled, now numbering 32.

The most recent birth of a Goeldi's is Easter Lily, a little female born Easter Sunday. The colony is presently off-exhibit, but with a recent ruling that marmosets born at the zoo belong to Brookfield, the zoo is making plans to exhibit the animals.

NATIONAL FISH AND WILDLIFE POLICY TO BE DRAFTED

The Fish and Wildlife Service is preparing a National Fish and Wildlife Policy to clarify and reaffirm the Nation's commitment to the conservation of natural resources. An initial portion of the policy which addresses State-Federal Relationships is printed in the Friday, May 2, 1980, *Federal Register*. The public is encouraged to review and comment upon that section and to comment upon the content and priorities which should be attached to various components of a National Fish and Wildlife Policy. Comments should be addressed to Director, Fish and Wildlife Service, Division of Program Plans, Washington, D.C. 20240.

THIRD MEETING OF CITES ANNOUNCED

The third regular meeting of the Conference of the Parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora will meet in New Delhi, India on February 2-13, 1981. A provisional agenda was printed in the May 9, 1980, *Federal Register*.

WILDLIFE GROUP, CHINA JOIN TO PROTECT PANDAS

More than 10 percent of all giant pandas have been killed by starvation or earthquake since 1975, prompting an international rescue mission to save one of the world's most beloved -- and most endangered -- animals.

A team led by Chinese scientists and experts from the World Wildlife Fund, which uses the panda as its symbol, made an unprecedented trip into the mountain habitats of the world's 1,000 remaining pandas. A survey of the panda reserves in southwest China concluded that 138 of the animals died in 1975 and 1976 from an earthquake and the sudden dying out of arrow bamboo, the panda's main food. The bamboo usually propagates in shoots. But once every 60 to 100 years it puts forth flowers and seeds and then dies. The seeds sprout new bamboo which takes several years to grow large enough for the pandas to eat.

Pandas live in 10 special protection zones, eight of them in Sichuan. The team plans to collect information from local Chinese naturalists to set up a plan to curtail further starvation -- a system of bringing food to the reserves or capturing and feeding the animals.

Pandas were hunted during the early 1900's. A movie scheduled for production this year, "The Lady and the Panda," is the first U.S.-Chinese co-production and will tell the story of one of those Panda hunts.

Jay Mathews, Washington Post

H.R. 6984---INTERNATIONAL WILDLIFE MANAGEMENT

A companion bill to the Chafee-Culver "International Wildlife Resources Conservation Act of 1980" was introduced in the House. H.R. 6984, sponsored by Rep. David Bonior (Mich.), would "facilitate the worldwide sharing of wildlife resource capability," by creating an International Conservation Corps, training foreign nationals, and appointing regional wildlife resources attaches. The bill was referred jointly to the Committees on Merchant Marine and Fisheries and Foreign Affairs.

ON THE OCCASION
OF THE FIRST BIRTHDAY OF A PYGMY HIPPO

by
Hans Vleming
Keeper II, Africa Pavilion, Metro Toronto Zoo

Tauret is a year old today. She really started more than two years ago, when we decided to introduce Hilda (Ubiaya, Basle 46) and Psi (Washington 46), more by way of experiment than from desire for offspring. We juggled with creaking slides, half-open doors, and supervised face-to-face feedings, but it was half a year before we dared to let them take a bath together. They were both in the neighbourhood of five years old and both new to the experience. The fact that Hilda knew what to do and Psi had no idea, may be taken by some as another proof of the natural superiority of women. Hilda spent a great deal of time teaching him. Unfortunately, she used the exemplary approach and poor Psi almost got crushed under the considerable weight of her mounting body, but after three months he had caught on, and one Sunday in May Wayne Hibbs made The Observation. Now we know that, on paper, Wayne's special expertise lies with reptiles, but when it comes to sex he is certainly nobody's fool and we may rest assured his observation was correct. It gave us a gestation period of 204 days.

Like so many teachers, Hilda lost all interest in Psi once he had graduated, and she blythely set about the art of being pregnant. She had, up to then, always been sort of fussy and dainty, but now she started fouling up her stall, and anything else she could get her behind backed up to, with more vigour and tenacity than Psi had ever displayed. If it was the manifestation of an identity crisis, as we first supposed, it was a long one for she is still doing it today. She only stopped for about a week after Tauret was born. Tauret, who at 1380 g. of skin and bone was possibly one of the scrawniest pygmy hippo babies ever, could have disappeared for hours under one of her mother's wall-markings, so this was probably nature's way of protecting her young.

Tauret was born with the lower canines already in place, about the size and sharpness of needle points, and for awhile we wondered why Hilda nursed her with both hind-legs pulled up tight against her belly. It turned out to be merely good sense: two legs can kick a nipple-biting baby straight across to the opposite wall without tearing the nipple. Tauret did a great deal of walking back to mama in the early stages.

For a few days we hovered between loss of weight and no gain, and therefore between supplementary feeding or no supplementary feeding, but before the decision had been arrived at, the great leap forward made it unnecessary. The 6th day we had a one-day gain of 450 g., followed by weeks of enormous growth.

The first day in the display, with just a little water in the pool, gave the world a look at the most independant creature this zoo has ever known. It did not only go where it would, where it could, and where it should not, but it kept Hilda on the run and out of the water she would have given her eye-tooth to wallow in. But she was obliged to follow the baby and follow the baby she did. And when Tauret would finally settle down in one place, Hilda would push her back on her feet and make her move again, maybe out of spite, but more likely because she felt she had to actively teach her offspring to walk and swim.

continued

On the Occasion of the First Birthday of a Pygmy Hippo, continued

After a while we noticed some slight scrapes on Tauret's back. They increased in size, depth and frequency at an alarming rate, and we went to great trouble trying to find the protruding nail or stone or board. The truth, as always, would be out in the end. We think of it now in terms of frustration, but at the time we preferred to call them love-bites. Our display has a dirt floor, and we went through some anxious times when Tauret ravenously fell upon it. We stamped it solid and swept off all the loose stuff, but it is a good guess she ate her weight in dirt, carefully licking around the foal-starter pellets we had hoped would be a reasonable alternative. Lucky for all, the phase passed.

We gradually increased the depth of the water, and Hilda still remembers the day she could get her back wet without rolling over. Tauret now nursed under water as well as on land. She had started nibbling on hay at 3 weeks, ate it at 6, ate pellets at 8 and cubes at 12. Her upper canines came through at 2 weeks, the lower incisors at 3, the uppers at 6, and all the molars were around at 11. We stopped weighing her at 16 kg; it was the limit of our scale. Now, after a year, she is about 1/3rd the size of Hilda, and probably a quarter of her weight. But as we do not weigh Hilda either, the exact pounds and ounces shall remain a mystery. She was last seen nursing at nine months and did not hold her breath under water until 4, having blown bubbles up to then and having to come up for air every 10 seconds or so.

She still lives with Hilda today, which is fortunate because she is our 5th pygmy hippo, and the only other one who can live with Hilda is Psi, and that would inevitably lead to our 6th, and if 5 strain our hippo-housing capacity, 6 would burst it at the seams, which goes to show perhaps that there would hardly be endangered species if we turned the world into one great big zoo instead of making it into the mess that has made our crowded little animal parks indispensable.

Happy Birthday, Tauret!



AAZPA ANNUAL CONFERENCE WELCOME

The staffs of the Brookfield Zoo, the Lincoln Park Zoo, and Shedd Aquarium wish to welcome keepers to the AAZPA Annual Conference September 14-18 in Chicago, Illinois. We will provide sleeping space in our homes for those who must be frugal with their money. Please let us know of your needs soon. Write:

Pat Sass
Lincoln Park Zoo
2200 Cannon Drive
Chicago, IL 60614

Dave Kuhn was elected Keeper of the Year by the Lincoln Park AAZK Chapter. Our apologies to those who were slighted by the erroneous announcement in the May AKF.

by

Donald Gillespie
Veterinary student, Univ. of Tennessee

INTRODUCTION

A privately owned, unsexed aquatic turtle (species unknown) was brought to a local zoo in South Carolina. The turtle had been in indoor captivity for about eight months. The turtle was exhibiting symptoms of lethargy and soft shell (osteomalacia). The owner had given the turtle a diet that consisted solely of grocery store variety boneless fish fillet.

The primary diagnosis was acute malnutrition. The owner was instructed to feed the turtle a variety of foods to include vitamins A & D sources, B complex, as well as calcium-phosphorus sources. Vegetables and whole fish (to include skeletal and intestinal organs) were suggested.

DISCUSSION

Turtles need a varied diet to include sources of calcium and phosphorus as well as vitamins A & D and the B complex. Owners of non-domestic "pets" may have preconceived ideas as to what constitutes an adequate diet. Presentation of facts may not change their convictions or behavior.

Chelonians may be carnivorous, herbivorous or omnivorous in their dietary proclivities. Turtles and terrapins usually eat earthworms, small whole fish, mice, green leafy vegetation (watercress, Swiss chard, elodea). Tortoises usually thrive on flowers, succulents, grass, Swiss chard, cucumbers, mixed vegetations, fresh fruit and a small amount of bread or dog food. The corrective diet for the aquatic turtle presented earlier should include: whole, live fish such as mosquito fish, sticklebacks or goldfish, and green leafy vegetables such as watercress, romaine or Swiss chard.

The calcium/phosphorus ratio is of major clinical significance. The proper balance lies between 1:1 and 2:1. The most common imbalance in chelonians results from a diet containing either too much lean meat or lettuce. In these cases the ratio may be as unbalanced as 1:40. The condition may be further aggravated by a Vitamin D deficiency since most captive reptiles do not receive sufficient ultraviolet radiation.

Boney tissues become so depleted that skeletal deformities result. Frequently, the appendicular skeleton of turtles suffers pathologic fractures through weight-bearing. Later, softening of the shell becomes marked. If the turtle survives, the shell tends to curl, the internal organs become crowded and debility is further exaggerated.

Hypovitaminosis A is of secondary clinical significance. This syndrome is frequently seen in aquatic turtles, especially during the first two years of life. Deficiencies will appear unless vitamin A is supplied in the diet. As a final note, keepers, caretakers and owners of non-domestic "pets" should know that most commercially prepared turtle

Dietary Deficiencies of Privately Owned Aquatic Turtles, continued

foods are very low in vitamin A, and that the diet should be supplemented with good sources of vitamin A such as liver or carrots.

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Frye, Fredric: Husbandry, Medicine and Surgery in Captive Reptiles. VM Publishing, Inc., Bonner Springs, Kansas. 1973.



BEAR CUB DIES Alan Sharples

The Himalayan Black Bear born at the Atlanta Zoo on December 25, 1979, is dead, the victim of an always fatal disease. The Bear was Hydrocephalic, suffering from water on the brain.

The cub had grown from five ounces (140 grams) to two pounds (907 grams.) The first reported birth weight of 8.5 ounces (240 grams) was incorrect.

The cub was taken to Auburn School of Veterinary Medicine in Alabama on February 19, 1980, where the disease was diagnosed. The cub was euthanized by attending veterinarians.

MANDRILL BABOON DIES

A male Mandrill baboon "Duke" was found dead 15 May, 1980. The necropsy discovered a intestine torsion that completely blocked the lower intestines, causing parts of the intestine to die and become gangrenous. Duke was about 14 years old and had resided at the zoo since 1966. This tribute was printed in the Topeka Zoo's Newsletter, *Claws and Paws*.

DEATH OF A FRIEND

There lived here a mandrill named Duke
His face was that of a spook
He lived here for years
Saw happiness and tears
In a staff that called him a kook.

The gaze to his deep, narrow eyes
Would hint to his fearsome disguise
Though his colors were bright
And his jaw would clench tight
His gentleness evoked only sighs

A monkey that lived here so long
Needs more than this short farewell song
But my eyes fill with tears
As I recall those years
So, for all who knew you, Duke, so long.

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Portland, Oregon

BEHAVIORAL AND HUSBANDRY CONSIDERATIONS IN A CAPTIVE GROUP OF CHIMPANZEES

by
Nancy E. King
Washington Park Zoo, Portland, Oregon

Because chimpanzees *Pan troglodytes* are now on the threatened species list with possibly fewer than 20,000 animals left in the wild, the breeding of these animals in captivity is becoming increasingly important. Breeding programs must be examined, and if necessary renovated, if we are to assure the continued existence of behaviorally wild animals in captivity.

Wild chimpanzees live in populations of 100 to 180 animals, breaking into small association groups of two to nine members. These groups may remain together for a few minutes or a few days, but membership is subject to change at any time. Only mother-infant relationships remain constant. For three to five years, wild infants nurse, share their mother's nests, use her for transportation, and depend on her protection. Even at seven or eight years of age, adolescents, especially females, frequently accompany their mothers, nest close to her and are sometimes still protected by her. Youngsters deprived of this relationship become neurotic and frequently die despite the fact they no longer need mothers' milk to survive.

If captive infants are to mature in a manner similar to their wild counterparts, they must live in a social environment and spend not a period of months, but a minimum of several years with their mothers. This accomplishes several things. (1) It encourages the development of infants which are behaviorally similar to wild offspring. (2) It gives adults in the enclosure something to do, thus decreasing stereotyping, abnormal or otherwise neurotic behavior and increases exhibit value as the public appears to enjoy watching mother/infant and infant/infant interactions. (3) Because infants serve as natural birth control (females who raise their young give birth every four to five years), it keeps adult females from becoming "baby machines" -- producing infants every year and then "burning out" at an early age.

The Washington Park Zoo in Portland, Oregon, was fortunate in having such a group. The colony consisted of an adult male, three adult females and their three offspring. The adults ranged in age from 10 to 26 years at the beginning of the observation period (July, 1977); the infants from 10 months to 2 years. Twenty-six months of data were collected.

The group was housed in a small indoor exhibit containing standard metal furniture. The chimps were allowed access to a sundeck when the temperature was above 13°C and it was not raining. The main exhibit was scrubbed daily with TB Q and hot water. Half a bale of straw, as well as dry autumn leaves in the fall, were added after every cleaning, thus allowing opportunities for nest building, tool use, foraging, and object manipulation.

Behavioral and Husbandry Considerations for Chimpanzees, continued

The group was fed nine quarts of Purina primate biscuits as well as seven and a half pounds of fruit and vegetables daily. The fruit and vegetables were cut up, combined with general, a powdered protein supplement and multi-vitamins, and distributed throughout the enclosure each morning. Wheat, trail mix, or cashews were sometimes sprinkled in the hay as well, thus encouraging foraging.

Data collected in 33 categories of behavior (including tool use; pro-social partner preferences; agonistic, social and solitary play; allogrooming; autogrooming; and food sharing) displayed remarkable similarity to that of wild chimpanzees (King, Stevens, & Mellen; in press). For example, unlike other captive chimps that groom less than their wild counterparts, there was no significant difference in the amount of time the studied zoo chimps groomed when compared with the chimps of Gombe. Also, the captive group used tools to clean their fur and teeth, catch insects and absorb water. Wild chimps use tools for exactly the same purposes.

These exciting yet surprising results suggest that despite the many obvious shortcomings of the zoo environment, chimpanzees may not only successfully breed in captivity, but may also raise their young to be behaviorally comparable to their wild counterparts. The similarity in behavior between wild and captive animals was probably strongly influenced by comparable group social structure and size. Each adult female in the captive group was added as an adolescent, the age wild females join new groups, over a period of many years. The adult male was the first member of the colony and as such never had to establish a position of dominance. No other males were ever added. Females were allowed to raise their offspring, thus aiding in the natural spacing of births as well as longer periods of infant socialization. If the enclosure is large enough, infants should remain with their mothers for at least one year after she has given birth again.

Whenever possible, such procedures should be used in other captive groups. Though costly in terms of time, such groups aid in preserving the behavior of a limited resource, as well as provide excellent educational and research opportunities.

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vanLawick-Goodall, J. "The behavior of free-living chimpanzees in the Gombe Stream Reserve", *Animal Behavior Monograph*, 1, 161-311, 1968.



Anyone wishing a list of 1979 AAZK Conference delegates, contact:
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Portland, Oregon

HUSBANDRY, DEVELOPMENT, AND COMMUNICATION OF CAPTIVE MANDRILLS *Mandrillus sphinx*

by
Jill D. Mellen, Research Coordinator
Ann P. Littlewood, Nursery Keeper
Barbara Barrow, Part-time Research Coordinator
Washington Park Zoo, Portland, Oregon

Introduction

Mandrills, *Mandrillus sphinx*, are a unique exhibit species, illustrating various aspects of the Order Primate. They are the largest monkey (up to 30 kg for males); males have the largest canines of any monkey; they demonstrate extreme sexual dimorphism; and they are the most colorful mammal living today. Unfortunately, few behavioral studies (captive or field) have been conducted on these monkeys. This paper reports information acquired from the mandrill troop at the Washington Park Zoo (WPZ) on hand-rearing and reintroduction techniques, promoting non-aggressive activity, and intraspecific communication. The purpose of this paper is to share our knowledge concerning the management of the species in captivity.

Troop Composition

The WPZ troop consisted of one adult male, Blue; two adult females, Lulu and Alice; and three infants, two male and one female, ages ranging from 10 to 20 months. See table 1, next page.

Both females were nulliparous when received. Subsequent to her arrival at WPA, Lulu, the female, has given birth four times: the first infant (male) died soon after birth, the result of a fall; her second pregnancy resulted in twins (1:1); her third, Roger (male); and her fourth, Cara (female). With the exception of the last infant, Cara, all surviving infants were pulled and hand-raised because of inadequate maternal care. Details on hand-rearing will follow. Alice, the ♀ female, has given birth once to a male, Pan, and exhibited normal maternal behavior.

Hand-rearing

The information presented pertains mainly to Lulu's third infant, Roger.*

Harlow and Harlow (1965, 1969) have repeatedly demonstrated the importance of maternal contact for infant monkeys. Therefore, after Roger was rejected by his mother, we decided to provide 24 hour human contact for him. This was possible because of the large volunteer nursery staff.

Roger was provided with chew toys, climbing structures, and straw on the floor of a small room. He always was either carried by a person or contained in the enclosure with a human companion. Twenty-four hour care was continued from birth until Roger was four months old. Then he was gradually weaned from human companionship.

* For details on hand-rearing techniques on other WPZ mandrills, see Littlewood and Smith (in press).

Table 1. Details of WPZ Mandrill Troop (fall, 1978)

House Name	Sex	Date of Birth	Weight* (kg)	Origin and History	Social Rank
Blue	♂	~1962-63	23.1	Presumed wild caught; arrived WPZ 1965; father of all the infants	α adult
Lulu	♀	~1968-69	15.9	Captive born; hand-raised.	β adult
Alice	♀	~1971	8.7	Origin unknown; presumed wild-born	Ω adult
Pan	♂	3/26/77	3.0 (at 12 mos)	Parents are Blue and Alice; mother-raised	α infant
Roger	♂	2/10/77	4.1 (at 12 mos)	Parents are Blue and Lulu; rejected at birth; hand-raised and subsequently reintroduced.	β infant
Cara	♀	11/4/77	1.1 (at 2 mos)	Parents are Blue and Lulu; mother-raised	Ω infant

*Weights are approximate

During the weaning process Roger exhibited a great deal of distress. When nursery volunteers or staff attempted to leave Roger's enclosure, he jumped to the floor and screamed with pilo erection and defecation. The decrease in human contact continued until he was permanently reintroduced to the WPZ troop at age seven and one-half months.

In retrospect, 24 hour care would not be attempted with another primate because of the high degree of distress exhibited by the infant in the human weaning process. Human contact for 16 hours per day seems a more reasonable amount of time for a primate which must be hand-raised without conspecific companionship. Thus, a primate would spend each night alone, clinging to an artificial sheepskin. Of course, the optimal mode of hand-rearing would be to provide a conspecific of approximately the same age.

Reintroduction

Because Roger was hand-raised with no conspecific companions, we felt it was imperative that he be reintroduced to the troop. We began a reintroduction project when Roger was about four and one-half months old. Fortunately, Alice, the Ω adult female, had given birth to a male, Pan, six weeks after Roger was born and was an excellent mother. We hoped that by allowing Roger and Pan to play, Roger would become socialized.

Husbandry, Development, and Communication of Captive Mandrills, *continued*

Reintroduction involved one of the authors entering the enclosure with Roger. Alice, the ♀ female, and her infant, Pan, were then allowed access to the enclosure. The adult male and the ♂ female, Lulu, were contained in holding facilities. Alice was cooperative throughout, appearing to show only mild interest in the human. The complete lack of aggression on the part of Alice was both a surprise and a relief. The infants, Roger and Pan, gradually began to interact and then to play. Lulu, the ♀ female and Roger's mother, was also allowed access to the enclosure when Roger and a human were present. She essentially ignored them both. After 42 hours of gradual reintroduction over a three month period, Roger became a permanent member of the troop, spending considerable time playing with the other infant, Pan. His behavior seemed normal in all respects and he appeared to become part of the troop almost immediately. (See also Mellen and Littlewood, 1978)

Husbandry and Promotion of Non-aggressive Activity

The WPZ troop's initial enclosure measured 4.7 m long by 3.6 m deep by 5.4 m high. Both the front and the top were chain link. The enclosure contained climbing bars and sleeping shelves. The mandrills were separated from the public by glass and had no outdoor facilities. Basic diet was monkey chow and fruit. Maintenance was routine.

Because of the restricted space of the enclosure and the aggressive nature of mandrills, it is, in our experience, absolutely imperative that a captive group be given "something to do". This is especially applicable to the adult male. On alternate days at the WPZ the cage was cleaned and sanitized, and then the floor was covered with straw (about one-half bale or 10 cm depth). Seeds and nuts were occasionally thrown into the straw. The troop spend a considerable amount of time picking through the straw for the seeds, nuts, and choice parts of straw, foraging in a somewhat natural pattern. This foraging behavior was interesting and perhaps educational to zoo visitors, and facilitated troop activity.

From August 1975 to June 1978, the adult male was provided an electronic reaction time game which allowed him to earn a portion of his food by competing against zoo visitors or a computer. (For details see Yanofsky and Markowitz, 1978.) Via this game the adult male had some control over his own environment, i.e. he could earn food whenever he chose to. The male was occupied by the game in one corner of the enclosure for four to five hours per day. This allowed the females and infants more freedom to move around the enclosure. Following the removal of the reaction time game from the enclosure there were 2.67 times as many threats by the adult male when comparing game-on and game-out. There were 8.21 times as many fights in the same conditions.

In July 1978, the WPZ troop was moved to a new enclosure, measuring 9.6 m long by 3.6 m deep by 5.4 m high (about twice as large as their initial enclosure). The new enclosure contained numerous structures and toys including logs, ropes, log platforms, "straw feeders", a tunnel, and a pulley toy. In spite of the increased space and new "furniture" the level of aggression was very high. Twelve days after moving to the new enclosure, the adult male attacked and seriously bit Lulu, the female, causing incised wounds and lacerations requiring in excess of 50 sutures to repair.

continued

Husbandry, Development, and Communication of Captive Mandrills, continued

A mechanical feeder device was installed subsequent to Lulu's injury. This feeder device required that the male manipulate monkey chow along a welded wire mesh screen to an opening, working against a 50° angle. The feeder has kept the male occupied about three to four hours per day, it has been easy to load with chow, and has required very little keeper time. Quantitative data on the level of aggression have not been analyzed, but the aggression seemed to be less than before the new feeder.

Comparative Development of Infants

About one month after Roger, the hand-raised male infant, was permanently reintroduced into the troop, Lulu, the ♀ female, gave birth for the fourth time. The infant was a female (Cara) and for the first time Lulu exhibited adequate maternal care. (However, the quality of maternal care did not appear as good as that of Alice, the ♀ female.) Lulu's "sudden" exhibition of adequate maternal care may be due to some or all of the following: (1) Lulu's observation of Alice's maternal care; (2) Lulu's contact with the infants Roger and Pan; or (3) Lulu's brief experience with her own previous infants.

Thus with our observations on the new infant Cara and the two male infants, we were able to compare the development of: (1) a hand-raised male versus a maternally-raised male, and (2) a maternally-raised male versus a maternally-raised female. We collected over 300 hours of quantified data over a 15 month period beginning with Pan's birth (Alice's male infant). Tables 2 and 3 summarize our findings.

When frequency and first appearance of various behaviors were compared, no real trends were found. Any differences that did occur may have been due to sex differences, rearing differences and/or individual differences. More data need to be collected on additional mandrill infants before any cause or effect can be determined. However, it must be pointed out that the behavior of the reintroduced male infant, Roger, was not dramatically different from either of the maternally-raised infants. Thus the rearing and reintroduction can be termed a success. Roger interacts, socializes, and behaves like his conspecifics.

Communication

A number of facial expressions and body postures are unique to *Mandrillus* and an understanding of these are very helpful in discerning the communications of a captive troop, facilitating better management.

Threats. In an agonistic situation we have observed the following: Mandrills threaten with a distinctive head bob in which the head is jerked forward and down. The mandrill's mouth is closed, he is staring directly at his adversary, and may sometimes slap the ground with his hand. Fur on neck and shoulders is erect. A more intense threat involves bobbing not only the head but also the shoulder region. Mandrills do not yawn threat as do most *Ceropithecids*. Mandrills do exhibit a canine display in which they yawn, but we have not observed it in a one-to-one threat situation.

"Smile". (silent, bared-teeth face, van Hooff, 1969) This facial expression has often been misinterpreted as a threat (e.g. Andrew, 1963), which it is not. The "smile" is an amicable facial expression. In such amicable situations, we have observed the following: In adult males the mouth forms a figure eight on its side (∞). The lips meet over

Table 2. First Appearance of Selected Behaviors of
Three Captive Infant Mandrills

Behavior or Activity	Week of First Appearance			Comments
	Roger	Pan	Cara	
Screams	1	2	1	
Sucks or chews on digits	2	2	1	
Manipulates objects	2	2	1	Roger: toys Pan & Cara: straw
Clings without support while mother walks or climbs	3	2	1	
Leaves mother voluntarily	3	3	3	
Locomotes Quadripedally	3	3	3	
"Smiles"	3	2	1	
Mounts and makes pelvic thrusts	1	4	25	
Makes open mouth laugh ("play face")	4	2	4	
Forages through straw using adult motor patterns	5	2	3	Roger had no access to straw until week 4
Gnaw wrestles (social play)	6	5	5	Roger: with human Pan & Cara: with their mother
Makes puffed lip face	3	8	10	Believed to indicate anxiety or mild fear
Bites aggressively	7	2	10	Roger: human, Pan: Alice, Cara: human when restrained
Presents for grooming	7	7	7	Roger: human, Pan & Cara: their mother
Socially grooms	8	8	11	Roger: human, Pan & Cara: their mother
Submissive present	14	9	10	Roger: human, Pan: Roger, Cara: Alice
Threat (head bob)	20	38	27	Roger: human -- he did not threaten a con- specific until he was 47 weeks old. Pan: Lulu, Cara: Pan

Roger - hand-reared, reintroduced male
Pan - mother-reared male, mother = Alice
Cara - mother-reared female; mother = Lulu

the incisors, the corners of the mouth are drawn back exposing the canines and premolars; the ears are flattened against the head, the crest is raised, and the head is slowly shaken from side to side; fur on the neck and shoulders is flattened; direct eye contact is very brief (<.5 sec). The "smile" is used in greeting and appeasement.

continued on next page

Table 3. Comparisons of Relative Frequencies of Occurrences of Selected Behaviors Exhibited by Three Infant Mandrills*

Behavior	Maternally-raised ♂, Pan (P) vs. maternally raised ♀, Cara (C)	Age of Infants**	Maternally-raised ♂, Pan (P) vs. hand-raised, re-introduced ♂, Roger (R)
<u>Solitary</u>			***
Solitary Groom	C>P (p<.02)	1-21 wks.	R>P (p<.02)
Locomotion	P>C (p<.05)	3-21 wks.	P>R (p<.01)
Exploration/ Manipulation	C>P (p<.01)	1-21 wks.	No significant difference (p>.05)
Masturbation	-----	-----	No significant difference (p>.05)
Vocalization	C>P (p<.01)	8-21 wks.	R>P (p<.01)
Jerking spasms	C>P (p<.01)	1-21 wks.	-----
Bounce	-----	-----	P>R (p<.02)
Solitary play	-----	-----	P>R (p<.02)
<u>Mother-related</u>			
Ventral- ventral contact with mother	No significant difference (p>.05)	3-21 wks.	-----
Non-ventral/ ventral contact with mother	P>C (p<.01)	3-21 wks.	-----
Nurse	No significant difference (p>.05)	1-21 wks.	-----
Infant restrained by mother	C>P (p<.01)	3-21 wks.	-----
Infant retrieved by mother	C>P (p<.05)	3-21 wks.	-----
<u>Social</u>			****
"Smiling"	No significant difference (p>.05)	3-21 wks.	No significant difference (p>.05)
Submissive presents to anyone	C>P (p<.01)	1-21 wks.	P>R (p<.01)
Mounts anyone	P>C (p<.01)	1-21 wks.	P>R (p<.01)
Social groom	C>P (p<.01)	1-21 wks.	P>R (p<.01)
Social play with anyone	P>C (p<.01)	1-21 wks.	No significant difference (p>.05)
Presents for grooming to anyone	-----	-----	No significant difference (p>.05)
Threatens	No threats by either one	1-21 wks.	No significant difference (p>.05)

*Using a matched pairs signed test (Wilcoxon)

** When relative frequencies were compared

***Age of infants 33-54 weeks

****Age of infants 34-54 wks.

Conclusions

From a practical husbandry viewpoint, it is essential that information concerning the care of endangered species be shared. We would encourage zoo keepers to consider straw on the floor for the more terrestrial monkeys and nest-building apes. We would also encourage the development of some sort of naturalistic feeder devices in an attempt to reduce boredom and aggression and to give the animals some control over their environment. Reintroduction of primates to their social group should be seriously considered; the benefits far outweigh the risks involved.

Acknowledgments

We wish to thank the general curator, J. Stephen McCusker, and the veterinarian, Dr. Michael J. Schmidt, for their guidance and cooperation. Special thanks is due nursery keeper, Jonolyn Smith, and primate keeper David Thomas. We wish also to thank Dr. Victor Stevens and Ms. Jan Hixson for their help in preparing the manuscript.

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conference.....79

Portland, Oregon

PROPAGATION TECHNIQUES AND HAND-REARING PROBLEMS

WITH MALAYAN SUN BEARS AT ROEDING PARK ZOO

by
Sally J. Smith
Nursery Attendant

The Roeding Park Zoo, Fresno, California, has maintained Malayan Sun Bears *Helarctos malayanus* in the same moated exhibit for over 25 years. In the mid-1950's, the exhibit was renovated to remove wrought iron bars and create a more natural rock and stucco siding.

Records show that the first pair of sun bears were observed breeding twice; no offspring were produced. Both died of complications of old age in 1974. A new adult pair was acquired in early 1975. The male came from Como Zoo in St. Paul, Minnesota. The female was acquired on a breeding loan from a private owner. He had raised the 5-year-old female from a baby and she had obviously been declawed and defanged.

During the following two years, no breeding had been observed. The discovery of a partially consumed baby came as a complete surprise in July 1977. The baby was full-term and had apparently been killed by one of the adults.

From this point, closer observation was initiated, recording any breeding attempts. In August 1977, a positive breeding was observed. Crandall lists the gestation of sun bears at 96 days. At 80 days the female was isolated in her den, making it necessary to lock the male outdoors 24 hours a day. An observation team was established to check her several times per day and record unusual behavior. On December 1, 1977, at 101 days, a male baby was born. Due to dampness and cramped den facilities, and the requirement that the male be locked outside in inclement weather, the decision was made to remove the baby for hand-rearing. The female was anesthetized with Sernalyn and Sparine.

In January 1978, positive breeding was observed once again and the same observation routine was instituted, isolating the female at 80 days. On May 11, 1978, at 105 days gestation, another male was born. Since the den had not yet been renovated, the baby was pulled once again.

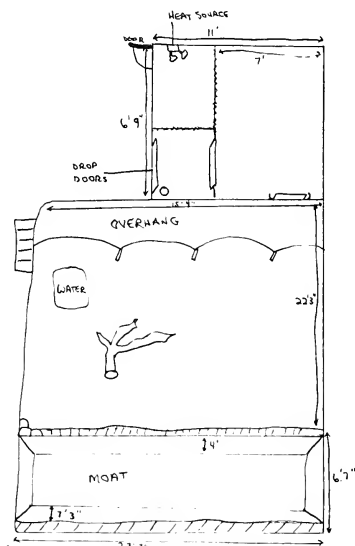
One month later the sun bears mated again and 96 days later on September 22, 1978, a fourth offspring arrived, a female. This time, in anticipation of the birth, the den area had been enlarged and modified with heat and water made available.

The sun bear den facility is small and marginally adequate. The inside shift area before 1978 consisted of a 3' x 7' den (.9 m x 2.2 m) with a 4" (10 cm) drain at one end and 3 drop doors. The building is concrete block with concrete slab flooring. In addition there was a 4' x 11' (1.5 m x 3.2 m) workman's lane. There was no electrical source or water available. The basic outside display area is 15' 4" x 15' 6" (4.6m x 4.7m) with an overhang, shallow drinking pool and tree branch. The moat is 7' 4" (2.4m) deep on the public side and 6' 7" wide. (2m)

continued

Malayan Sun Bears at Roeding Park Zoo, *continued*

The bears are able to descend and ascend from the moat. In 1978 the inside den was enlarged (into the workman's lane) into a 7' x 7' area, (2.2 m x 2.2 m) complete with water crock and light sockets for heat lamps. Except for the door opening, there is no exterior light source. The animal cage and workman's area are separated by chain link fence. See diagram below.



In anticipation of the second birth, Dr. Chaffee and the nursery attendants searched the literature but found little information about hand-raising sun bears. We could find no milk analysis or formulas used. Using literature from the International Zoo Yearbook and Borden Company comparing KMR, Esbilac, and cow's milk with Brown Bear milk, we chose to follow the Toronto Zoo method using canned cow's milk with vitamin and iron supplements. See chart below.

MILK COMPOSITION %

	<u>BROWN BEAR*</u>	<u>ESBILAC**</u>	<u>COW*</u>
Water	89		
Fat	3.2	8.2	3.5
Protein	3.6	7.6	3.2
Carbohydrate	4.0	2.8 (lactose)	4.6
Ash	.2	1.2	.7

PERCENT SOLIDS

	<u>ESBILAC**</u>	<u>KMR**</u>	<u>BROWN BEAR*</u>	<u>COWS*</u>
Fat	44.1	25	29.1	29.9
Protein	33.2	42.2	32.7	25.6
Carbohydrate	15.8	26.1	36.3	38.7

*International Zoo Yearbook, Vol. 16

** Borden Co.

continued

Malayan Sun Bears at Roeding Park Zoo, continued

Our only previous experience with bears had been a successful hand-rearing of an Asiatic Black Bear using this same method.

December 1, 1977, the second baby was born and taken immediately to the nursery. "Shardik" was placed in a cardboard box on layers of "sheepskins" over a heating pad. The box was covered to prevent draughts. This method of bedding has worked well at our nursery for hundreds of babies because it is portable, warm and easily kept clean. At our zoo, babies in need of 24 hour care are taken home at night by nursery personnel. Human baby bottles were used, sterilizing all milk and equipment. Urination and BM's were stimulated and the cub was burped after each feeding. Normal stool was semi-solid and curdy.

The first day the formula ration was 1:3 evaporated milk to water, reduced to 1:1 by the third day. A vitamin supplement, "Hi-Vite with Liver and Iron" manufactured by Evsco, was given in the amount of $\frac{1}{2}$ cc per day. The weight of the bear at birth was 340.2 gm. The newborn bear was drinking $\frac{1}{2}$ oz. per feeding 10 times a day. We encountered problems with dry, cracking skin. Lanolin oil was used sparingly to keep the skin soft. A humidifier is recommended for this problem.

Night feedings were eliminated at 3 weeks and he was eating $1\frac{1}{2}$ oz. six times a day. His weight was 1020 gm. By six weeks of age, the bear was still unable to support himself in a standing position. At this point his legs were noticeably abducted away from his body. Curiously enough, his fur had turned a silver blue. By eight weeks his legs had "splayed" more and his body rested on his sternum, rear legs outstretched and forelegs extended to the side with toes turned back. His weight was 2.8 kg. In an attempt to correct this problem, we began to hobble his legs under him, while exercising pectoral and thigh muscles. At 10 weeks, Dr. Chaffee referred the bear to U.C. Davis. The Veterinary Teaching hospital took skull and body x-rays, and electroencephalogram and conducted neurological examinations. Symptoms and results of the examination indicated hydrocephalus. The bear was euthanized and an autopsy confirmed the diagnosis.

At this point we were expecting a third birth, however, the bear exhibit had not yet been renovated. In May, 1978, another male, "Baloo" was born and removed to the nursery for hand-rearing. BM's indicated this baby had nursed from his mother. The development of "Baloo" was essentially the same for the first six weeks, except that this bear weighed more at birth, 623.6 gm. Once again the legs began to abduct and the fur turned blue. At 44 days the bear developed a dry hacking cough. Dr. Chaffee detected a possible heart murmur and the bear was started on digitalis. A hematocrit indicated anemia but the exact hematocrit for sun bears is unknown.

By 50 days there was a noticeable loss of weight and coughing continued. The bear was eating sporadically and became very subdued. By 57 days, force feeding was necessary. The bear was cyanotic and his circulation was poor. He was euthanized at 57 days of age at a weight of 2.7 kg. An autopsy confirmed a congenital atrial septal defect.

When the fourth baby sun bear arrived on September 22, 1978, it was allowed to remain with the mother. A team of keepers and nursery personnel kept close observations. Two heat lamps were installed for cool nights. Water was kept available. A shift door was lowered to separate mother and baby from the 4" drain hole, and hosing was kept to a minimum.

Malayan Sun Bears at Roeding Park Zoo, continued

The adult female did not eat for over a week after the birth. A special diet of oranges, hard-boiled eggs, wheat bread and honey, and softened omnivore biscuits (Hill's Omnivore Diet, Division of Riviana Foods, Topeka, Kansas) was offered. This bear commonly soaks her omnivore biscuits in the pool, perhaps because she lacks all but her second molars. We feel she may not have eaten at first because she was reluctant to leave the baby in her den corner. During the first six weeks, she seldom left the baby for more than a minute at a time, exhibiting outstanding maternal ability. She spend most of her time on her haunches, cradling her baby on her abdomen and stooped over so the baby could nurse. This position created a kind of sling so that the baby was kept curled up as in a pouch. We theorize that this behavior of cradling the baby in a curled position for 8 or 9 weeks aids in proper development of the infant's limbs. The flat surface of the artificial box may be an unnatural substrate for hand-reared sun bears. We feel this was the probable reason for the abducted legs.

When approached, the female would growl and appear nervous, charging the chain link or scratching at the concrete block walls and floor, as if she were drawing nest material toward her. She remained in one corner. At nine weeks the baby was able to support herself in a coordinated manner and at ten weeks she was first observed tasting food. When alarmed, the mother bear would scoop the baby up with her forelegs and, standing erect, back into the corner and deposit the baby on her lap.

At eleven weeks of age the female baby was too large to fit on the mother's abdomen and spent most of the time exploring or sleeping on the floor next to her mother. At thirteen weeks the baby was nursing only occasionally and was eating solid food well. She was removed to the nursery by separating her from the female. Her weight at thirteen weeks was 8.2 kg. and she was 73.6 cm (29") long. She was pronounced in excellent health, and named "Bruang."

Her diet at weaning was the same basic diet she received with her mother, except that vitamins and Esbilac were added. Twice daily her diet consisted of:

- 1 hard-boiled egg
- 1 Tbsp. honey
- Esbilac soaked Omnivore diet
- ½ orange
- 1 slice wheat bread
- 1 dropper multiple vitamin with liver and iron (Evsco)

Honey was eliminated after 4 weeks. At 4½ months her weight was 12 kg. At the age of 5½ months she was given to the donor of the mother bear as a part of the breeding loan agreement. Her weight was 14 kg. She was in good health and still handleable.

In retrospect and after observing natural maternal behavior of sun bears, we can speculate about our problems encountered with the first two hand-raised babies. Although many of the problems with those bears stemmed from congenital defects which could not be altered, we feel some changes could be made in the mechanical aspect of handling. The diet may have been inadequate. However we are not certain that Esbilac would be a correct substitute. I believe the milk analysis of this tropical little bear may be quite different from other species, but accurate milk analyses are difficult to obtain, requiring anesthesia of the female at various stages of lactation. Diet may have been a

Malayan Sun Bears at Roeding Park Zoo, continued

factor in the color change of the hair coat. Both bears did, however, seem to gain weight at an even rate, did not suffer from bloat, and had normal BM's. Dry skin can be remedied with the use of a humidifier. Much heat and humidity is generated by the close sheltered contact on the mother's abdomen.

A major revelation derived from our hours of observation of the mother and baby is the method of supporting the infant. It is important to apply the natural sling of the mother's abdomen to the artificial substrate. We believe that the splaying of the legs can be eliminated or lessened by creating a sling for the hand-raised sun bear for the first weeks of life.

It is obvious to me that much more study of this elusive little bear under varied natural and captive situations would provide a basis for successful propagation. Presently, there is precious little information available. It is my hope that sharing information of our experiences at hand-rearing and our success with a mother-reared infant will shed some light on this topic.



Alternatives...Education and P.R.

"MEET THE ZOOKEEPERS" AT THE METRO TORONTO ZOO

The Metro Toronto Zoo in Canada has a new feature for their summer visitors. Named "Meet the Zookeepers", it is designed to provide the public with a more intimate experience. Visitors be able to meet various zookeepers and learn how they care for their animals; watch the free-flying birds of prey and find out how they are trained; talk to a camel keeper and stroke young Bactrian camels (two humps!); watch the feeding of the polar bears and fur seals and listen to the volunteer guides give commentary on their diet; learn how to hold a boa constrictor; find out what it's like to be the guardian of seven African elephants; watch the training of the two orphan polar bear cubs; see the hippos gargle; meet the zoo babies - the zebras, meerkats, Japanese macaques, gemsbok, reindeer, camels, lions and many more born this spring. A schedule is posted with times and places to "Meet the Zookeeper."

The Metro Toronto Zoo has also introduced a Sunday picnic time of 5:00 to 7:30 p.m. Patrons coming to the zoo at this hour will avoid the day's rush, save \$1.00 on parking, still have time to see the zoo before it closes and be entertained by local musicians while they picnic.

FALCONRY DEMONSTRATION AT BALTIMORE ZOO

The Baltimore Zoo will present a demonstration on how the ancient art of falconry has been used to re-introduce birds of prey to the wild. Dr. William Seegar will fly a Harris hawk at a lure to demonstrate how the birds capture prey. A brief lecture will focus on several aspects of the ecology of birds of prey. This will be a weekly event throughout the summer months.

chapter

Congratulations to the Montgomery Zoo AAZK Chapter on their 2nd Anniversary! New officers are President...Mark Ratliff Vice-Pres....David Sangster Sec/Treas....Mike McGoUGH

The main activities of the Montgomery Chapter are in assisting the Curator of Education.

news

from the Coordinator for Chapter Affairs, Bernie Feldman...

Recently I wrote an Open Letter to all Zoo Keepers asking for information from existing Chapters and from individuals who are interested in forming a Chapter. I received a letter from the Metro Toronto Zoo AAZK Chapter describing their activities and want to share their ideas. They try to 1. have a lecturer/talker or films every 2-3 weeks over the winter, using staff members, people from the Royal Ontario Museum and the University of Toronto as speakers. They use free films from the Canadian National Film Board. 2. During their get-togethers they have a book raffle where they manage to net at least \$10 which is used for coffee, cookies, postage, etc. 3. One of the members, Neville Pike, is organizing a Sponsorship of a child in a Third World country. The whole zoo will be involved. 4. One person takes care of typing and mailing articles to the AKF which has increased the number of people who are willing to write the articles. 5. They had a contest to design their own Chapter crest, the prize was \$35 worth of books. 6. They are looking into the possibility of hosting the 1983 or 84, or 85 AAZK National Conference, with the Zoo Director's support. 7. They hope to organize a group trip to Chicago for several Chapter members -- a chance to see other Zoos and meet other Keepers!

Keep up the enthusiastic work, Metro Toronto AAZK!

ANIMAL DATA TRANSFER FORM QUESTIONNAIRE

In the interests of continuing to make the Animal Data Transfer Form concise and informative, I'm requesting that all Keepers who have used the Form or are acquainted with it answer three questions. A copy of the Animal Data Transfer Form is found on page 240 in the December 1979 *Animal Keepers Forum*.

1. Can you see any changes in the Animal Data Transfer Form that would make it more helpful in the shipment of animals? (i.e. lengthen or shorten any part of the Form, add or subtract any part of the form)

2. Are you satisfied with the present format of the Animal Data Transfer Form? If not, what would you consider changing?

3. Any additional comments that would be constructive to the Animal Data Transfer Form are appreciated!

Please send your responses to: Bernie Feldman, Miller Park Zoo, 1020 S. Morris Ave., Bloomington, IL 61701.

[PLANNING A MOVE? Please notify AAZK, 635 Gage Blvd., Topeka, KS 66606.]

coming events

Joint Annual Meeting of the Society for the Study of Amphibians and Reptiles and the Herpetologists League
August 6-10, 1980
University of Wisconsin
Milwaukee, Wisconsin

International Conference for Zoo Horticulture
August 24-29, 1980
Temple University,
Philadelphia, Pennsylvania

AAZPA ANNUAL CONFERENCE
September 14-18, 1980
Radisson Hotel
Chicago, Illinois

AMERICAN ASSOCIATION OF ZOO KEEPERS NATIONAL CONFERENCE
October 5-9, 1980
Montgomery, Alabama
Theme: *The Role of Smaller Zoos in the Zoological World*

Keynote speaker at the banquet will be Mr. Charles P. Kelly, Director of Game and Fish Division, Department of Conservation and Resources of Alabama, Vice-President of the National Wildlife Federation and past president of the International Association of Fish and Wildlife Agency.

Some of the events scheduled for the conference are papers presented by keepers, tours of the Montgomery and Birmingham Zoos, Board and Business meetings, films, a cruise on the riverboat General Richard Montgomery and much, much more. *Y'all come!!*

For registration please fill out this form and return with fees to
Laura Strickland, Conference Coordinator
Montgomery Zoo, PO Box ZEBRA
Montgomery, AL 36109

Please make checks payable to AAZK Conference

----- REGISTRATION FORM -----

NAME _____

STREET _____ CITY _____

STATE _____ ZIP _____

ZOO/ORGANIZATION _____

POSITION _____

- () Member of AAZK - Registration Fee: \$40.00
- () Member of AAZPA - Registration Fee: \$50.00
- () Non-member of AAZK Or AAZPA - Fee: \$60.00
- () Will be presenting a paper (discount \$20 from Registration)
Deadline for papers is July. Papers do not need to follow the theme for the conference.

() I wish to share a room at the Holiday Inn Capitol.

() I wish to stay in a home. This is available for keepers only on a limited basis.

We are indebted to the AAZPA Newsletter for allowing us to reprint portions of this section from their "Positions Available" listings. This is a monthly service to us, for you.

OPPORTUNITIES
KNOX

ZOOKEEPERS - CARNIVORES... responsible for the animal care and management in an expanding and progressive zoological garden. Requires two year's experience in a recognized zoo and references. Starting salary \$8,940 - \$10,344; excellent benefits. Contact: Dale Stastny, Personnel Director, Audubon Park and Zoological Garden, P.O. Box 4327, New Orleans, Louisiana 70178.

REPTILE KEEPER... full-time position requiring meticulous application to details of animal care, diets, exhibit design, medical care and record keeping. At least two years of college work in animal science or biology preferred. Work experience with reptiles and amphibians, with emphasis on propagation and research, may be substituted for academic requirements. Salary: \$3.75/hour increasing to \$4.03/hour after 6 months, plus benefits. Forward applications to: Howard E. Lawler, Curator of Herpetology, Knoxville Zoological Park, P.O. Box 6040, Knoxville, TN 37914.

PACHYDERM KEEPER... to participate in husbandry program of Asiatic and African elephants, rhinoceros and hippopotamus and to assist trainer with an elephant program that includes public demonstrations. Elephant experience desirable. Salary: \$10,046 - \$11,794. Excellent fringe benefits. Submit resumes to: Tom Foose, Curator of Pachyderms and Ungulate, Oklahoma City Zoo, 2101 N.E. 50th, Oklahoma City, OK 73111.

ANIMAL TRAINER/KEEPER... qualified applicant must be familiar with animal husbandry and operant conditioning techniques, especially with birds. Duties include maintenance of animals for educational animal demonstrations. Individual would train animals, conduct regularly scheduled demonstrations on stage and be responsible for training and supervising an assistant. Salary commensurate with experience. Submit curriculum vitae to: James B. White, Personnel Department, New York Zoological Society, 185th St. and Southern Blvd., Bronx, NY 10460. EOE.

REPTILE SUPERVISOR... responsible for reptile and amphibian collection, personnel and facilities. Zoological or related degree and 3 years' reptile care experience required. Salary: \$12,120 - \$15,468. Inquiries must be received by Monday, 23 June 1980. Contact: City of Fort Worth, Personnel Department, 1000 Throckmorton St., Fort Worth, TX 76102.

ASSISTANT REPTILE SUPERVISOR... responsible for reptile and amphibian collection, personnel and facilities under the direction of the Supervisor. Must be capable of performing in Supervisor's behalf during his absence. Zoological or related degree and two year's reptile care experience required. Salary: \$11,004 - \$14,040. Inquiries must be received by Monday, 23 June 1980. Contact: City of Fort Worth, Personnel Dept., 1000 Throckmorton St, Fort Worth, TX 76102.

EDUCATION COORDINATOR... responsible for preparation/coordination of all zoo educational programs. Must have four-year degree in Zoology, Biology, or Education with background in Biological sciences; one year's work experience in programming at a zoo or similar institution preferred. Forward resume to: Chuck Wikenhauser, Manager, Glen Oak Zoo, 2218 N. Peoria Road, Peoria, IL 61603.



INFORMATION FOR CONTRIBUTORS

Animal Keepers' Forum publishes original papers and news items of interest to the Animal Keeping profession. Non-members are welcome to submit articles.

Articles should be typed or hand-printed. All illustrations, graphs and tables should be clearly marked, in final form, and should fit in a page size of no more than 6" x 10" (15 cm. x 25½ cm.). Literature used should be cited in the text and in final bibliography. Avoid footnotes. Include scientific names.

Articles sent to *Animal Keepers' Forum* will be reviewed for publication. No commitment is made to the author, but an effort will be made to publish articles as soon as possible. Those longer than three pages will be separated into monthly installments at the discretion of the editorial staff. The editors reserve the right to edit material without consultation unless approval is requested in writing by the author. Materials submitted will not be returned unless accompanied by a stamped, self-addressed envelope.

Telephoned contributions on late-breaking news or last minute insertions are acceptable. However, phone-in contributions of long articles will not be accepted. The phone number is 913 272-5821.

DEADLINE FOR EACH EDITION IS THE 20th OF THE PRECEDING MONTH.

Articles printed do not necessarily reflect the opinions of the Animal Keepers' Forum editorial staff or of the American Association of Zoo Keepers.

Items in the publication may be reprinted. Credit to this publication is requested. Order reprints from the Editor.

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All new members receive a membership card good for free admission to many zoos and aquariums in the U.S. and Canada.

The AAZK National Headquarters has shoulder patches available for \$2.00 and back issues of the *Animal Keepers' Forum* for \$1.00.

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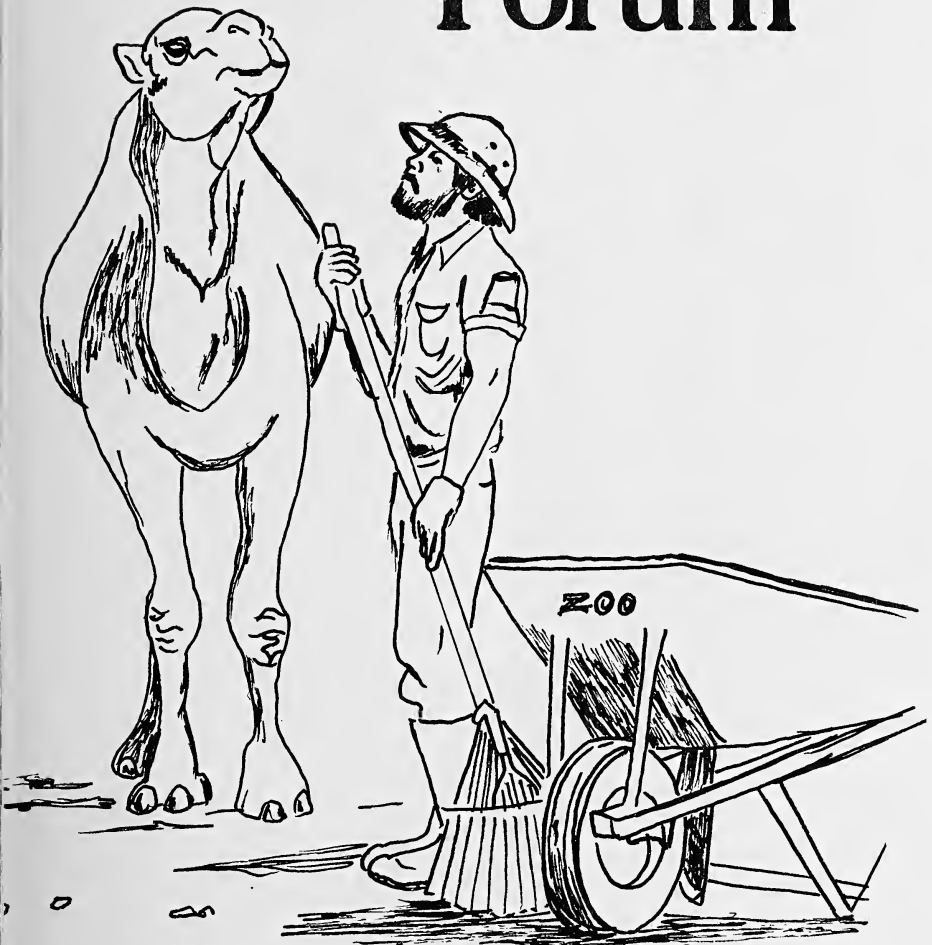


**American Association
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Topeka Zoological Park
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Animal Keepers' Forum



Bob Thornton
Kansas City Zoo

Dedicated to Professional Animal Care

Editor-in-Chief: Ron Kaufman
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Art Consultant: Elaine Shea

Animal Keepers' Forum is a monthly journal published by the American Association of Zoo Keepers, 635 Gage Blvd., Topeka, Kansas 66606.

Second class postage is paid at Topeka, Kansas. Return postage is guaranteed.

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The cover illustration for July is done by Bob Thornton of the Kansas City Zoo, Kansas City, Missouri. The AKF staff has been delighted with the variety of artwork submitted in response to the request for works illustrating the every day life of an animal keeper.

SCOOPS and SCUTTLEBUTT

THYLACINUS -- JOURNAL OF THE AUSTRALASIAN SOCIETY OF ZOO KEEPERS

The June issue of the journal of the Australasian Society of Zoo Keepers, *Thylacinus*, is an impressive publication. It is quarterly and contains items of interest and zoo news from New Zealand and Australia and articles such as these: the abstract of papers presented at a recent workshop, a travelogue to Bali, a four-part series covering the marine aquarium, a two part presentation on the problems of hatching ostriches, an article on Hand-raising Abandoned Animals, and a report with picture and illustrations on the new arboreal primate exhibit at the Royal Melbourne Zoological Gardens. Subscriptions are available for \$12 for overseas members. Contact: The Editor, A.S.Z.K. Journal, P.O. Box 74, Parkville; Vic. 3052, Australia.

SCIENTISTS OBSERVE HISTORIC EVENT: CALIFORNIA CONDOR CHICK HATCHES IN WILD

For the first time ever, scientists have observed the daily incubation and hatching of one of the rarest birds in the world--the California condor--and hopes are high that their observations of the rearing will shed some light on the mystery of why the continent's largest bird is on the brink of extinction.

This season's only known egg hatched out successfully in mid-May as dawn broke over the rugged terrain of a national forest in California. The mated adult condors were first spotted on March 4 by the joint Condor Research Team from the Fish and Wildlife Service and the National Audubon Society. The birds inspected several possible nest sites before settling inside a small sandstone pocket on a rocky cliff ledge several hundred feet high. The solitary egg, deposited March 15 on loose sandy soil, has since been the object of researchers' daily scrutiny through a telescope so powerful it can detect movement in a bird's eye. The observers have been well concealed in brush a quarter to a half-mile away on another cliff side across the canyon to avoid disrupting the birds' normal behavior pattern. Watchers from the 9-member Condor Research Team have been on the scene on a 24-hour basis for the past three weeks.

They report that the birds took turns incubating the whitish, 5-inch egg without interruption for stretches of 3 to 7 days, alternately going without food or water. The chick started "pipping" the eggshell: in the evening and broke through 3 days later on May 14. Covered with dark down, the chick was about the size of a man's fist. With an established incubation period, and a known hatching date, growth rates can be monitored for the first time.

BIRTHS HATCHINGS

BALD EAGLE HATCHES AT THE COLUMBUS ZOO. Yvonne Clippinger

The Columbus Zoo is proud to announce the hatching of one Bald eagle *Haliaeetus leucocephalus* on 26 March 1980, after a 37-day incubation period. Department personnel discovered the eaglet at approximately 3:30 p.m. on the above date. The second egg was not found in the nest or on the ground of the aviary. We are assuming that our male or female eagle destroyed the egg.

This is the second successful hatching of the Bald eagle at the Columbus Zoo, the first being in 1978 when one eaglet hatched. Several new occurrences took place during the 1980 captive propagation program. One event that we feel to be quite significant happened on 18 April 1980. Our female (Georgina) started feeding the eaglet smelt. On 1 May 1980, we decided to try feeding mackeral to our female and as we had expected, she took the mackeral to the nest and began feeding the eaglet. In 1978, our female eaglet was fed mainly a diet of laboratory rats that were supplied by our Reptile Department. Rats were also supplied twice daily for the eaglet this year.

We also observed that our male (George) was a lot more active in the incubating and brooding process this year than in 1978. He was also observed several times in the nest with our female helping feed the eaglet which he had not done in 1978.

The Columbus Zoo was working with the Ohio Department of Natural Resources in a cooperative effort to place the eaglet in a wild nest of Bald eagles on Lake Erie. However, due to the fact that our female hatched at such an early date, it was not deemed possible to undertake such a task. We then decided to let our male and female raise the eaglet until old enough to hack. Since the Ohio Department of Natural Resources is not equipped with a hacking facility, and due to the expense of hacking, we arranged to transfer the eaglet to New York State.

On 21 May 1980, at 54 days of age, the eaglet was removed from the nest. Bird department personnel took the following measurements and weight:

wingspan	64"	(162.5 cm)
beak	2 1/2"	(6.5 cm)
length	26"	(66 cm)
weight	8 lbs., 8 oz.	(3.85 kg)

The eaglet was then taken to Don Scott Field in Columbus and flown via ODNR aircraft to the Montezuma National Wildlife Refuge in Seneca Falls, New York. Once there, the eaglet was placed in a hacking tower under the supervision of the United States Fish and Wildlife Department of the Interior, New York Department of Natural Resources, Ohio Department of Natural Resources and Columbus Zoo personnel.

TWO GREY-HEADED KINGFISHERS HATCHED AT BROOKFIELD ZOO

Tittle and Tattle, two baby grey-headed kingfishers, are new additions to Brookfield Zoo's collection and also to the roster of "firsts" in zoos. The adult birds arrived at the zoo three years ago from East Africa. They weigh 2 oz; the offspring now weigh 1½ oz.

BIRTHS AND HATCHINGS, continued

The bird keepers devised a clay-loam bank for the kingfishers to build a nest in. The parents raised the birds for about a week and then stopped and keepers have been feeding the babies bits of meal, crickets and tiny pieces of meat.

PRZEWALSKI HORSE BORN AT TOPEKA ZOO

Our breeding pair of rare Przewalski horses, Rolmar and Colleen, became parents for the second time May 8, 1980. The male, named Marco, was born exactly two years to the day that the pair's first offspring Rococco was born. Marco is known in the official P. horse stud book as Topeka II and in in-house records as Forbes I since his is the first birth at the Forbes Conservation/Propagation Center.

Rolf, the oldest living Przewalski horse in the world, celebrated his 29th birthday in May. He currently shares exhibit space with Rococco on the Zoo grounds. With a current herd of five P. horses, Topeka is in the top four zoos in North America in the size of collection of this endangered species.

WANDERING HIPPO FINDS A BERTH (BIRTH?). Steve Robinson

Ever since Libby and Chubby, the Honolulu Zoo's pair of pygmy hippos, were received as young animals on December 6, 1974, it seems as though they have been trying to return to Cincinnati. So far we've managed to head them off, but have accumulated a broken hand, dead cassowary and nilgai, water-logged boots and lots of mileage.

Libby and Chubby have shown an amazing ability at opening gates and doors and at going over, under, around or through the fences of the various enclosures they have been kept in. They love to wander (it's just the gypsy in their souls) and have visited all parts of the zoo, even leaving their calling card splattered on the front office door one night, much to the dismay of our secretary. They also travel by day, once wandering through the zoo crowd allowing the delighted visitors to pet the "baby" hippo (the animal keeper who came upon that scene was not so delighted.)

The latest escape took place on April 14, 1980. Libby and Chubby were being kept together in a large, grassy hoofed animal pen with shade tree and mud hole. Their pen was between the white-tailed deer pen and axis deer pen, both of which they had visited. The wire had been tied down, but during the night, Libby searched and found a spot along the chain-link fence where she could push against the fence, breaking the old, rusted tie-wire that holds the chain-link to the metal bar running along the bottom of the fence. She went across the axis deer pen and did the same thing, entering the nilgai pen. Then she continued her stroll, crossing the nilgai pen and pushing under the fence into the mouflon pen. Either not being able to go any farther or not caring to, she left her mark on the mouflon barn door and returned to the nilgai pen. There, because of a missing floor wheel that guides and supports the sliding door, Libby was able to force her way into the barn where she attacked a female nilgai. She was discovered in a very agitated state in the blood-spattered barn with the nilgai the next morning and herded into a holding pen close by. (The nilgai later died from a slit-open belly.)

continued on page 51

conference.....

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AMERICAN ASSOCIATION OF ZOO KEEPERS

Montgomery, Alabama

October 5-9

TENTATIVE SCHEDULE

Saturday, October 4, afternoon: Pre-registration

Sunday, October 5, all day: Registration and Board Meeting
evening: Ice Breaker Cruise on Riverboat General
Richard Montgomery with a supply of "buffalo
chips" so you can try your luck as a
old-time riverboat gambler.

Monday, October 6, all day: Presentation of papers
evening: Hospitality Room

Tuesday, October 7, day: Tour of Birmingham Zoo
evening: Film Festival and Hospitality Room

Wednesday, October 8, morning: Papers
afternoon: tour of Montgomery Zoo
evening: Film Festival and Hospitality Room

Thursday, October 9, morning: Papers
afternoon: Business Meeting
evening: Banquet and Non-animal Auction

Registration fee is \$40 for AAZK members which includes coffee breaks, both zoo tours, three lunches, the cruise and the banquet. What a bargain!

Conference headquarters is the Holiday Inn State Capitol: Southern hospitality for \$23 for single and \$29 for double.

Laura Strickland, Conference Coordinator, reports excellent support and enthusiasm from the zoo and Zoological Society and many others.. This has helped her develop plans for an outstanding conference.

PLAN TO ATTEND!

Registration Form on following page

* * * * *

For registration please fill out this form and return with fees to
Laura Strickland, Conference Coordinator
Montgomery Zoo, PO Box ZEBRA
Montgomery, AL 36109

Please make checks payable to AAZK Conference

REGISTRATION FORM

NAME _____

STREET _____ CITY _____

STATE _____ ZIP _____

ZOO/ORGANIZATION _____

POSITION _____

- () Member of AAZK - Registration Fee: \$40.00
- () Member of AAZPA - Registration Fee: \$50.00
- () Non-member of AAZK Or AAZPA - Fee: \$60.00
- () Will be presenting a paper (discount \$20 from Registration)
Deadline for papers is July. Papers do not need to follow
the theme for the conference.

- () I wish to share a room at the Holiday Inn Capitol.
- () I wish to stay in a home. This is available for
keepers only on a limited basis.

* * * * *

coming events

Joint Annual Meeting of the Society for the Study of Amphibians and
Reptiles and the Herpetologists League
August 6-10, 1980 University of Wisconsin
Milwaukee, Wisconsin

International Conference for Zoo Horticulture
August 24-29, 1980 Temple University
Philadelphia, Pennsylvania

AAZPA ANNUAL CONFERENCE
September 14-18, 1980 Radisson Hotel
Chicago, Illinois

CAN THE AMERICAN URBAN ZOO SURVIVE?

by
Douglas M. Richardson
Calderpark Zoo, Scotland

It can often be found in the British zoo environment that older zoos (pre-1950) are seriously hampered from progress because of very permanent outdated buildings that were erected when the zoo was first opened. This coupled with a limited land area found in most urban zoos, can make remodeling a slow and costly process. London zoo is the most prominent example that comes to mind. Even if they had the money to replace the outdated buildings all at once, they are restricted by a very crowded 36 acres. So when one building comes down a new one is erected on the old site.

Now American zoos are comparatively young as compared with the European zoos, so they had the opportunity to erect large buildings using modern wild animal maintenance techniques. These new methods of keeping animals in zoos are necessarily outdated but may prove to be an even bigger millstone around their respective necks.

I will use the Bronx zoo as my example. It is one of the oldest zoos in America and it built large permanent structures right from the start. These older buildings did not stop the erection of their modern counterparts since they had the cash as well as 252 acres to build upon. These new structures are among the most ostentatious zoo buildings to date, i.e. the World of Darkness, the World of Birds, and the Tropical Asian Building which is under construction. These three buildings encompass the most modern and aesthetic methods of displaying wild animals to the general public. They painlessly educate the visitor (whether the visitor likes it or not) about animals in their respective environments.

The problem that is beginning to occur with these new monoliths to enlightened captive management, is not technique outpacing the drawing board and construction crew, but the fact that these buildings are gargantuan consumers of energy. I don't have any figures of the cost of the consumption of gas or oil in these building, but just think what your utility bills for your home are like and multiply that by 100 or 1000 or ...

Okay, so the person who donated the money for the new birdhouse has also agreed to pay for a fair portion of the annual running costs. The last gas shortage was a glaring example of how your benefactor will not be able to help you out in the long-run. In some states, if your license plate did not end in the appropriate numeral (i.e. odd or even) then it was nigh on to impossible to get gas that day, no matter how much cash you had. I believe the same will become true of all fossil fuels.

The Bronx has been a trend setter in exhibit techniques so it would seem that they would be the logical innovators in modern installation management. A solar roof may not cut your heating oil consumption by 100%, but the savings would be appreciable. Methane digestors may be a more logical energy source for zoos due to the daily production of vast quantities of bio-degradable material.

Of course, the most viable solution is typified by the adage "small is beautiful". Jersey zoo in the Channel Islands, seems to demonstrate

BIRTHS AND HATCHINGS, *continued*

While the keepers checked the nilgai, Libby went to work on the holding pens. She pushed against the fence, popping off the clips that hold the chain-link to the bottom strand of wire and went through into the next holding pen and under the next fence into another holding pen containing a water Buffalo and donkey, both of which she attacked (without injury.)

Finally, with rakes, shovels and pooper scoopers, the keepers and mammal technician forced her into the water buffalo barn, the only secure place close by. Apparently she found a place that suited her and remained contented, giving birth there on April 29 to a male calf.

This was her second calf. The first was a female born September 5, 1979, in an outside waterfowl holding pen in which she and Chubby were being kept. That infant was found dead two week later, apparently from suffocation when Libby lay on it.

Being kept in a rectangular barn may have contributed to this latest calf's survival since the calf lies as close to its mother as possible (almost under her), but it is usually near a wall or in a corner into which the calf fits but Libby, because of her bulk, does not.

At 5 weeks old, the calf is healthy and strong and Libby appears willing to stay put for the moment. Meanwhile Chubby, the father, stalks his perimeter fence testing the gates and searching for an opening, any little opening.

Can the American Urban Zoo Survive?

this quite well. They have no large bird house or ape house, but specialized exhibits for each specie. Their aviaries are nothing monumental, but are pleasing to the eye and their success speaks for itself with 200 white-eared pheasants and 100 Rothschild's mynas being reared.

Choosing species which are more compatible with the respective zoo's climate can still make for interesting and challenging projects. The ungulate exhibits in Wild Asia at the Bronx show this quite well. The only energy expended is in the form of electric bar heaters in the covered stall areas. But I think even these could be unnecessary with the proper use of deep litter.

Zoos are constantly paying vast amounts of lip service to conservation, but only in the area that zoos are endeavoring to breed genetically representative populations of endangered species, and that is pursued only in a handful of places. I think that if attitudes do not become unblinkered, the temperate zone urban zoo could potentially cut its own throat. A walk around the Bronx or the National zoo or Milwaukee in 20 years may present unspectacular though pleasant exhibits with the quiet shells of unused buildings in the shadows.

The author has worked as a keeper in Edinburgh and the Bronx and is now a keeper at Calderpark Zoo.



THE INCUBATION OF TURTLE EGGS
AT THE METRO TORONTO ZOO

Reptile
Amphibian
potpourri

by

Bev Carter

Keeper II, North American Pavilion

In 1978, the artificial incubation of Red-Eared Turtle *Pseudemys scripta elegans* was attempted by the staff of the North American Pavilion at the Metro Toronto Zoo, as the display housing the turtles did not lend itself to natural incubation. The display's laying area was composed of sand with a few large flat basking rocks. Light and heat was provided by 3-150 w. spot lights located approximately 7 feet above the sand, giving a ground temperature of only 68-70° f. The sand was watered twice weekly.

Signs of digging in the laying area were investigated from April through September. Any eggs found were removed as soon as they had been laid, with care taken not to shake, rotate, tip or otherwise disturb the fragile embryo. Normal clutch size averaged 9 eggs. As the clutches were removed, they were transferred to plastic containers (margarine or ice cream containers work well), buried in a mixture of 50% sand and 50% peat moss moistened with water. The topless containers were then individually sealed in clear plastic bags marked with the number of eggs and the date laid and/or placed in the incubator. Condensation formed on the inside of the bags as humidity in the sealed environment was approximately 80%.

The incubator we have been using is a primitive one -- simply a wooden box approximately 18" x 18" x 18" (45 cm) with a plexiglas window in front and a hinged top. Heat is supplied by a light bulb under the wooden floor (25 w. in the summer, 40 w. in spring and fall). During periods of hot weather, the light is often turned off as the ambient air temperature can affect the interior temperature in the box by as much as 10°. There is a temperature gradient of approximately 12° inside the box with the highest heat near the area of the light bulb. A dummy container is set up with moistened substrate and, instead of eggs, a thermometer is sealed in a plastic bag. This container is placed directly over the light bulb and the temperature is recorded three times daily. By positioning the containers at varying distances from the heat source, a fairly constant temperature can be maintained. We have found 82-84° to be the best incubation temperature.

The containers were checked every six weeks. Collapsed eggs were removed and checked for fertility and/or stage of development at death. After approximately 70 days of incubation, with daily temperature fluctuating 2-6°, baby turtles emerged by themselves and could be seen on the surface of the substrate. Pictures were made of plastron marking, weights recorded and the hatchlings were set up in 10 gallon aquaria with hauling out rocks, floating corkwood and plastic plants for resting on, and placed in a holding room.

In 1978, from a total of 60 eggs, 14 turtles hatched, giving an approximate hatch rate of 23%. However, of the 60 eggs, 19 proved to be infertile, thereby increasing the hatch rate to approximately 34%. In addition, one Eastern Box Tortoise *Terrapene c. carolina* hatched out of 3 eggs incubated.

continued

The Incubation of Turtle Eggs at Metro Toronto, continued

In 1979, the adult turtles were moved to a new display located under a skylight. The decision (for space reasons) was made to incubate only six clutches. The same technique was used as in 1978. Out of 54 eggs incubated, 12 were infertile and 32 hatched -- a hatching rate this year of approximately 76%. In addition, two clutches left in the display hatched, yielding another 11 turtles. Unfortunately, one was cannibalized by the adults and two died of suffocation when the sand on their heads hardened to a cement-like mask, cutting off their air supply. Five Blandings Turtles *Emydoidea blandingi* were hatched in 1979, two by artificial incubation and three naturally in the display.



As of mid-December, all babies are eating well and growing rapidly.

THE STRUGGLE FOR SURVIVAL

THREE NATIONAL WILDLIFE REFUGES FOR MIGRATORY WATERFOWL TO BE ESTABLISHED IN SOUTH'S MISSISSIPPI RIVER DELTA

Three national wildlife refuges are being established in the bottomland forest habitat in Mississippi, Tennessee, and Arkansas. Mathews Brake in central Mississippi, Lower Hatchie in west Tennessee, and Overflow Bottoms in southeast Arkansas are all part of the lower Mississippi River Delta, which has been steadily drained and cleared for agricultural purposes since the arrival of the pioneers. It is estimated that by 1985 less than 5 of the original 24 million acres will remain of this unique ecosystem and vital habitat.

HOUSTON TOAD PROPAGATION PROJECT

Under contract to the U.S. Fish and Wildlife Service, researchers at the Houston Zoological Gardens have been working to perfect methods for raising Endangered Houston Toads *Bufo houstonensis* in captivity. It is hoped that successful propagation will help boost the recovery of this small, secretive toad, whose total numbers are estimated at less than 1,500.

Of 3,600 eggs collected from Bastrop County, Texas, in March 1978, and maintained at 24°C, 91 percent survived to metamorphose.

Toadlets were more difficult to maintain in captivity, however, with only 2 percent and 5 percent survival rates reported for 1978 and 1979, respectively.

Five hundred sixty-four metamorphosing toads were released into the wild in 1978, and a stepwise release plan for adults has been devised.

conference.....79

Portland, Oregon

OBSERVATIONS ON THE ESTROUS CYCLE OF THE AFRICAN LION

Panthera leo

by

Anne Moody Schmidt and Leonie A. Nadal

Animal Health Department, Washington Park Zoo, Portland, Oregon

Summary

Three African lionesses were observed daily for 45 minute periods over an 18 month study period, after being separated from the Zoo's male lions. Several behavioral estrous cycles were observed. Hormone levels taken at intervals confirmed estrus with high estradiol levels or demonstrated high progesterone levels suggesting that ovulation had occurred. Estrous cycles occurred throughout the year with no seasonal variation. Interestrua periods varied between lionesses and for each individual (2-8 weeks). A pregnancy is described following 12 hours breeding contact with a male.

Introduction

Why spend 45 minutes everyday for 2 years of your life watching lions sleep? Basically, we did it for 2 reasons. 1. As a keeper I had been told by various zoo people when asked how to tell if a cat is in heat "It's obvious!" It wasn't to me. 2. Most of what is done with exotic felines is based on studies done on the domestic cat. Is the lion's reproductive cycle, at least, like that of the domestic cat?

The reproductive cycle of the domestic cat has been studied in more detail than that of any other felid. Hormonal profiles have been described (Paape et al, 1975; Verhage et al., 1976). Behavior and vaginal cytology have been correlated (Michael, 1961). Domestic cats in the absence of a male have a seasonally polyestrous cycle (Asdell, 1964), and ovulation is induced by copulation (Greulich, 1934). In another felid, an isolated jaguar, ovulation did not occur spontaneously (Wildt et al., 1979).

Information on the reproductive cycle of the African lion is limited. Behavioral estrous periods have been described (Cooper, 1942; Eaton et al., 1971; Schaller, 1972), but the criterion of estrus has been copulation. If, like the domestic cat, the lion is a reflex ovulator, copulation would affect the length of the cycle (Paape et al., 1975, Verhage et al., 1976). Recently, we described weekly estradiol and progesterone levels over a 6 month period in the same 3 African lionesses. High progesterone levels suggested that ovulation had occurred following 7 of the 9 estradiol surges described (Schmidt et al., 1979).

The present study was undertaken to provide information on the frequency and duration of behavioral estrous cycles throughout the year in the absence of a male.

Observations on the Estrous Cycle of the African Lion, continued

Methods

Three mature parous female African lions *Panthera leo* were housed together in the feline building of the Washington Park Zoo, Portland, Oregon, and kept separate from the Zoo's male lions. On alternate days the lionesses were allowed outside in a moated enclosure. Male lions were housed in adjacent enclosures and alternated in the outside area

with the females. This situation allowed olfactory, auditory, and limited visual contact, but no physical contact, between males and females.

The lionesses were observed for 45-minute periods every day except for the days on which serum samples were collected. Behavior patterns were recorded in 1-minute block periods, then scored by the number of blocks in which they occurred. Behaviors categorized by field (Schaller, 1972), and zoo (Cooper, 1942; Eaton et al., 1971) researchers as sexual, i.e., lordosis, increased frequency and intensity of rolling, attempts by the estrous female to move beneath another female, mounting of the estrous female by another female with copulatory thrusts and neck grip, rubbing by the estrous female of her anal area on another female, and a characteristic low growl, were used to determine behavioral estrous cycles. The frequency of each of these behaviors was tallied to provide a score of sexual behavior for each week. Lioness C was isolated from the other 2 lionesses prior to ovariectomy to observe whether ovulation would occur in a socially isolated animal. Other behaviors used to determine behavioral estrous cycles in this animal were rubbing the parts of the enclosure with her head or body, and grooming the anal area.

A pregnancy resulted when Lioness A was allowed physical access to a male lion overnight at the height of a behavioral estrus. She was separated from the male the following morning.

Blood collection and hormone analyses were accomplished as described previously (Schmidt et al., 1979).

Results

Sexual behavior scores for Lionesses A, B, and C with estradiol and progesterone levels taken at intervals are shown in Figures 1, 2, and 3, respectively.

Several peaks of sexual behavior representing behavioral estrous cycles were demonstrable in each of the three lionesses. There were obvious individual differences in the lionesses' behavior in heat. Behavioral estrous cycles in Lioness A were easily seen (figure 1.) However, an animal may be in estrus and not show behavioral signs. This was particularly obvious in the case of Lioness C. However, the high estradiol levels recorded during the comparatively low behavioral peaks confirm that these peaks were indicative of estrus for this individual (figure 3.)

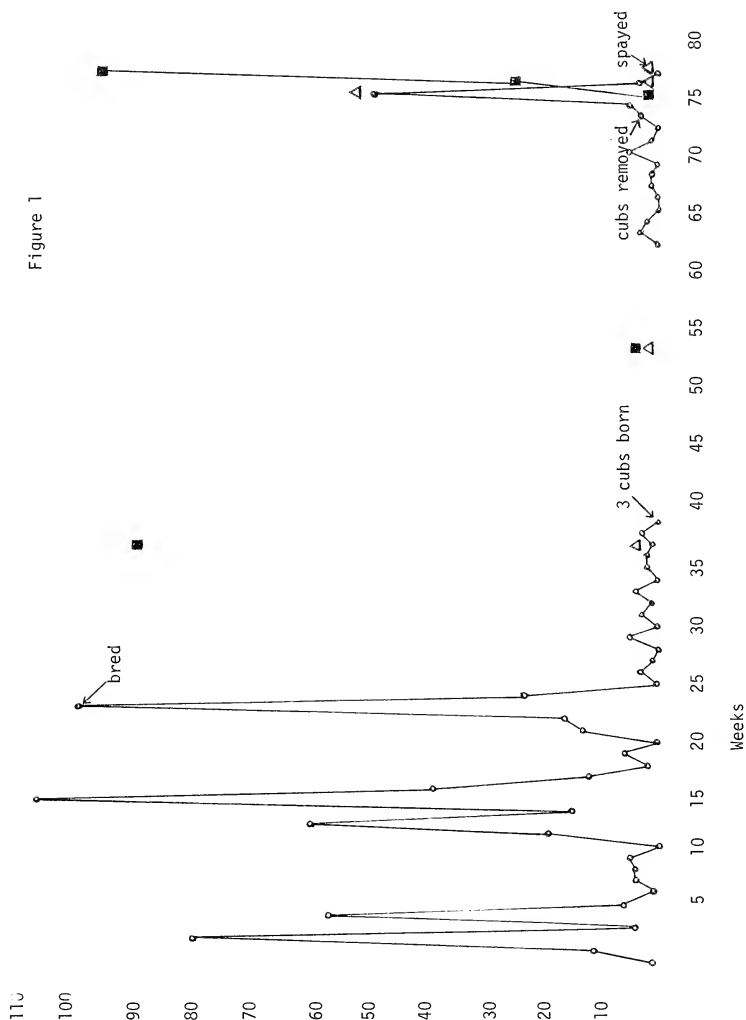
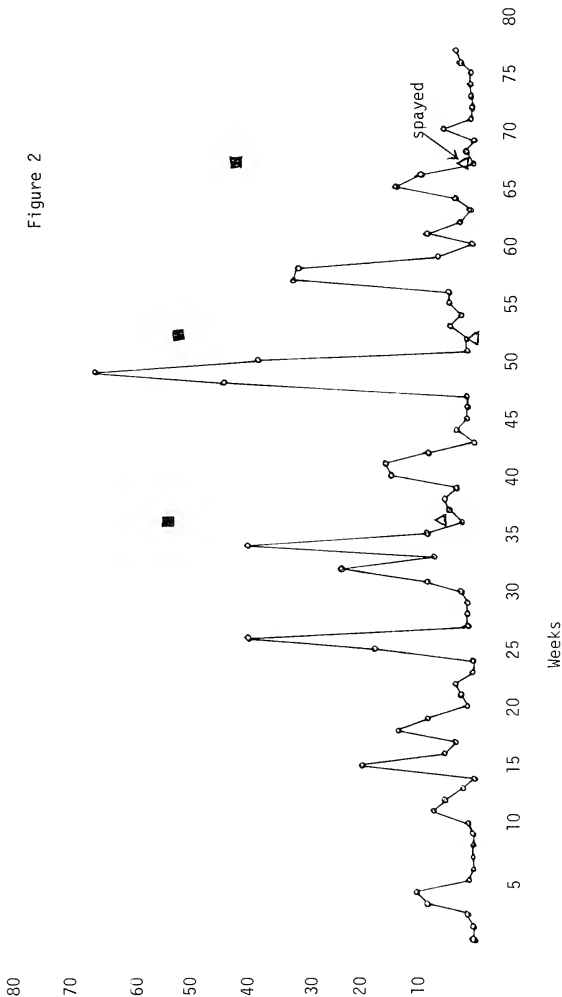


Figure 1

High progesterone levels observed in Lioness B after behavioral peaks (figure 2) suggested that ovulation occurred in cycles where she was not immobilized during estrus. High progesterone levels in Lionesses A and B (figures 1 and 2) at the time of ovariectomy 2 weeks following behavioral estrus suggested that ovulation had occurred and was confirmed by examination of the ovaries collected at that time. High progesterone levels suggested that ovulation had occurred in Lioness C (figure 3) when she was isolated from contact with the other 2 lionesses. Examination of the ovaries collected during ovariectomy confirmed that ovulation had taken place.

Cycles did not appear seasonal, and seemed to occur with the same frequency throughout the year.

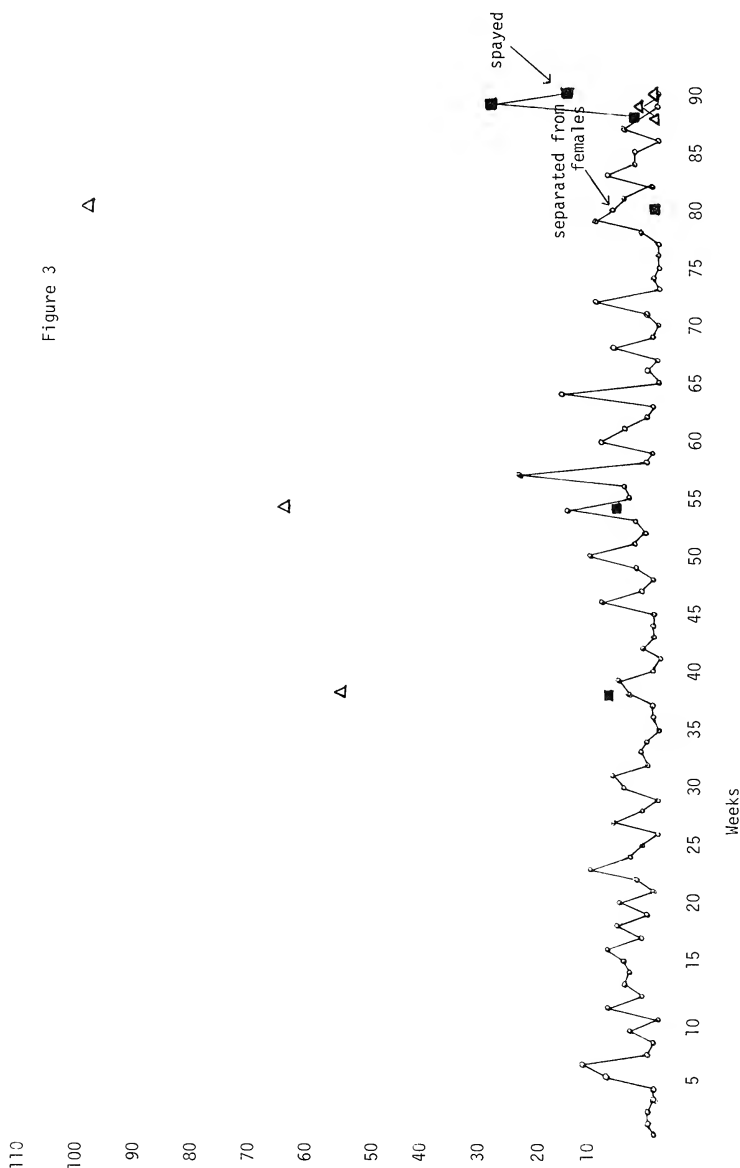


Discussion

Although behaviors during estrus were similar for the African lion and the domestic cat, other aspects of the estrous cycle of our African lions were quite different from the estrous cycles of the domestic cat.

The lions cycled throughout the year rather than seasonally like the domestic cat. The interval between cycles was quite variable both among the lionesses and for the individual lioness. This confirms the variability previously described for the lion (Eaton et al., 1971; Schaller, 1972; Seal et al., 1975).

Figure 3



As described previously (Schmidt et al., 1979) high progesterone levels indicating ovulation had occurred were observed during cycles without coitus. Ovulation occurred whether or not the animals were immobilized during estrus, and when an animal was isolated from the other females. Coital stimulation is required for ovulation to occur in the domestic cat (Greulich, 1934; Paape et al., 1975; Verhage et al., 1976), and may be required in the jaguar (Wildt et al., 1979).

Observations on the Estrous Cycle of the African Lion, continued

Behaviors of the lioness in heat have been described (Cooper, 1942; Eaton et al., 1971; Schaller, 1972), and are similar to those observed in the domestic cat (Michael, 1961). Individual differences in behaviors and intensity of behaviors occurred in both lions and domestic cats. Lionesses may be in hormonal estrus and show few or no behavioral signs.

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conference.....79

Portland, Oregon

THE BIRTH OF

A SOUTHERN WHITE RHINOCEROS *Ceratotherium s. simum*

and

A RETICULATED GIRAFFE *Giraffa camelopardalis reticulata*

by

Michael L. Carpenter
Phoenix Zoo

The 1978-1979 season was outstanding for the Arizona Zoological Society's Phoenix Zoo because of a significant increase in our mammal population due to births. These births included 12 Arabian Oryx *Oryx leucoryx*, an Orangutan *Pongo pygmaeus* and a Desert Bighorn *Ovis canadensis mexicana* among the endangered species. Two Red-Bellied Tamarins *Saguinus labiatus*, a Spider monkey *Ateles sp.*, and four Red Kangaroo *Megaleia rufus* continue the list of exotic species born, while coyotes and domestic goats and donkeys were also included.

Two of the more interesting births occurred during daytime working hours and were carefully observed and photographed. These were a female Southern White Rhinoceros *Ceratotherium s. simum* born November 27, 1978, and a male Reticulated Giraffe *Giraffa camelopardalis reticulata*, born on May 5, 1979. Due to our fortunate photographic documentation of these events and to the intense interest the births generated in our keeper staff this paper will present a brief overview of the birth process in Rhino and Giraffe.

We became aware of the possible pregnancy of our female rhinoceros approximately two months prior to parturition. At that time subtle changes in the animal contours became noticeable to keepers who had experienced previous rhino pregnancies. While we had several probable breeding dates 14 months previous, none were positively identifiable as successful. The first definite signs of an imminent birth occurred on November 26 when the female's udder was noted progressively more distended through the day. At approximately 8:00 a.m. the following day, the female and two males in the exhibit were noted to be very agitated and aggressive toward each other. Closer observation revealed that in fact the female had begun labor and the fetal membranes had ruptured. The males were immediately removed from the exhibit area and what would prove to be a long wait began. At times the female appeared "uncomfortable" standing in unusual positions or briefly lying. However, for most of the next five hours little change could be noted. Finally, at about 1:15 p.m., she reclined near one wall of the exhibit and with an audience of some 80 people, gave birth to a healthy female calf at 1:30.

Within five minutes the female stood and inspected the calf, then she once again lay down near the calf. Within 20 minutes, and after several unsuccessful attempts the calf was standing. After another 20 minute period of testing her legs, the calf found her way to mother and began nursing. The final events of the natal day included a tour of the entire exhibit at mother's heels and sampling a puddle of water. The calf made frequent mewing vocalizations through the afternoon and evening when the animals were bedded with bermuda hay. By November 30 the calf

Rhino Birth and Giraffe Birth, *continued*


was running and spending some time in a mud wallow with the female. The calf is still nursing and vocalizing, but she is now an 800 pound juvenile and will soon be leaving for Japan.

This birth has several noteworthy aspects, a five hour period from onset of labor to birth, a posterior (rear feet first) presentation, and the occurrence of a White Rhinoceros birth in a non-herd environment. Data on the duration of the birth process in White Rhinoceros is extremely limited and no other information on length of labor was found. Our experience with the type of presentation in rhino birth is limited to this occurrence. Because of the relationship of the rhinoceros to other Perissodactyla which are known to have a head-first presentation, this posterior presentation appears to be quite rare. No other instance of such an occurrence was found in literature.

Finally, while other Southern White Rhinoceros births have occurred in non-herd situations, non-herd birth are far less frequent. In Phoenix, a 17-year-old male, a multiparous 11+-year-old female and her previous offspring, a 6-month-old male, were present at the time of conception of the 1978 offspring. Since parturition there have been a number of copulatory attempts, hopefully one will again prove successful.

On May 5, 1979, our female Reticulated Giraffe gave birth to a healthy male calf after a gestation period of 459 days. While we had been expecting a birth since mid-February, we were forced to settle for the term of a final observed breeding date.

Throughout the morning of the 5th, the female was calm and no unusual occurrences were observed. At 12:30 p.m. however, she was noted to have some vaginal dilation and to be assuming unusual head-down postures. At about 1:50 p.m. the amniotic membranes broke and for the next hour the female was in heavy labor. The apparently normal positioning of the calf was observed; forelegs were first to protrude followed by tongue and nose. As labor contractions continued, the head, neck and forelegs were easily passed, but the shoulder required some period of time. When the shoulders were finally passed, the birth progressed very rapidly and at 2:50 p.m., with a breath-starting six foot drop, the calf was born. The female began immediately to remove the placental membranes; this was accomplished in the next 15 minutes. Both animals spent some time resting and then, after a great deal of leg untangling and repeated attempts, the calf acquired a standing position at 4:00 p.m., one hour and ten minutes after birth. Another 45 minutes were required for a successful nursing, the calf having difficulty adjusting to the proper position and the proper end of mother. After its first success, nursings of less than one minute were common through the afternoon and evening. The calf has continued in excellent health and now at four months of age stands 8 feet tall and is beginning to eat grass, hay and leaves readily.

One unusual aspect of our giraffe birth was the youthfulness of our male. At the time of conception he was only four years old. While the probability of sexual maturity of male giraffe at three and a half years is discussed by Anne Dagg in "The Giraffe" (Von Nostrand Reinhold Co., 1976), information from other sources suggests that 5 to 7 is the normal age at first breeding. Since May our now 5-year-old male and 17-year-old female have had several breeding periods and we are hoping that 14 months in the future we'll see another giraffe birth in Phoenix. 

conference.....79

Portland, Oregon

THE GREATEST SHOW ON EARTH?

by
Jay Haight, Washington Park Zoo

In the face of higher operating costs, declining gate receipts, and other problems associated with inflation, many zoos are finding themselves on the short end of a steadily shrinking stick; the situation is especially acute in the case of small zoos and those constrained by outdated facilities. One method by which some zoos are attempting both to generate increased revenues and to portray more accurately the excitement and vitality of the animals involves the construction of naturalistic facades for exhibits, perhaps in conjunction with promotion of a more showmanship-like atmosphere designed to facilitate both educational enrichment and entertainment.

Important as such approaches may be, in terms of establishing visual and social impact for visitors, they often tend to ignore basic issues regarding the behavioral biology of the animals on exhibit. It is axiomatic that people visit zoos in the hope of viewing exotic animals in action. They pound upon the glass of exhibit windows and throw rocks over exhibit moats in attempts to motivate the animal to activity, at least temporarily. No matter how nice an exhibit may appear superficially, it remains that if an animal cannot interact with elements of the exhibit environment (preferably in a naturalistic manner), the visitor will attempt to generate activity by virtually any means available. This, in my opinion, is a fundamental truth which many architects and planners pass over in favor of an unhealthy preoccupation with monument-building. To the average zoo visitor, it probably matters little whether an animal is observed sleeping in an unfurnished cage or in a pleasantly decorated and visually appealing cage. Either way, given the opportunity, he or she will probably lob something in there to make it move.

It is in precisely this context that the subtle difference between exhibit redecoration and environmental enrichment makes itself known. Exhibit redecoration is what architects do; environmental enrichment is what you and I can do. Many architects appear to be primarily artistic by inclination; they don't know much about the requirements of animals, nor in many cases do they seem to care particularly--the aesthetic beauty of the structure is their main concern.

Biologists, zoologists, and other professional animal people, on the other hand, generally have other priorities. The behavioral biology of the animal comes first, while aesthetics per se take a back seat. Although architectural considerations are certainly important in the sense of providing an aesthetically pleasing background against which the action takes place, they are too often accorded overriding importance. They become, rather than complement, the show. And it is important to remember that the show which visitors come to see is not a show of architectural splendor, but the show that is carried off by the animals themselves when conditions are arranged in such a way as to maximize opportunities for the exhibition of natural sequences of behavior. This is the one and only Greatest Show on Earth--the act that captures the visitors' imaginations. And we are the people that make it happen.

The Greatest Show on Earth, continued

At Washington Park Zoo, efforts have been made to demonstrate that, at very little financial expense, sterile and antiquated facilities can be modified in a manner compatible with the behavioral biology of the species exhibited. Superficially, when compared with expensive "naturalistic" facades, the additions may not look like much. They are labor-intensive, requiring more time and effort on the part of keepers to maintain properly. They are considerably less durable than their concrete-and-steel counterparts, being predominantly constructed from natural materials. From a visual point of view, they don't go to great lengths to conceal the fact that the animal is confined to a cage. But the animals appear to love them and so do the people who come to watch.

The principles guiding such modifications are very simplistic: utilizing field literature sources, one attempts to correlate behavior patterns that occur in the wild with those observed in the captive situation. Dependent variables mediating specific behaviors in the wild are isolated, and where possible, are incorporated into the modification scheme.

In our case, it quickly became evident that space was a problem. The cages seemed comparatively roomy, but observations showed that the animals could not take advantage of a significant portion of that space. Further, what useable space that was available was not arranged in a behaviorally relevant manner. For example, Colobus monkeys in the wild are known to gain momentum for extended leaps by bouncing up and down on flexible branches. By incorporating such branches into the captive environment, opportunities for the exhibition of this behavior were afforded. By the same token, if monkeys in the wild are known to utilize scattered sources of food, aggressive confrontations may be minimized by incorporating a similar distribution scheme into the modified exhibit.

Preeminent among considerations which may be successfully addressed in inexpensive modification schemes are those relating to the characteristic method of locomotion. Mandrill baboons are primarily terrestrial; therefore modification of their enclosure involved the creation of additional areas of horizontal space by strategic placement of logs. As mentioned earlier, Colobus monkeys move by leaping from branch to branch, often running along the tops of branches as well. A similar method of locomotion is employed by Squirrel monkeys. Both cages were modified accordingly.

Since visual and spatial isolation is an important component of normal social behavior in many animals, provisions were made for this as well. In the Mandrill enclosure, this was accomplished by building additional "platforms" to supplement the two already in the exhibit. In the Squirrel monkey enclosure, visual isolation was provided in the form of a hidden nest box and an experimental fibreglass rock and pond complex.

To date, three of our monkey exhibits have been modified in this manner at a total cost of well under \$1000, most of which went for manilla rope and experimental fibreglass construction. The fibreglass constructions, while not completely successful due to my own inexperience with the medium, nonetheless provided an interesting learning experience.

Successful reproduction and rearing of offspring has occurred in all three exhibits and, subjectively, visitor interest in the exhibits appears to have increased. Comparative data for the Colobus monkey exhibit suggest that a normalization of activity patterns has been effected through environmental enrichment techniques. Not only do

The Greatest Show on Earth, continued

locomotory patterns appear more compatible with those obtained in the wild, but other behaviors, such as branch-shaking, hitherto unobserved in our group, have appeared as well.

I believe that exhibit modifications such as these effectively demonstrate that exhibit quality--from both resident and visitor perspectives--is less a function of dollars spent than of effort spent on making the exhibit environment more responsive to the specific behavioral requirement of the animals on exhibit. They also demonstrate that a few individuals, with perhaps no money but with a sincere desire for improvement can affect significantly both the quality of life for their animals, and, in so doing, the quality of the visitors' zoo experience.



AAZK LIBRARY

Pat Sammarco and I are trying to establish an AAZK Library of sorts. The library will not be a physical collection of materials, but will be an information center of "Who has What."

To accomplish this, we are asking each of you to let me know to what information you or your institution have access. Keep in mind individuals and groups tangent to your institution. For example, in the Cleveland area there is an M.D. with a special interest in giraffe and rhino kidneys. We also have the Northern Ohio Association of Herpetologists.

I hope the following questions will give you an idea of what kinds of information we would like to gather. Of course, if there's anything else you would like to mention, please do.

Do you know of any pertinent bibliographies?

Do you know of any zoo/animal-related surveys or questionnaires that have been done?

Is there any material about which you feel strongly (pro or con) and would like others to know?

Do you know of any libraries with an emphasized wildlife material collection?

Hopefully, information will start coming in to me, then maybe I'll be able to direct you to an answer you might need. For example, if you wanted a list of good elephant-related materials, I could tell you that the Elephant Interest group has such a bibliography. Or if, say, you wanted something to present at an AAZK Chapter meeting, I could tell you that Pat Sammarco at Lincoln Park zoo in Chicago has a slide presentation she is willing to lend. The presentation describes how she does her job at the zoo.

I am sure there are many possibilities that have not occurred to us. Any input is welcome, in fact, essential to the project. Please send information to the address below

Ellen Leach
Pachyderm Bldg.
Cleveland Metroparks Zoo
4104 Brookside Park Dr.
Cleveland, Ohio 44109

Alternatives...Education and P.R.

STUDENTS LEARN LATIN AT THE PHILADELPHIA ZOO, ET TU?

A class of 6th grade students have participated in a unique 4 hour, once a week class at the Philadelphia Zoo. It combines Latin with science, animal studies and a picnic lunch.

Since animal genus and species names are classified in Latin, students must translate them into English to complete their weekly projects. The program emphasizes studies on animal adaptation and life cycles of mammals, reptiles and birds. The course was for eight weeks and also included back-at-school study and research.

FATHER-OF-THE-YEAR AT BROOKFIELD ZOO

Brookfield Zoo honored Shorty, a 17 foot, 2,000 pound giraffe for Father's Day. He has fathered 16 young with two more on the way. He has helped produce more offspring than any other large mammal at the Brookfield Zoo.

Shorty had a special brunch of his favorite vegetables and fruits at noon on Father's Day. Visitors to the zoo were given a Father's Day card featuring Brookfield Zoo Dads such as Shorty, Clarke the polar bear and Ansel the Nile Hippo who have recently contributed to the conservation effort.

AAZK ACCESSORIES AVAILABLE

DECALS

The official AAZK decal is available through the Memphis Zoological Park and Aquarium AAZK Chapter. The decal is a black and white reproduction of the AAZK rhino logo, suitable for any smooth, hard surface, especially a car window. Cost is \$1.50 complete, prepaid. Make checks payable to the Memphis Chapter, AAZK, and send directly to Mike Maybry, Decal Project Coordinator, 1887 Crump Ave., Memphis, TN 38107.

T-SHIRTS

The T-shirts come in a variety of colors and have the AAZK logo on them. Contact Carleton Bailie, 4400 NW 39th Ave., #124, Gainesville, FL 32601.

BUTTONS

Buttons printed with "Keepers Care" and a logo are available for fifty cents (50c) from Larry Sammarco, Lincoln Park Zoo, 2200 N. Cannon Drive, Chicago, IL 60614. 50% of the sale price goes into AAZK's national treasury.



chapter

Officers of the Portland Chapter
President....Jonolyn E. Smith
Treasurer....Mike Keele
Secretary....Stanley Held

At present, they have 6 on-going projects, only one of which is for profit, and that is, of course, the Zoo-Doo (elephant manure)! They sell it by the truckload and by the bag in the gift shop! The other projects are 2) building a library in the Zoo that complements, not duplicates the existing Zoo library; 3) they elect an honorary member of their Chapter every year, where they pay that person's AAZK dues for one year. Usually this person is not a current AAZK member or Keeper. Their hope is that the honorary member will remain a member in the following years and thus broaden their Chapter's scope of influence. 4) Veterinarian lectures; 5) an annual picnic open to all Zoo staff; and 6) a brand new project--Keeper externship. More will be shared on this new projects as it is developed. We continue to wish the best to the Portland Chapter of the AAZK for setting very good examples of projects for other chapters.

Officers of the Calgary Zoo Chapter
President....Bill Dubrenil
Vice-Pres....Marcia Rasmussen
Treasurer....Brent Van Hooft
Secretary....John Creviston

news

The Calgary Zoo AAZK Chapter is interested in communicating with other Chapters in relating to increasing the professionalism in Zookeeping. Any Chapter willing to send them their own ideas?

Officers of the Toledo Zoo Chapter
President.... Glennous Favata
Vice-Pres....Willis Whittaker
Sec/Treas....Douglas Young
Sgt. of Arms....Michael Dilley

The Toledo Zoo AAZK Chapter is interested in fund-raising ideas that are successful in other Chapters. Any Chapter willing to send them their own ideas?

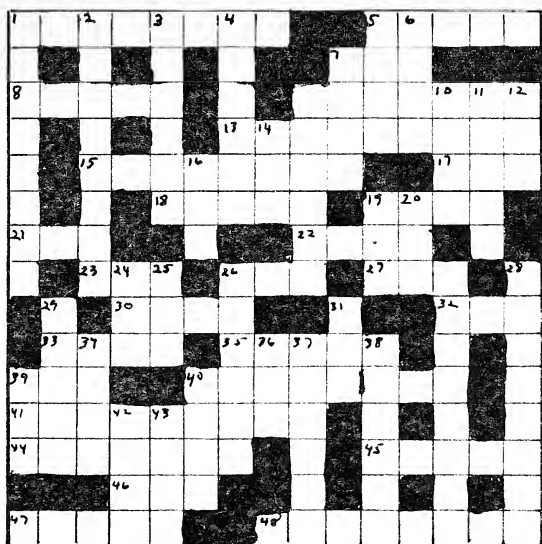
*Bernard C. Feldman
Coordinator for Chapter Affairs*

The Montgomery, Alabama, chapter is preparing for the National Conference and the field trip to hand-raised. They are noted for the successful breeding of their zoo chimpanzees, multi-species displays and cleanliness.

A tour is planned to the Birmingham Zoo which has a diversified representative collection. Their noted breeding programs have been with Siberian Tigers, Golden Spider Monkeys, Grant's Gazelles, Ring-tailed Lemurs and Beisa Oryx.

For your summertime relaxation and enjoyment, Neville Pike from the Metro Toronto Zoo presents another of his challenging "Natureword" puzzles.

NEVILLE PIKE



19802

CLUES ACROSS

1. Queen Victoria's _____
5. Raises
8. Tropical Tern
9. Close relative of the stoat
13. Poisonous spider
15. Asian Pheasant
17. Uncooked
18. Sometimes followed by hounds
19. Stalk
21. Does this fish need a boat?
22. Known as Jaeger in North America
23. Extract sap
26. An age
27. Yellow or red
30. Check a horse
32. Fruit
33. Also called Kauai Oo
35. Is the Manta Ray an impish fish?
39. Shrub also known as Indian mulberry
40. The tundra begins above here
41. Related to the Ibis, this bird has a peculiar shaped mandible
44. Sea fir genera
45. Progeny of a hatching
46. Hearing organ
47. Avian scavengers
48. Caviar producer

CLUES DOWN

1. Pied or painted buck
2. North American warbler
3. African weaverbird
4. Kea genus
5. Sable relative
6. Orient
7. Lima or string
9. Some species are called pudding wife and corkwing
10. River in Northwest France
11. Humpless camel
12. Use this fly for cutting wood?
14. Imitate the Primate
16. Long-snouted fish
19. Pig genus
20. Prong of a fork to a Scot
24. Macaw genus
25. It grows in a pod
26. Largest living lemuroid
28. Genus of the stumptooth minnow
29. _____dace, found in South Nevada springs
31. Beach hazard
34. Swan genus
36. Conger
37. Solitary wasp that masquerades as an ant
38. Agile
39. Chigetai
40. Secure your birdfeeder to this
42. Saare Islands to a Swede
43. Island to the west of Sumatra

We are indebted to the AAZPA Newsletter for allowing us to reprint portions of this section from their "Positions Available" listings. This is a monthly service to us, for you.

BIRD KEEPER... responsible for care and maintenance of expanding bird collection. Requires at least two years' paid professional experience in bird keeping. Formal education helpful, but not mandatory. Starting salary: \$10,344/year, plus excellent benefits. Send applications to: Dale Stastny, P.O. Box 4327, New Orleans, LA 70178.

SENIOR KEEPER... must be experienced with diversified collection, preferably with primates, elephants and reptiles. Degree desired, but not necessary. Responsible to curator for daily activities of animal department and performs curatorial duties in his absence. Salary: \$8,300-\$10,400. Submit application to: Daniel A. Baffa, General Curator, Indianapolis Zoo, 3120 E. 30th Street, Indianapolis, IN 46218.

ASSISTANT DIRECTOR FOR ANIMAL MANAGEMENT... responsible for a total program of animal management. Requires extensive knowledge and experience in personnel management and administrative principles; graduation from college with major in zoology or related field. Salary \$23,298-\$32,726, plus benefits. Send resume to Personnel Office, Oklahoma City Zoo, 2101 N.E. 50th, Oklahoma City, OK 73111. Closing date 15 September. EOE.

ADVANCED PRIMATE KEEPER... requires indepth experience with large and small primates in zoo or similar facility. Degree preferred. Salary commensurate with experience and qualifications. Excellent benefits. Send resume to: Charles H. Hoessle, General Curator/Deputy Director, St. Louis Zoological Park, Forest Park, St. Louis, MO 63110.

ADVANCED REPTILE KEEPER... requires in-depth experience with reptiles and amphibians in zoo or similar facility. Degree preferred. Salary commensurate with experience and qualifications. Excellent benefits. Send resume to: Charles H. Hoessle, General Curator/Deputy Director, St. Louis Zoological Park, Forest Park, St. Louis, MO 63110.

ANIMAL CARE SPECIALIST TRAINEE... will be trained for full-time position in animal care techniques for marine mammals, water-fowl and other aquatic birds. Applicant should be high school graduate, strong swimmer and possess willingness to learn. Competitive starting salary and outstanding benefits program. Interested applicants should mail resumes to: Attention: Personnel Department, Sea World of Florida, 7007 Sea World Drive, Orlando, FL 32809. EOE, M/F.

AQUARIST... requires Bachelor's Degree in Biology, Marine Biology or closely related field; previous experience in an aquarium, experience in aquatic animal collection. Send resume to: Robert Mottice, Assistant Curator of Husbandry, National Aquarium in Baltimore, 10 South Street, Suite 301, Baltimore, MD 21202.

MEMBERSHIP COORDINATOR... challenging and interesting position requiring ability to plan, organize, implement and maintain membership or direct-mail programs. Bachelor's Degree and two years' experience helpful. Forward resume to: Membership, National Aquarium in Baltimore, 10 South St. Baltimore, MD 20202. EOE.

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INFORMATION FOR CONTRIBUTORS

Animal Keepers' Forum publishes original papers and news items of interest to the Animal Keeping profession. Non-members are welcome to submit articles.

Articles should be typed or hand-printed. All illustrations, graphs and tables should be clearly marked, in final form, and should fit in a page size of no more than 6" x 10" (15 cm. x 25½ cm.). Literature used should be cited in the text and in final bibliography. Avoid footnotes. Include scientific names.

Articles sent to *Animal Keepers' Forum* will be reviewed for publication. No commitment is made to the author, but an effort will be made to publish articles as soon as possible. Those longer than three pages will be separated into monthly installments at the discretion of the editorial staff. The editors reserve the right to edit material without consultation unless approval is requested in writing by the author. Materials submitted will not be returned unless accompanied by a stamped, self-addressed envelope.

Telephoned contributions on late-breaking news or last minute insertions are acceptable. However, phone-in contributions of long articles will not be accepted. The phone number is 913 272-5821.

DEADLINE FOR EACH EDITION IS THE 20th OF THE PRECEDING MONTH.

Articles printed do not necessarily reflect the opinions of the Animal Keepers' Forum editorial staff or of the American Association of Zoo Keepers.

Items in the publication may be reprinted. Credit to this publication is requested. Order reprints from the Editor.

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Contributing/Institutional.\$50.00 annually

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The AAZK National Headquarters has shoulder patches available for \$2.00 and back issues of the *Animal Keepers' Forum* for \$1.00.

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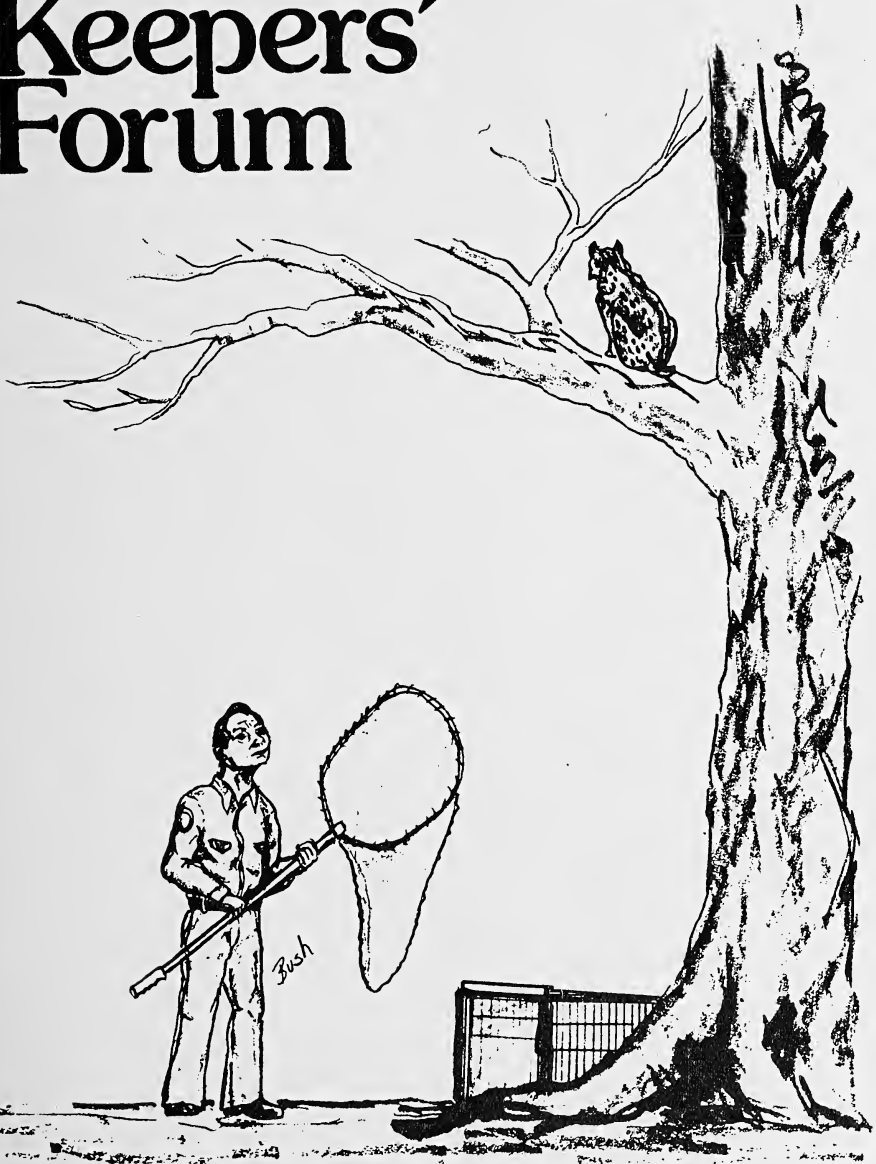


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Topeka Zoological Park
635 Gage Blvd.
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Animal Keepers' Forum



Dedicated to Professional Animal Care

AUGUST 1980

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Animal Keepers' Forum is a monthly journal published by the American Association of Zoo Keepers, 635 Gage Blvd., Topeka, Kansas 66606.

Second class postage is paid at Topeka, Kansas. Return postage is guaranteed.

AMERICAN ASSOCIATION OF ZOO KEEPERS
NATIONAL HEADQUARTERS, 635 GAGE BLVD., TOPEKA, KS 66606
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Sometimes in the daily life of a keeper comes the moment depicted on this month's cover -- an escaped animal on a hot summer's day and the frustration that can bring. Who is the most cunning? Who has the most patience? James M. Bush is the artist for this August issue.

SCOOPS and SCUTTLEBUTT

TWO COORDINATORS APPOINTED

President Pat Sammarco announces the appointment of Karen Starr Wakeland to the position of International Coordinator and the appointment of Marcia A. (Rohrer) Clevenger as Coordinator of the Infant Development Data Project.

The Infant Development Data will complement the Infant Diet/Care notebook with developmental information such as weight gain, physical activity, solid food intake/weaning, molting/shedding.

REGISTER NOW FOR THE ANNUAL CONFERENCE (SAVE \$10)

Registration blanks were published in the June and July issues of the AKF. Late registration fees are \$10 higher than early registration, so send it in now.

Late registration will be charged after September 1.

BIDDING STILL OPEN FOR 1982 ANNUAL CONFERENCE

Bids will be accepted through September for the 1982 annual conference of AAZK. Submit a letter to Pat Sammarco describing facilities available. See page 100, May AKF. The decision will be made at the Montgomery board meeting.

1979 CONFERENCE PAPERS

The papers from the Portland 1979 conference have been published in the April through August issues of, the *Animal Keepers' Forum*.

LAST CALL FOR CONFERENCE PAPERS!!!

Laura Strickland asked for one more call for papers for the conference. Isn't it worth \$20 off the registration fee to put into words some of your thoughts, observations, and research about your work as a zoo keeper?

Papers do not need to follow the theme of the conference. Please submit to Laura Strickland, Conference Coordinator
Montgomery Zoo, PO Box ZEBRA
Montgomery, AL 36109

THANKS!

BIRTHS HATCHINGS

SNOW LEOPARDS BORN...AND BORN...AND BORN AT OKC ZOO...Steve A. Clevenger

Spring is understandably the time we all look forward to as zookeepers for it is then that the procession of young creatures begins anew. For those of us involved in the Snow leopard breeding program at Oklahoma City, however, the winter months are a necessary precedent, for it is then that we observe for signs of estrous and attempt introductions. The winter quarter was especially rewarding this year as we successfully introduced our resident male to all three of our females, including the youngest ("Tangla") for the first time.

Three litters of young were produced (see below): all are being successfully mother-reared. The average gestation was just over 98 days.

Animal	First Obsvd Copulation	Birth	Gestation
"Damascus" (2/1)	28 Dec 79	6 Apr 80	99 days
"Tangla" (2/0)	17 Feb 80	25 May 80	97 days
"Elektra" (1/1)	16 Mar 80	22 Jun 80	99 days

Additional details on the specifics of our program are available in the September 1979 *Animal Keepers' Forum*. Significant observations during 1979-80 include:

-Seclusive behavior was shown in all three females for the two days prior to birth.

-The youngest female ("Tangla") did not eat for the first seven days after giving birth. Her young, however, were observed nursing and gained weight steadily. This was her first birth.

With the last two litters we also began separating the mothers from the kittens for short periods of time after the first several days. This allowed for examination by the zoo veterinarian and for determining the sex of the youngsters. No problems have been encountered thus far with this procedure.

FIRST CAPTIVE BRED SCARLET-HEADED BLACKBIRDS HATCHED AT PHILADELPHIA

Rare and beautiful scarlet-headed blackbirds have been successfully bred in captivity at the Philadelphia Zoo for the first time anywhere in the world.

Curator of Birds, Larry Shelton, attributes success in part to the marsh-like habitat created for the birds in their Zoo environment. To simulate the wilderness, Spanish moss was imported from Florida for the birds to use as nesting material.

The Philadelphia Zoo has raised two different nests of birds this year and they are nesting for a third time right now. It takes 14 days for eggs to hatch, another 14 for the young to leave the nest and 14 more for them to be independent.

An information request from Yoshi. Yonetani of Japan was printed in the May issue of AKF. He is especially interested in the areas of Zoo-Design and Education. He is also a very talented artist. AKF has asked Mr. Yoshi for news from the zoos of Japan. The first news is sad, but accompanied by a touching and delightful sketch.

NEWS FROM UENO ZOO, TOKYO

The Ueno (pronounced Way-no) Zoo, Tokyo, lost one male Giant Panda (named KangKang, 9 years old) on June 30, at 11:58 pm. We are very sad at this misfortune because one female Giant Panda (named LanLan, 10 years old) died of acute renal failure about 10 months ago on September 4, 1979, at 1:27 am.

The cause of his death was heart failure by consumption of the lungs making a cold worse. We are disappointed at the hopelessness of the second's birth.

KangKang and LanLan crossed over to Japan on October 28, 1972 in remembrance of the diplomatic relations between China and Japan. They succeeded their pairing last year, and the dead LanLan was with an embryo in her body at the autopsy.

On this January 29, a new female Giant Panda "HuanHuan" (7 years old) arrived at the Zoo. Just as KangKang and HuanHuan are starting their fresh project for reproduction, KangKang departed from this life as if he ran after LanLan.

The Ueno Zoo leaves their stuffings to posterity. We hope to help the surviving HuanHuan to live long and then turn the breeding to good account in international harmony.

More on the topic of Giant Pandas -- a couple of Pandas will be exhibited for the exposition "Portpia '81" in Kobe next spring. The organizer rents Pandas during the session from Tien-tsin, China.

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A Letter from President Pat Sammarco to the Director of the Fish and Wildlife Service.

Dear Mr. Director,

The American Association of Zoo Keepers supports the Department of the Interior, Fish and Wildlife Service in preparation of National Fish and Wildlife Policy to clarify and reaffirm the Nation's commitment to the conservation of natural resources.

As Zoo Keepers, we deal daily with endangered species, and with the public, ultimately responsible for endangering them, and who have the potential for protecting them. The American Association of Zoo Keepers wishes to affirm our own commitment to the conservation of natural resources, and urges the Fish and Wildlife Service to consider carefully the impact of National Wildlife Policy on captive wildlife, and those of us involved in its management.

The comments on the Draft Fish and Wildlife Policy are made from the Zoo Keeper's point of view, and are in order as listed in the notice published in the FEDERAL REGISTER, vol. 45, no. 87, Friday, May 2, 1980, Notices.

pre 1 When considering the economic values of wildlife and habitats, it seems immoral to put a price tag on life; but, putting morality aside, it becomes much more expensive to reclaim lost habitats than to protect them before their destruction. The human projects that so often endanger wildlife habitats can be duplicated elsewhere, whereas the habitat being destroyed is a one-of-a-kind life support system. Efforts should be made to assess quickly and accurately the impacts of human activity on wildlife habitats before monetary matters enter the discussion of sacrificing wild areas to human use.

pre 2-4 Human attitudes and activities are primary to the development and support of Fish and Wildlife Policy. The public must be educated and guided in their attitudes regarding conservation. Federal Policy must indicate the need for strict monitoring and enforcement of conservation measures, and especially on prohibiting environmental pollution. Much habitat destruction seems to stem from ignorance and negligence.

pre 8 Management strategies for the maintenance of populations and biological diversity must include our captive populations. Especially in the case of rare and endangered species, genetic diversity in breeding populations must be maintained. In the past, much of the wildlife legislation has omitted consideration of captive wildlife, making laws that severely limit the possibility of genetic diversity within captive wildlife species in our Nation and around the world. Zoos are becoming holding areas for endangered species while the world governments discuss the fate of their environments.

II 1 Authority over resident fish and wildlife must be carefully considered. Habitat boundaries often superceed human boundary lines, and especially in the case of migrant animals and wide-spread plant species, may involve many state and international borders. Multi-governmental agreements must be reached to protect a-political wildlife.

continued

- III Rather than trying to achieve wildlife population levels and distribution in accordance with federal statutes, statutes should be in constant review to meet the standards set by wildlife levels and distribution. Statutes should be regularly reviewed and updated to comply with scientific resource management principles and practices.
- IV 1 The primary purposes for which federal lands are administered should be subject to change as to remain consistant with scientific resource management principles.
- 2 The framework of applicable statutes and regulations, including requirements for possession of appropriate state licenses or permits should be consistent with scientific management principles and practices, and should provide for strict enforcement. License and permit issuance should be made only on demonstration of knowledge of conservation principles and practices.
- 3 ...human activities affecting fish and wildlife resources will not be permitted for reasons of adminstration, national security, public safety, or habitat protection...
- V 1a Research, or other field study or captive programs...
 - e Great care should be taken in the decision to introduce fish and wildlife into any ecosystem.
 - f Requirements for permits should be based on the knowledge of conservation principles and practices. Strict enforcement of conservation practices should include revocation of permits and prosecution and sentencing as appropriate.
- 2 When dealing with living organisms, change is naturally constant, and review of conditions with subsequent updating of regulations is extremely important to the scientific management of wildlife and its habitats.

For the sake of our wildlife, both captive and free-ranging, please carefully consider every aspect of the formulation of the National Fish and Wildlife Policy.

Sincerely,
 Patricia E. Sammarco
 AAZK President
 Zoo Keeper
 Lincoln Park Zoo
 2200 N. Cannon Dr.
 Chicago, IL 60614

coming events

AAZK ANNUAL CONFERENCE
 October 5-9, 1980

Holiday Inn State Capitol
 Montgomery, Alabama

THIRD ANNUAL SYMPOSIUM
 November 7-9, 1980
 see page 191

Louisville AAZK Chapter
 Louisville, Kentucky

THREE PRIMATES AND SEVEN CACTI PROPOSED ADDITIONS TO APPENDIX I

The Diana monkey, mandrill and yellow-tailed woolly monkey and seven species of Mexican cactus plants are being threatened with extinction and should be transferred from Appendix II to Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora.

INTERIOR TO PROPOSE LIFTING BAN ON COMMERCIAL IMPORTS OF KANGAROOS

The red kangaroo *Megaleia rufa*, the eastern gray kangaroo *Macropus giganteus* and the western gray kangaroo *Macropus fuliginosus* have been listed as Threatened species under the Endangered Species Act of 1973 since December 30, 1974. The Service has now completed its five year review of the status and concluded that all three species of kangaroos remain "Threatened" as defined by that Act. The review also demonstrates that the Australian States of New South Wales, Queensland, South Australia, and Western Australia now have met the requirements for the commercial import of kangaroos and the Service therefore proposes to permit such commercial importation from these states.

EMERGENCY DETERMINATION OF ENDANGERED STATUS AND CRITICAL HABITAT FOR THE BORAX LAKE CHUB

The service determines the Borax Lake chub to be an Endangered species and Borax Lake, Harney County, Oregon to be its Critical Habitat. The chub is limited to the lake, its outflow, and Lower Borax Lake. Geothermal development in and around Borax Lake and human modification of the lake threaten the integrity of the species' habitat and, hence, its survival.

REPROPOSAL OF CRITICAL HABITAT FOR THE COACHELLA VALLEY FRINGE-TOED LIZARD

The Service repropose Critical Habitat for the Coachella Valley fringe-toed lizard *Uma inornata* known only from the Coachella Valley, Riverside County, California. Threatened status and Critical Habitat were originally proposed for this species on September 28, 1978. The Critical Habitat portion of this proposal was withdrawn by the Service because of Changes in the law.

NOTICE OF AVAILABILITY OF U.S. ANNUAL REPORT FOR 1978 ON TRADE DATA

The U.S. Annual Report for 1978 on Trade Data gathered under the authority of the Convention on International Trade in Endangered Species of Wild Fauna and Flora is available by writing to Director, U.S. Fish and Wildlife Service, Federal Wildlife Permit Office, Washington, D.C. 20240.

ENDANGERED SPECIES CONVENTION: REVISION OF IMPLEMENTATION RULES

The Service proposes to amend the rules implementing the Convention on International Trade in Endangered Species of Wild Fauna and Flora to provide for procedures for public participation and agency consultation in the development of negotiating positions for such meetings.

A TRAINING PERIOD AT THE JERSEY ZOO

by
Ernie Karpeles

I recently returned from a four-month training period at the Jersey Wildlife Preservation Trust followed by a few weeks of working on the cat section at Howletts Zoo, Great Britain. The Jersey Trust, founded in 1958 by Gerald Durrell is a top-rate zoo, and one that is dedicated to the preservation and propagation of endangered species. People who are lucky enough to go through the four-month training period there (there's a long waiting list) can learn a lot and get the all-important practical experience that is difficult to obtain in American zoos as a student. I learned a lot there, and had a wonderful time doing so.

The island of Jersey, located 15 miles off the coast of France in the English Channel, is a truly beautiful place and provides many scenic spots that are fun to explore on days off. The island has a beautiful and varied coastline, many places of interest, and is in close proximity to the other Channel Islands and France -- only a short and fairly inexpensive hydrofoil ride away.

Jersey has a terribly confused and expensive bus system so the best way (and the most fun) to get around the island is to synchronize your day off with a staff member with a car. Indeed, the first day off often becomes a pub crawl around the island that, by dinnertime, makes the island seem a lot larger than it really is.

The student system is flexible, but most schedules are set up so that you work on all of the different sections in two or four week periods, i.e. 2 weeks on outside mammals, 2 on reptiles, 2 on apes, 4 on birds, 2 on small mammals, 2 on bats and marmosets, and 2 free weeks at the end. On each section, you have a supervisor who is usually the curator or head of the section, and you work pretty closely with this person, at least at the beginning.

The staff at the Jersey Zoo is quite small. One of the best features of Jersey Zoo is its size. It is approximately twenty acres, surrounding Les Augrès Manor, which houses the zoo's offices, the Durrells on occasion, some of the keepers, and the students from time to time. There are less than 100 species, but there has been great success with the species they do have. They have bred and distributed large amounts of some very rare species such as the white-eared pheasant, Waldrapp Ibis, and Rothschild's Mynah. The emphasis at Jersey Zoo is to concentrate on a small number of very endangered species and breed and distribute them to the point where they are safe from extinction (at least in captivity.) The Dodo, symbol of the Jersey Trust, exemplifies the fate of so many animals in the past few hundred years that no one even attempted to save. This is a very commendable animal management policy and not an easy one to maintain. It gets terribly boring to feed a hundred of the same species, day after day. It takes a lot of patience and determination, especially from the younger newcomers to the field of animal care.

Another great thing about Jersey Zoo is that the curators are Keepers; and they have to work with the decisions that they make. I think that this not only helps them to make decisions more easily and confidently, it also allows for more input from the other keepers who spend most of the day around the curators.

continued

A Training Period at the Jersey Zoo, continued

The section head, on the student's first day on that section, gives you a folder full of information and articles about the animals you will be working with. Also available to the student is the zoo's small, but growing library, located in the office of Jeremy Mallinson, the director. Mr. Durrell's extensive personal library is a great place to go during lunch or breaks to read or do research. (I was researching a project about the snow leopard and found lots of information.) It is not a take-out library. John Hartley, Mr. Durrell's personal secretary is very helpful suggesting where you might find information on any given topic.

On occasion, there were lecture in the zoo's classroom on such topics as the wildlife of Mauritius and Round Island by John Hartley, and the Pygmy Hog of Assam by Bill Oliver (Research Assistant.) Movies and slide shows were presented fairly regularly, and the staff is good at setting something up on request. I wanted to learn about the capture equipment, and Simon Hicks, the Trust Secretary, spent a lunchtime reviewing the capture equipment with us. Also available to the student is the weekly visit by the veterinarians and Lynn Walter, the biologist, who does constant biological testing. Some student use the open two week period to work with Lynn and possibly to do a project in parasitology or nutrition.

Basically, you get as much out of your four-month stay at Jersey Zoo as you put into it, both practically and academically. They will give you as much responsibility as you can handle and you will work hard; but the rewards are great.

Why Jersey Zoo? That is a question that many people have asked me. One reason is that this was an opportunity for me to get some solid practical experience working with animals. I personally got started in the zoo field in 1975, when the Philadelphia Zoo hired me for three months to work in the education department. (I graduated from Antioch College, a work-study school, and this was part of my degree plan) I worked there again in 1977 doing behavior studies and observations for the curator of mammals. I learned a lot at the Philly Zoo, especially from being around and talking to the Keepers. However, due to union regulations, I was not permitted to get any practical experience. Even when there was a strike in 1975, and the administration had to do some of the routine work for a day, I could not. The only way to get the experience is to get the job. There are some student Keeper training programs that have begun in the U.S., but they are few and far between.

Another reason I wanted to go to Jersey Zoo is because of the philosophy that Mr. Durrell and Jersey Zoo have on animal management. I had read most of Gerald Durrell's books and was quite impressed with the dedication to saving highly endangered species. Going to the Jersey Zoo and seeing it for myself lived up to all my expectations.

I was impressed by the small and very knowledgeable staff, and the self-sufficiency of the zoo. (They have a small farm, a compost pile; they burn the trash that isn't put into the compost, etc.) The animal collection is, of course, impressive, and the fact that everyone has a say in what's going on. I also like the fact that the animals are pretty well left alone, including those with medical problems until intervention is absolutely necessary. (The first time I saw Mr. Durrell was when he was on the Dick Cavett show about 3 or 4 years

A Training Period at the Jersey Zoo, continued

ago and I remember being impressed with his answer to Mr. Cavett's question about which animal was the most dangerous in a zoo. "The Zoo veterinarian," was Mr. Durrell's reply.)

The thing that impressed me most and surpassed my expectations is the great leadership at the Jersey Trust and the great sense of purpose and direction that is shown by them. Jeremy Mallinson is a zoo director who has the respect of all of his staff members. How many Keepers can look at the director of their zoo and know that he would, and often does, any of the jobs that they are asked to do?

Once I got to Jersey, I also became aware of the wide-spread approach that the Trust, an international organization, is taking to fulfill the aims that Mr. Durrell has been writing about for years. They have supported field projects such as the Pygmy Hog study (in conjunction with the Assam Valley Wildlife Society), and projects such as Helen Freeman's study of the snow leopard in captivity, and they have supported students from places like Mauritius to come to the Jersey Zoo and study, so that they can go back to their countries and work towards preserving indigenous species in captive propagation programs.

One leaves Jersey Zoo at the end of four months having learned a lot about a different concept in animal management. Today, with things changing and improving constantly in the zoo field, there is certainly a need for such a valuable knowledge.

Anyone who would like more information about Jersey Zoo or Howletts Zoo, can contact me, Ernie Karpeles, 313 Hamilton Road, Merion, PA 19066. If you are interested in going to Jersey for four months, a short working holiday, a Keeper exchange, or just a visit, you should contact Simon Hicks, Trust Secretary, Jersey Zoo, Les Augrès Manor, Trinity, Jersey, Channel Islands. The Howletts Zoological Park is at Bekesbourne, n.r. Canterbury, Kent, Great Britain.



AN INVITATION

The International Crane Foundation would like to extend an invitation to everyone attending the 1980 AAZPA National Conference. We will be giving free tours of the facilities before and after the conference to all members of AAZPA and AAZK. Please call or write for an appointment. to Kerry Hoffman, International Crane Foundation, City View Road, Baraboo, Wisconsin 53913 (608) 356-9462

ELEPHANT INTEREST GROUP

Jeheskel Shoshani, the editor of *Elephant*, reports that issue Number 4 is being compiled. The tentative Table of Contents includes the Minutes from EIG meeting for June 1979 and 1980, many articles and reports, information from the Elephant Interest Group Questionnaire, an update on the captive elephant population of North America, and a compilation of references which presently number over 400 and cover a period of 20 years from 1960 to 1980. Funds are inadequate at the present time for publication, however, for the estimated 150 page production. EIG members and interested individuals have been requested to give support either through membership fees or contributions. T-shirts are also available through EIG, Department of Biology, Wayne State University, Detroit, MI 48202.

conference.....79

Portland, Oregon

HUSBANDRY AND CAPTIVE PROPAGATION OF THE ORNATE HAWK EAGLE

Spizaetus ornatus AT THE OKLAHOMA CITY ZOO

by
Steve A. Clevenger
Senior Animal Technician

The Ornate Hawk Eagle *Spizaetus ornatus* is a small, rather buteonine forest eagle of the humid tropics of the new world. It ranges from central Mexico to northern Argentina and Paraguay and is also found on Trinidad and Tobago. The bird is not uncommon throughout its range. This forest eagle prefers the presence of some open areas and observed nests have been located in the canopy, some in silk-cotton trees as high as 95-100 feet (Brown and Amadon, 1969). This bird is seldom seen in captivity.

We in Oklahoma City are presently working with three pairs of birds which have been in the collection for from four to seven years. We initially sexed these birds by comparing weights and standard body measurements (wing, tail and tarsus) to reported weight and size ranges for the sexes. Because of a degree of overlap in the range of these figures we also practiced the time-honored method of crossing our fingers. Some combination of these has been successful as we have seen copulation and egg-laying in two of the three pairs. By the spring of 1976, all three pairs were moved from scattered areas of the zoo to three separate cages in a new off-exhibit breeding area. Here the animals are maintained on a year-round basis. These cages are 4.9 m square by 3.9 m high. The north side of each cage and 1.2 m of the east and west sides are covered with sheet metal inside and are insulated with 4.0 cm of styrofoam. The nest box in each cage is a 1.2 m cube. Its sides and bottom are also styrofoam insulated, as is the .6 meter baffle which is placed along the top rear perch to retain heat in the winter. During that season, several steps are taken to shelter these tropical birds from the Oklahoma winter wind. Wintering panels of translucent fiberglass cover the east and west sides and top of each cage. Heat is provided by three to four 250 W heat lamps which are thermostatically controlled from outside the cage. These include two heat lamps inside the nest box. If needed, the floor of each nest box may also be heated by a subfloor heating pad.

One-way glass and outside access to the nest box are provided on each cage. Also on the cage of our most prolific pair, a darkened observation booth allows constant observation of egg, parents and possible hatchlings. Inside each nest box a 15 cm deep by 67 cm square box filled with prairie hay has been provided as a base for nest building.

These facilities were designed as minimal maintenance units and as such the only regular visits to the cage are for feeding, watering and observations. The only major disturbance which the birds undergo is the semi-annual installation and removal of the winter panels and this occupies a total of only two days a year. Cleaning of the cages is minimal and results in a decrease in the disturbance of the birds. Minimal hosing removes most of the feces and the remaining uric acid is removed by normal precipitation.

continued

Husbandry of the Ornate Hawk Eagle at OKC, continued

The birds are fed once daily (in the morning) seven days a week. Small raptors require more food in relation to their body weight per day than large ones and thus require more regular meals (Brown, 1976). Ornate Hawk Eagles in the wild eat small mammals, birds and rodents. (Brown and Amadon, 1969). At Oklahoma City, we feed primarily young chicks and commercial raptor diet, regularly supplemented with rats and mice.

The three pairs of birds with which we are working are of varying ages. The oldest pair are at least nine years old. (They have been in the collection since 1972 and arrived in adult plumage). They have produced one fertile egg (in 1972) and several infertile ones and have shown no copulatory or nest-building activity since that time. The "middle" sexually mature pair is the most prolific of the three having produced six eggs in 1977, five in 1978 and two in 1979 including all three recorded captive hatchings. The third pair consists of a female and a younger male (approximately 5 years old) which have thus far shown no copulatory or nestbuilding activity.

Ornate Hawk Eagles nest at the canopy level often over 90 feet above the forest floor and are presumed to have a soaring, aerial display (Brown and Amadon, 1969). Identifiable courtship behavior in our birds has been minimal. In the seven observed copulations there have been no discernible preliminary displays. Many of these copulations occurred during the process of nest-building, all varied in length between 23 and 31 seconds, and all were observed between the hours of 0730 and 0930.

Nest-building activity has occurred throughout the year and has been concentrated in the period from the middle of October through the end of the following June.

Participation in nest-building in the zoo has been observed in both the male and female. In the wild, branches from 2.5 cm to 10 cm in diameter have been found in the nest (Brown and Amadon, 1969). We initially offered material of this size and the birds did carry some of it to the box. In one instance the female tried to carry a fallen perch 5 cm in diameter and approximately 2.6 m long into the nest box with obviously limited results. The preferred nesting material (that most often found incorporated into the nest) consisted of green, leafy branch tips (approximately .5 to 1 cm in diameter) cut and suspended from the perches in the cage. We developed this approach after seeing Neil Rettig's film of the harpy eagle in the wild. This bird gathers green, leafy branch tips as nesting material by hanging upside-down from the branches and cutting off the tips with its beak. In the ornates, this has resulted in one pair of birds haphazardly building a nest but not nesting. The second pair of birds has built a nest and carried the breeding cycle to completion.

Our initial approach towards a captive hatching in this species was to allow the parents to hatch and rear the young. On their first three attempts the adults each time left the nest (stopped incubation) at 22 days. These eggs were then removed, artificially incubated and checked for development. These early eggs were thin-shelled and development was rarely carried beyond quarter term. After embarking upon a program of dietary supplementation of calcium and phosphorus, we allowed the parents to incubate one egg, then removed the nest to incubate artificially, etc.

continued

Husbandry of the Ornate Hawk Eagle at OKC, continued

The next five eggs resulted in a succession of improvements, both in relative thickness of the eggshells and in increased development in fertile eggs. On 23 April 1978, copulation was attempted three times by the male before 0800. The following week showed increased incubating tendencies on the part of both the male and female, and on 30 May 1978, the ninth egg was removed for artificial incubation. The egg was moved to a Marsh Roll-X incubator with a dry bulb temperature of 37° C and a wet bulb temperature of 32-35° C. Forty-two days after removing this egg from the nest, it began to hatch. Pipping required twenty-four hours and the chick finally had to be helped from the shell. The chick lost weight initially (approximately 20 per cent of birth weight over the first three days), although the food intake for that period was over forty grams of chopped pink mice treated with Enzymine, a peptic enzyme. Days five and six showed a weight gain of almost 6 grams. However on day seven the bird did not eat, did not show digestion of food already in the crop and eventually lost strength and expired.

The second artificial hatching occurred on 9 January 1979. The egg deposited on 24 November 1978 was removed for artificial incubation after the parents had incubated the egg for 48 days and had apparently abandoned the nest. Three days later this egg was found recently hatched with the chick completely free of the shell on its own. A series of procedures for hand-rearing the chick were followed similar to that used with the first chick and after five days the chick again expired. Post-mortem findings on both chicks were minimal (non-conclusive), as both were strong and eating until the last day. In both cases the chick's general physical condition deteriorated sharply within an eight hour period immediately preceding death.

An amended set of procedures was then drawn up to be implemented should another incubator hatching occur.

An additional egg was laid 23 May 1979 which was again removed for artificial incubation. At 51 days the egg was opened and contained a full-term dead chick. Depression then set in and once again we waited.

Eight days after removing egg number twelve there was a noticeable increase in nesting activity and on 16 April 1979 an egg was laid at 0930. Firmly committed this thirteenth time to allowing the parents every opportunity to hatch this egg themselves, we waited. Incubation duties were shared by the male and the female. Literature on other *Spizaetus* species (Brown, 1977) indicates a sharing of incubation duties. This also seems to be the case with *Spizaetus ornatus*. In 176 random samplings on the total incubation time for all thirteen eggs, the female incubated 58 per cent of the time and the male 42 per cent.

On day 46 the egg was discovered pipping at 0930. For the next three days no change was noticed in the egg. Incubation continued (by the male primarily the last six days) and on the fifth of June the a.m. check revealed a recently hatched dry, strong, vocalizing chick. Total incubation time plus hatching time was fifty days. Of 19 random samplings during incubation the female incubated 53 per cent of the time, the male 47 per cent.

The new chick's first three days were uneventful and checks of the nest revealed only one or the other of the brooding parents. By the afternoon of day 4 however, a torrential rainstorm was occurring and after adding two rats (food animals) to the cage, I retired to the observation booth.

Husbandry of the Ornate Hawk Eagle at OKC, continued

Each adult took one rat to the nest edge and ate it entirely. During this period the chick had risen to its tarsi and was vocalizing repeatedly. After eating the rat entrails herself, the female started stripping meat from the body cavity of a food chick which had been previously taken to the nest. She then offered the meat to the chick which took it after a little difficulty. The female fed the chick five times over a period of ten minutes, each time feeding only chicken and no regurgitated rats. At the end of this ten minute period the female straddled the chick, tucked the young eaglet under her breast and began brooding.

The next day the youngster was not be found in the nest and a subsequent search turned up the head, a portion of the spine and one foot, the remainder of the bird apparently eaten by one or the other of the parents. Because of the diligence with which the parents incubated during this hatching and the degree of parental care observed we feel that we can rule out the killing of the chick by the parents as the cause of death.

That brings us to the present. It also focuses our attention on the first and second weeks in October, the approximate time we can expect our laying pair of Ornate Hawk Eagles to again return to the nest. The time involved in this effort has been long -- well over four and a half years at this point. And as you can see this period has often been wrought with disappointment, and, at times, disillusionment. The final end has been closely approached but has not been reached. Toward this end we will again early in October watch for copulation, supply nesting material and hope for the best. The third time was a charm, but the fourth time should produce a winner.

Acknowledgments

Many people have been involved in this project from the very beginning and to them goes the thanks for making an undertaking like this possible: Former Curator Linda Turner for initiating and carrying out the early stages of this project and for information on hand-rearing; George Walters for many of the slides presented with this paper; Zoo Docent Don Henderson for many long hours of productive observations; Zoo Director Lawrence Curtis for valuable editorial assistance and to the keepers who have worked with and alongside me for the past five years.

Special thanks also to Lawrence Curtis and the Oklahoma City Zoological Trust for believing in and supporting the idea of the professional keeper by underwriting representation to this conference.

Literature Cited

- Brown, L.H., 1976, *Birds of Prey, Their Biology and Ecology*, A&W Publishers, New York.
Brown, L.H., 1977, *Eagles of the World*, Universe, New York.
Brown, L.H. and Amadon, D., 1969, *Eagles, Hawks and Falcons of the World*, Country Life, London.

Products Mentioned in the Text

- Marsh Roll-X incubator, manufactured by Marsh Farms, 14232 Brookhurst St., Garden Grove, CA 92643.
Enzymine, manufactured by Haver-Lockhart Laboratories, Box 390, Shawnee, KS 66201.

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Portland, Oregon

THE AAZK PRESENTS

A STANDARDIZED KEEPER TO KEEPER

ANIMAL DATA TRANSFER FORM

by

Jane Hansjergen

Ungulate Keeper, Sacramento Zoo

My purpose for speaking with you today is to explain and promote the new AAZK keeper-to-keeper ANIMAL DATA TRANSFER FORM. I believe that the use of this form will greatly contribute to upgrading the professional conduct of the keepers who participate.

In our profession we deal with animal exchange, sales and breeding loans, all of which require animal transport. Unfortunately, the transport too often resembles the shipping of inanimate merchandise with a health certificate taped to the side of the crate instead of an invoice.

Our professional priorities, the very essence of our jobs, are the animals we care for. As keepers we work so hard in the daily care and maintenance essential to the well-being of wild animals in captivity; yet to be true professionals our care and concern for these animals should not end the moment they are put in a shipping crate and leave our facilities for a new destination.

How often have we all received an animal with no more information than its species, age, sex and medical clearance. The animal has just experienced sudden removal from a familiar and safe territory; a frightening trip, sometimes extended over a number of days in cramped quarters; and sudden arrival into a new and frightening environment. It is often recovering from tranquilization. It may be suffering from hunger and thirst if the trip was long or if the animal was too traumatized to accept food or water. The mere trip, no matter how carefully planned, is already an overwhelmingly taxing experience for the animal, then in our ignorance of the this particular animal's needs, we often place it in an enclosure completely alien to what it was accustomed, feed the animal a diet it may have never had before and clean or maintain the exhibit in a way which violate the mental health more than contributes to the physical health. We often end up with a neurotic animal which will not eat, retreats to a corner of the enclosure or displays extremely aggressive behavior. Usually, in time, all these problems are worked out and the animals and keepers adapt to each other, however, not without great cost to the animal and wasted time and frustration for the keeper.

How much easier it would be for all concerned if the animal was shipped with an accompanying fact sheet giving all pertinent information on the diet, environment, health and behavior. The animal's adaption to its new home can be made with much more ease and speed. In short, the entire procedure can be done professionally.

There is a second, different sort of problem that arises from the shipment of an exotic animal from one zoo to another and that is the

Animal Data Transfer Form, continued

emotional stress the keeper shipping the animal feels. It is very hard to put do much hard work, time and personal involvement into an animal and then suddenly ship it off, never to hear of it again. We keepers become attached to our charges and need the personal gratification of knowing they continue to be in good hands when they leave our care. By sending a data form with the animal when it is shipped out, the keeper who cared for that animal would be assured that every thing possible has been done to adapt it to its new home. Also, if any problems arise, further communication between the involved keepers will be made easy through information provided on the sheet.

The purpose, as I understand it, of the AAZK is to promote professional animal care and to upgrade and expand exchange between keepers. I feel that standardizing animal shipment through intercommunication of keepers could only promote the degree of professionalism we all seek in this our chosen field.

It is for these reasons that the AAZK has developed an official form to use in the transport of animals between professional exotic animal people and institutions. Officially it is known as the AAZK Animal Data Transfer Form.

The Lincoln Park Zookeepers in Chicago are primarily responsible for the rise of this data transfer form. They invited Keepers from their general vicinity to join with them for an evening to "rap" about a form to accompany all animal transactions from Zoo to Zoo. From that evening in the fall of 1977 came the first tentative outline for such a form. It was two full pages long and busy and complicated. It was obvious that it needed consolidation and improvement, but it was a good start.

During the 1978 AAZK Conference in Gainesville, Florida, Bernie Feldman (Miller Park Zoo, Bloomington, IL..) was appointed as the project chairman of the form by Dennis Grimm, our AAZK president. Through the help of Mr. Randall Carney (Bernie's Supervisor) a second draft of the transfer form was drawn up. This second form was organized better and was easier to follow, but still rather long-winded.

Bernie concentrated his efforts on consolidating the information on the form and managed to condense it down to one sheet. Bernie and Dennis Grimm volleyed this form back and forth throughout the winter of 1978-1979 with the assistance and guidance from Dr. George Rabb (Director of Brookfield Zoo, AAZPA Board Director), Mr. Robert Wagner (AAZPA Executive Director) and Mr. Randall Carney. The form they developed is the final official AAZK Animal Data Transfer Form.

A copy of this form was submitted to the AAZPA and printed in the July AAZPA Newsletter for the purpose of exposure to AAZPA personnel. AAZPA membership response to the implementation and eventual usage of this form was encouraged as most welcome. Thus far general response has been very encouraging and positive with minor suggested corrections such as "change 'age at transfer' to 'birthdate'".

Hours of work, discussion, correspondence and care have gone into the preparation of this transfer form. It is a dream of many people finally made into a reality. To make this reality work is, however, completely up to you, the keepers of America. It needs to be discussed, criticized, approved of and used by a large number of animal keepers.

Animal Data Transfer Form, continued

That is why we are presenting it to you here at the AAZK National Conference. Please, take this form back to you home zoos. Present it to your directors, management and Zoological Societies. Work to have it approved and used as a normal integrated part of animal transactions at your zoo. Help the AAZK and the Zookeeping field improve upon its professionalism with the implementation of this Transfer Form. The end result can only benefit the animals concerned, your zoo, the AAZK and the keeping profession.

Ed. Note: The form was published in the December 1979 issue of the Animal Keepers' Forum, page 240. Additional copies of the form are available from

Bernard Feldman
Miller Park Zoo
1020 S. Morris Ave
Bloomington, IL 61701

Editors Note: Bernie Feldman wrote AKF recently:

At this point, there is a large supply of Animal Data Transfer Forms (ADT Forms) on hand for any Zoological/Aquarium institution to use, free of charge, as a matter of courtesy from AAZK.

It is most enlightening to see an ADT Form accompanying an incoming animal from another Zoo/Aquarium that fully describes the animal's past history. It is equally rewarding to fill out an ADT Form for one of your animals or a group of animals realizing that your special care of the animals goes with them and, hopefully, there won't be any surprises for the recipient Zookeepers!

I am still interested in any further comments or other input concerning these Forms. I am convinced that the ADT Forms will promote themselves owing to their own merit of transfer of animal information. I encourage all to contact me for ADT Forms.

Again, these Forms are free, yours for the asking! For an examination of the Form, please refer to AKF, the December 1979 issue and the AAZPA Newsletter August 1979. Thank you.

Bernie Feldman
Miller Park Zoo
1020 S. Morris Ave
Bloomington, IL 61701



NEW FIRST AID FACILITY AT BALTIMORE ZOO

Two professionally trained Paramedics are available daily at the Baltimore Zoo. The Emergency Care Team is funded and staffed by the Mayor's Office of Manpower Resources and provides conscientious and well-trained care to accident victims. The paramedics were particularly valuable during a recent storm at the Zoo and alleviated potentially dangerous injuries.

The First Aid Station is centrally located and marked by a bright red and white First Aid Flag.

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Portland, Oregon

FRESNO'S UNIQUE NEW REPTILE FACILITY

by
Mary L. Swanson

We at the Fresno Zoo are very proud of our brand new herpetology facility which has a North American emphasis. It is unique in the zoo world, in that each exhibit unit has computerized environmental controls.

We have never exhibited many reptiles because we had no building for them. A reptile house was included in our master plan that was proposed in the early '70's. The dream was to exhibit and breed reptiles from extremely varied environments, from arid deserts to moist tropics. Over a period of many years, the plan evolved into the unique facility we have today.

In the late '60's, Dr. Paul Chaffee, our director, saw an early form of environmental chamber designed by Troy Powell, a herpetologist. Troy was unable to manufacture it, so Dr. Chaffee turned to Dr. Charles Wright of the Climatek Company of Albuquerque, N.M. Then Ron Tremper, who is now our herpetologist, became involved. Ron began at our zoo as a teenage volunteer, became a summer keeper in his college years, and eventually our herpetologist. He and Dr. Chaffee worked closely with the engineers on the system. The Climatek version worked on cams. Eventually the contract went to a local Fresno firm, Energy Systems. They came up with many improvements, the most important being the use of computers, which greatly increased the capabilities of the chambers.

Construction of the 5800 sq. ft. building began in April 1978. The building is made of natural materials with stabilized adobe walls both outside and inside. There are no windows to the outside in the building, since we wanted to eliminate glare on the viewing glass, and to prevent the animals from seeing the natural photoperiod, to which they are sensitive. Part of the outer walls act as retaining walls, against which we built up a hill for landscaping. This is part of our master plan, in which we change our flat land into rolling hills. The reptile house is just beyond our first master plan unit, the Bison-Tule Elk exhibit, completed in 1976. The two exhibits are tied together architecturally by the landscaping -- a rustic natural look. The reptile house is approached over a raised bridge which spans our man-made dry river bed. The whole effect is that of a low profile building nestled in a woody area. This is part of our North American area. Opening day on July 7, 1979, culminated an 11 year dream for Dr. Chaffee and Ron Tremper.

The project is not yet complete. The area in front of the building is to include a large art work by the renowned artist, Stan Bitters, who also designs much of our landscaping. In addition, the area southwest of the building will have turtle ponds, a natural stream, and a place for our breeding Galapagos tortoises.

The building is designed for public comfort, keeper comfort, and animal comfort. The public outer corridor is air-conditioned and carpeted. The viewing windows have slanted frames to prevent trash from accumulating

Fresno's Unique New Reptile Facility, continued

and to provide a better aesthetic effect. The front of each exhibit has two panes of glass -- which are actually on the exhibit chamber and not in the walls. These inner walls bear no weight and are moveable panels of rough-sawn redwood. If we wish to rearrange the sequence of exhibits, we can just move the panels. The lighting is rheostatically dimmed so that the public can view the exhibits easier. A continuous step is provided for children.

Vertical windows in the doors are provided so the public can view "Behind-the-scenes" or we can close these off with shutters. This is for educational purposes. Some of our docents will be trained to give special reptile tours. At present, the learning center with its back-projected slides and tape commentary is the main educational thrust, along with the graphics. Ron designs the graphics. They are first typed in black on white, then photographed for reversal, a photo or map is added, and green tissue paper goes behind the script for easier reading. Recently, Ron added an educational exhibit of hatching red-eared turtle eggs and hatchlings.

The keeper work area is separately air conditioned. The keepers can work in comfort instead of in the high temperature usually associated with keeping the whole building warm. A large chopping block island work center has a dishwasher on one side, a stainless steel sink, cabinets, and a small refrigerator strictly for storing the antivenins. Each exhibit with poisonous reptiles is marked with a colored dot that corresponds to the proper antivenin. There are emergency alarm buttons in several locations and the alarm has an unmistakably loud sound.

Each work room has its own stainless steel sink. There is a quarantine, acclimation, and holding room for new specimens and those temporarily off-exhibit. There is provision for full-spectrum lights over each aquarium. This room also houses our incubating alligator eggs. Ron successfully hatched 17 last year, and currently has 45 eggs incubating.

There is a cool room for amphibians. It has its own temperature controls, and is usually kept at 63°F. There are several species of salamanders housed there. In each room there is a clipboard with the record sheets for each animal. Ron also has complete duplicate records in his office.

There is a turtle room that presently houses mostly desert tortoises, many of which hatched at our zoo. There is a rodent room, which is really a food room. In addition to the rodents, it houses goldfish and a cricket colony. One food has to be acquired the hard way. Our reptile keepers hunt for large ants behind the reptile house. The ants are for our horned lizards, which are so difficult to keep in captivity.

There are battery pack lights that go on instantly in case of power failure. We would not want a blackout while handling a venomous reptile. Because the building is so highly automated, power failures are a real threat. Each building is on a burglar alarm system with microphones tied to a central unit. If the power fails during the night, they know by the sudden silence, and call Ron at home so he can come out and check if the backup system is working.

It is now known that many species of amphibians and reptiles can be reproduced by artificial fluctuations in day-light cycle and

Fresno's Unique New Reptile Facility, continued

temperature. Since our objective is to provide the very best care for, and ultimately the reproductive of, each species, the environmental chambers are the most important part of our system. There are three sizes (20, 32, and 66 cu. ft.). There are a total of 31 units. The cabinets are fiberglass, with a drain for ease of cleaning, and special locks for the doors. Each unit has a small computer with little chips. Each chip is capable of storing 2,000 bits of information. All components inside are easily replaced. The units are moved up against the corresponding framed hole in the wall panel, rolling on casters. Each caster has a jacking system for levelling and locking in position. The units cost over \$5000 each.

The idea is to try to duplicate the animal's natural environment. We can program each chamber for temperature, humidity, and light cycle, and even gradually change the seasons, for up to two years in advance. With growth lights (Vita-Lite), we can use real plants instead of plastic ones. Each unit has the necessary germicidal ultra-violet lights. Air is recirculated through grilles, then filtered through medical filters that can take out virus size particles. The water in each unit is automatically de-ionized and is connected by just snapping a line on each unit like an umbilical cord.

The herpetologist programs each unit for individual environmental needs according to the species at hand. The control panel on the computer unit has a digital readout of chamber temperature at all times. By following certain procedural steps, readouts of humidity, time of day or night, etc., can be obtained. Maximum temperature is also set for each unit. There is a visible and audible alarm if temperature is too high, water too low, or the fan fails. The keepers monitor these controls and can, if necessary, re-program for proper conditions. The temperature limits of the modules are 45° to 120° F. and the relative humidity limits are 20% to 90%.

Each chamber is arranged with substrate and plants suitable to the natural environment of the animal. There are desert exhibits such as the rosy boa. The Bell's horned frog has a more tropical display. The mountain king snakes and the mountain garter snakes are in more forest-like surroundings. The rattleless rattlesnake and the Pacific rattlesnakes are in rocky outcrop type exhibits. Some chambers house two species, such as the spiny lizards with the horned lizards. The Tokay gecko lives with the Burmese python. The ridgenose rattlesnake and the twin-spotted rattlesnake are together.

Keeping such varied types of reptiles has always been difficult in the traditional reptile house. The climate controlled chamber is an important advance in providing the best of care for reptiles. Naturally, the ultimate goal is propagation. This becomes especially important with endangered species, such as the blunt-nosed leopard lizard from our own San Joaquin Valley. When the units were planned Ron fully expected that they would provide the proper conditions for reproduction. His expectations were quickly realized. In June, within one week of being placed in their environmental chamber, the Honduran rat snakes were mating, and soon laid eggs, which we are now incubating. We realize this may be coincidence -- that just changing them from their aquarium to different housing may have triggered the mating response. But it was definitely a hopeful sign. Since that time, we have had lots of breeding in the environmental modules. The Central American

Fresno's Unique New Reptile Facility, continued

milksnakes, the leopard gecko, the aberrant king snakes, and the California mountain king snakes have all bred.

Though it is still early to tell, we do feel that the potential for breeding success with this new system of care has to be very good. There is no doubt in our minds that individually programmed environmental exhibits allow us to provide the best care possible for captive reptiles and amphibians, thus increasing their longevity.

Our new amphibian and reptile exhibit has been very popular. Attendance at the zoo has rise 37% over the same time period last year. Probably 90% of the people who visit our display have no conception of what a radical departure from traditional reptile exhibition it is, nor what great potential it has. Most of the public is more interested in oohing and ahhing over our recent acquisition, a huge 55 pound (25 kg.) red-tailed boa.

But for us the greater excitement is in the daily achievements in care and reproduction of our reptiles and the future potential of our facility. We have already had many visitors from other institutions who are interested in the system. We would like to extend an invitation to all of you to come and see it.



"MEET A KEEPER" DURING BALTIMORE ZOO WEEK

The Baltimore Zoo has scheduled a week of activities and special programs for "Zoo Week." Two sessions are scheduled daily to "Meet a Keeper." Other activities are special elephant demonstrations, a plant sale to help meet the expense of improving zoo exhibits, a banquet with food and music, rides and other entertainment.

Keepers from all the animal departments are scheduled to meet the visitors, talk briefly about their jobs and answer questions from the public. The sessions will take place in the old lion cage (presently unoccupied).

ADDRESS CHANGES FOR PROFESSIONAL MEMBERS

Mary Anne Cramer
1701 N. Roxboro Road #1
Durham, NC 27701

James L. Patterson
6406 Jenny Drive
Luke Wales, FL 33853

William Dunlap
3707 Roland Ave
Baltimore MD 21211

Janet J. Phipps
2133 Whistler Ave
Baltimore, MD 21230

Jill Grade
11000 Kittyhawk
Tampa, FL 33615

Nancy C. Snyder
5458 Cross Creek
Mobile AL 36609

The following letter was received by Pat Sammarco, as President of AAZK. She wanted AKF to publish it as a point of information. This is not to imply approval of membership involvement or disapproval of the program, but simply a way to make keepers aware of the program's potential to show keepers in positive or negative ways. A nationally aired show as proposed could have an impact on all keepers.

Alan Landsburg Productions
1554 South Sepulveda Blvd
Los Angeles, CA 90025 213 473-9641

President AAZK.

Alan Landsburg Productions is proud to announce its newest television series, THOSE AMAZING ANIMALS. The program will begin airing this September on ABC with Burgess Meredith as our host and narrator.

We are contacting your organization in an effort to establish an authoritative network of information sources. We hope to stimulate your curiosity, engage your interest, and, whenever possible, to enlist your assistance. You will find us worthy of your scrutiny.

Our show will be an hour-long, magazine-format presentation focusing on the colorful, perilous and often heart-warming adventures within the animal kingdom. We are seeking story concepts that will generate an emotional response as well as stimulate the intellect and the imagination. We stress that we will maintain the dignity of all animals involved. Our aim is to entertain and enthuse, but never to exploit.

We project from six to eight weekly segments which center around the unusual and, for the general population, the unexplored. Our concern is with the full spectrum of animal activity, their intelligence and behavior, their interactions with man and with each other -- from microorganisms to elephants and whales. Examples include dogs that hear for the deaf; chimpanzees that communicate via sign language; endangered wildlife; a newly evolved or hybrid species; and advances in medicine and husbandry.

Should you have any suggestions or if your organization, your affiliates or your colleagues come in contact with any relevant material, please direct it to THOSE AMAZING ANIMALS at the above address and phone number.

Thank you in advance for your help with this exciting and important project. We are looking forward to talking with you.

Sincerely,

Gary Moskowitz
Staff researcher

Pat's reply included these statements:

"Much of the public still sees zoos as animal prisons, and I hope some of your air time will involve presenting our institutions as facilities dedicated to animal conservation through public education and careful management and husbandry. I hope that you will be able to show today's Zoo Keeper as the dedicated professional, very personally involved in public education, conservation and animal management.

continued next page.

"As keepers, our members often cannot offer information for publication without approval of their zoos' administration, and I hope you will be in contact with zoo directors for release of stories at their institutions."

THE STRUGGLE FOR SURVIVAL

SHEEP COLLAR RESEARCH

The U.S. Fish and Wildlife Service and Texas A & M University are seeking to work out a cooperative agreement for research into the effects of Compound 1080 in the toxic sheep collar as a method for controlling coyotes. The toxic collar is recognized as a highly selective way to eliminate an "offending" predator-- one which tries to kill livestock. The research will try to determine how much 1080 is a lethal dose to a coyote and how much has secondary impacts on non-target species.

An ad hoc oversight committee, balanced between representatives of sheep and goat raisers and environmental organizations will be part of the stringent controls.

HABITAT MANAGEMENT PLANS FOR POWER LINE RIGHTS-OF-WAY

Electric power transmission line rights-of-way can be slashes of wasteland meandering across the countryside or beneficial habitat for wildlife depending upon how wisely these corridors are managed.

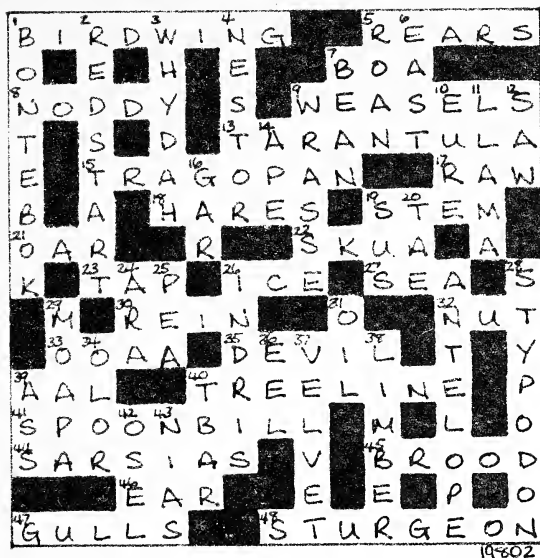
The Fish and Wildlife Service National Power Plant Team has completed a technical assistance manual to promote beneficial use by aiding wildlife biologists and right-of-way managers in designing and directing wildlife management plans for transmission line rights-of-way.

The Interior Department agency estimates that 300,000 miles of transmission lines occupy about 5 million acres of land--largely suburban, rural, forested or uninhabited. This acreage is expected to double or triple in the next 30 years as national energy development accelerates.

The Management of Transmission Line Rights-of-Way for Fish and Wildlife is a three-volume manual which describes general strategies for effective right-of-way management. It combines the goals and expertise of utility maintenance personnel with that of wildlife biologists.

Volume 1 presents general vegetation management strategies and background information on right-of-way costs, engineering constraints, land use rights, vegetation maintenance, and wildlife management. Volumes 2 and 3 present ecological information on selected plant and wildlife species in the eastern and western United States, respectively. The users will be able to develop specific management plans for any of 61 biological regions of the United States.

NATUREWORD



Neville Pike, Keeper, Metro Toronto Zoo

chapter

Audubon Park Zoo, New Orleans,
Louisiana elected new officers;
President....Patty Sidbury
Vice-pres....Frank Kohn

news

OPEN LETTER TO ALL KEEPERS

The Louisville, Kentucky, AAZK Chapter will hold it's Third Annual Symposium November 7,8, and 9, 1980. This year the topic will be "Infant Care and Development." We would very much like to have more keeper input and the bulk of the program to be given by keepers themselves. Therefore, we are asking for submission of papers regarding infant care. This topic includes hand-raising or well documented mother-rearing. Since we realize transportation costs may be prohibitive to some, we are prepared to pay part of these expenses for persons giving accepted papers.

When submitting papers, please include approximate length of talk, use of visual aids such as slide projector, movie projector, etc., and these will be provided. Please submit papers for consideration by September 1, 1980. This year's symposium will be held at the Ramada Inn.

Please send papers to: Mary Jo Marshall, Program Chairperson,
Louisville AAZK Chapter, 1100 Trevilian Way, Louisville, KY 40213.

We are indebted to the AAZPA Newsletter for allowing us to reprint portions of this section from their "Positions Available" listings. This is a monthly service to us, for you.

SENIOR KEEPER... responsible to curator for supervision of personnel, maintenance of facilities and direction of activities within Children's Zoo. Hatchery, animal training or exhibit construction experience helpful but not required. Must have at least two years' zoo experience and have demonstrated supervisory abilities. High school diploma or G.E.D. preferred. Salary \$15,400. Send resume to: John C. Donaho, Children's Zoo Curator, 1513 Outerbelt Drive, Houston, TX 77030. (713) 522-3961.

CURATOR... operate and manage small but expanding animal collection. Responsibilities include husbandry and exhibition of all vertebrate classes, record keeping and supervision. Requirements include minimum of Bachelor's Degree in Biological Science, training and/or experience in management of zoo animal collection, and training and/or experience in supervision of personnel; background in behavioral research, conservation work or education desirable. Salary: \$10,150 - \$13,500, depending on experience, plus excellent benefits. Send resume and three letters of recommendation to: Ronald M. Schassburger, Ph.D., Director, Ross Park Zoo, 185 Park Avenue, Binghamton, NY 13903.

AVICULTURIST... responsible for acquisition, care and propagation of tropical birds as well as small colony of puffins. Will co-ordinate entire rain forest exhibit including plants, reptiles and mammals. Applicant must possess thorough knowledge of avicultural principles and practices and bird exhibiting techniques. Send resume to: Robert J. Mottice, Asst. Curator of Husbandry, National Aquarium in Baltimore, 10 South Street, Baltimore, MD 21202. EOE

ASSISTANT DIRECTOR/ANIMAL MANAGEMENT... responsible for a total program of animal management. Requires extensive knowledge and experience in zoo animal husbandry, natural history, exhibit development and research of captive wild animals; proven experience in personnel management and administrative principles; graduation from a college with major in zoology or related field. Salary: \$23,298 - \$32,726, plus benefits. Closing date 15 September. Send resume to Personnel Office, Oklahoma City Zoo, 2101 N.E. 50th, Oklahoma City, OK 73111. EOE.

CURATOR/MAMMALS... under direction, to be responsible for mammal collection with emphasis on solid husbandry, biologically suitable accommodation and planned propagation. Minimum entrance requirements include familiarity with operation of large zoological parks, particularly curatorial activities. Job description on request. Send resume by 15 August 1980 to: Dr. Gunter Voss, Director, Zoological Parks, Box 39, Royal Oak, MI 48068.

MOVING?

Please send address changes to
Brenda Jarboe, Administrative Secretary
American Association of Zoo Keepers
National Headquarters, 635 Gage Blvd
Topeka, KS 66606

ORPHEUM
SOCIETY



INFORMATION FOR CONTRIBUTORS

Animal Keepers' Forum publishes original papers and news items of interest to the Animal Keeping profession. Non-members are welcome to submit articles.

Articles should be typed or hand-printed. All illustrations, graphs and tables should be clearly marked, in final form, and should fit in a page size of no more than 6" x 10" (15 cm. x 25½ cm.). Literature used should be cited in the text and in final bibliography. Avoid footnotes. Include scientific names.

Articles sent to *Animal Keepers' Forum* will be reviewed for publication. No commitment is made to the author, but an effort will be made to publish articles as soon as possible. Those longer than three pages will be separated into monthly installments at the discretion of the editorial staff. The editors reserve the right to edit material without consultation unless approval is requested in writing by the author. Materials submitted will not be returned unless accompanied by a stamped, self-addressed envelope.

Telephoned contributions on late-breaking news or last minute insertions are acceptable. However, phone-in contributions of long articles will not be accepted. The phone number is 913 272-5821.

DEADLINE FOR EACH EDITION IS THE 20th OF THE PRECEDING MONTH.

Articles printed do not necessarily reflect the opinions of the Animal Keepers' Forum editorial staff or of the American Association of Zoo Keepers.

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Professional (full-time personnel)\$20.00 annually
Affiliate (part-time keepers, managerial personnel)\$15.00 annually
Associate (interested individuals)\$10.00 annually
Contributing/Institutional.\$50.00 annually

All memberships include subscriptions to the *Animal Keepers' Forum*. 50% of the member's dues are budgeted for the publication. The journal is not available by subscription only.

All new members receive a membership card good for free admission to many zoos and aquariums in the U.S. and Canada.

The AAZK National Headquarters has shoulder patches available for \$2.00 and back issues of the *Animal Keepers' Forum* for \$1.00.

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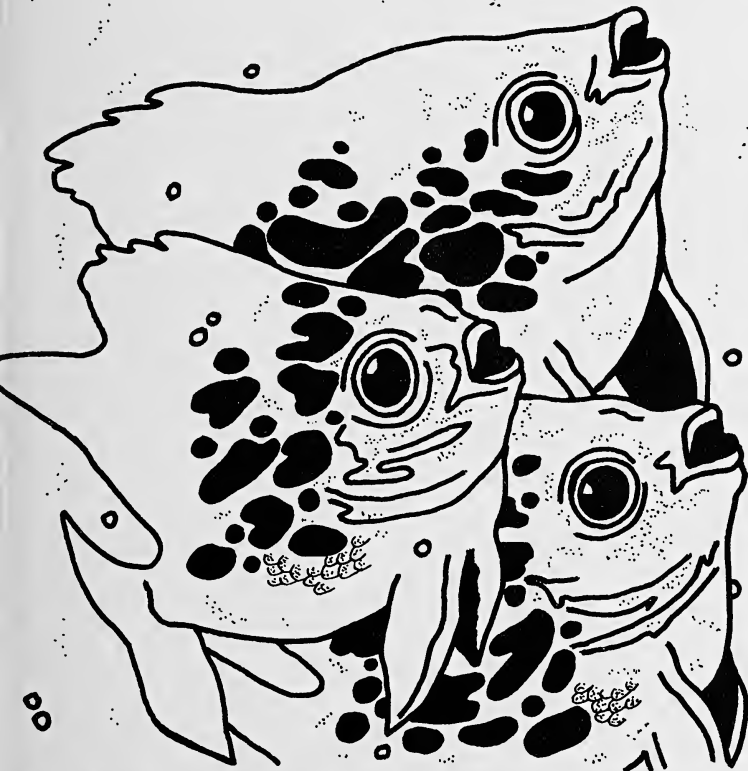


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Animal Keepers' Forum



Dedicated to Professional Animal Care

SEPTEMBER 1980

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Animal Keepers' Forum is a monthly journal published by the American Association of Zoo Keepers, 635 Gage Blvd., Topeka, Kansas 66606.

Second class postage is paid at Topeka, Kansas. Return postage is guaranteed.

AMERICAN ASSOCIATION OF ZOO KEEPERS
NATIONAL HEADQUARTERS, 635 GAGE BLVD., TOPEKA, KS 66606
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The September cover illustration is by Lutz Kuschinski of Glasgow, Scotland. Mr. Kuschinski was one of the first to respond to the request for artwork for AKF covers. He did superb work on a hummingbird (May 1979), a rhinoceros (September 1979) and for this month a delightful aquarium scene. Such versatility! He wrote, "My drawings signify a particular moment between keeper and animal." Thanks for sharing that moment.

SCOOPS and SCUTTLEBUTT

1981 CONFERENCE BID ANNOUNCED, 1982 BID OPEN

Congratulations to the Roeding Park Zoo and the Fresno AAZK Chapter for their successful bid for the 1981 conference!

Bids will be accepted through September for the 1982 conference of AAZK. Submit a letter to Pat Sammarco describing facilities available. The decision will be made at the Montgomery board meeting.

ELEPHANT KEEPER INJURED

On July 5, a keeper was seriously injured while working with our pair of African elephants at the Fort Worth Zoo. Jeanne Jacobsen was cleaning the outside exhibit area when the male elephant Benny began to give her trouble. Although he is kept chained so the female can get out of his reach when necessary (he is reaching sexual maturity), he still has access to most of the outside yard.

After an initial mock charge by Benny, Jeanne's attempts at discipline were apparently ineffective as he charged a second time. With trunk raised, he forced her into the front corner of the exhibit with his head. The solid wall on the right and the horizontal bars across the front prevented an easy escape. Fortunately, Benny backed off and Jeanne was able to slip through the front of the exhibit.

Her injuries included a dislocated shoulder, broken shoulder blade and collar bone, three broken ribs and a broken jaw. Despite being bandaged and wired and strung up to traction apparatus, she is in good spirits and is healing well. But the backpacking trip to Colorado in August will have to be postponed for awhile.....
Peter Shannon

TULSA ZOO HOSTS ELEPHANT WORKSHOPMark Swanson

All elephant keepers are cordially invited to attend an informal elephant workshop at Tulsa Zoo on October 11th and 12th, 1980. We feel this would be an excellent opportunity for exchanging ideas, experiences and making contacts, as well as having fun.

Topics to be discussed include foot care, pros and cons of working a daily "show" routine, and how important is chaining? There will be time for any other suggested topics and for socializing.

Tulsa AAZK Chapter will provide sleeping accommodations for those interested. Write Mark Swanson, Tulsa Zoo, 5701 E 36th St. No., Tulsa, OK, 74115 or call (918) 835-8471.

conference..... 80

Montgomery, Alabama

October 5-9

Saturday, October 4, afternoon: Pre-registration

Sunday, October 5, all day: Registration and Board Meeting, *see p. 196.*
evening: Ice Breaker Cruise on Riverboat

Monday, October 6, day: Presentation of papers, *see page 195.*
evening: Regional Coordinators Meeting, All R.C.'s and anyone interested are invited to attend. R.C.'s are a vital part of AAZK and this is an opportunity for all members to learn about their functions. The hospitality room will be open, also.

Tuesday, October 7, day: Tour of Birmingham Zoo
evening: Film Festival and Hospitality Room

Wednesday, October 8, morning: Papers
afternoon: tour of Montgomery Zoo
evening: Film Festival and Hospitality Room

Thursday, October 9, morning: Papers
afternoon: Business Meeting
evening: Banquet, Keynote Speaker, Non-animal Auction

And there will be the traditional Volley Ball Game!

Conference headquarters is the Holiday Inn State Capitol: Southern hospitality for \$23 for single and \$29 for double.

For registration, please fill out this form and return with fees to
Laura Strickland, Conference Coordinator
Montgomery Zoo, PO Box ZEBRA
Montgomery, AL 36109

Please make checks payable to AAZK Conference

----- REGISTRATION FORM -----

NAME _____

STREET _____ CITY _____

STATE _____ ZIP _____

ZOO/ORGANIZATION _____

POSITION _____

- () MEMBER OF AAZK - REGISTRATION FEE: \$50
() MEMBER OF AAZPA - REGISTRATION FEE: \$60
() I wish to share a room at the Holiday Inn Capitol.

The registration fee includes coffee breaks, both zoo tours, three lunches, the cruise and the banquet.



- Venomoid Surgical Procedure in Asiatic Cobras
Mike Coker/Topeka Zoo
- The Keeper as an Education Resource
Pattie Kuntzmann/Philadelphia Zoo
- Coccidiomycosis (Valley Fever) and its Treatment in Western Lowland
Gorilla: A Keeper's Perspective - Michael Carpenter/Phoenix Zoo
- Lizard Husbandry at the National Zoological Park
Bela J. Demeter/National Zoo
- Diverse Role of Zookeepers at Roeding Park Zoo
Sally Smith/Roeding Park Zoo
- Supplemental Feeding of Maternally-Reared Red Pandas
Kevin Conway/Front Royal
- Animal Keepers' Forum* Welcomes the AAZK National Headquarters
Mike Coker/Topeka Zoo
- Handrearing & Development of a Rothchild's Giraffe
Marcia A. Clevenger/ Oklahoma Zoo
- Role of Keepers as Educators in Smaller Zoos
Anne Miller/ Birmingham Zoo
- Akron Children's Zoo Grows Up
Carleton Bailie/Akron Zoo
- Handraising Two Baby Hippopotamuses at the Kansas City Zoo
Margaret Cook/Kansas City Zoo
- A Theory on the Origin of Homonid Bipedalism
Gary Tibbetts/Albuquerque Zoo
- Transportation/Care of Zoo Animals
Barbara Brand/Miami Import-Export Center
- Growth Rate of a Mother-Reared Polar Bear
Nancy Snyder/Zoo of Arkansas
- Problem of Multi-Species & Natural Habitat Displays
Frank Kohn/New Orleans Zoo
- Observing Trumpeter Swans
Mary Bole/Kansas City Zoo
- Propagation of Common and Purple Gallinules at the Montgomery Zoo
Mark Ratliff/Montgomery Zoo
- Opportunities in Small Zoos
Chuck Clift, Zoo Director, Montgomery Zoo
- Tell It Like It Is
Randall Reid/Birmingham Zoo

from the President

Dear Fellow AAZK Members,

AAZK board meetings will be held all day on Sunday, October, 5, and will include reports from committee heads, administrative personnel and project chairpersons. All members are invited to attend these discussions, especially during the times when items of particular interest are scheduled. Because it is difficult to predict the exact times that each discussion will take place, the schedule below is approximate and subject to change. If particular items need more discussion, time will be scheduled on other conference days as well.

The results of the board meetings will be presented during the business session on Thursday, and those matters needing membership vote will be decided. If there are other topics that you would like discussed by the board please contact me as soon as possible.

Thank you for making AAZK the fine professional association it is.

Sincerely,



Patricia E. Sammarco

TENTATIVE SCHEDULE OF

DISCUSSIONS OF THE AAZK BOARD MEETING, OCTOBER 5.

9 am	Status of National Headquarters Chapter Affairs Regional Coordination International Coordination	1 pm	Keeper Training Manual Program Library Infant Development Information Center
10am	Legislative Action Comm. Nominations & Elections Comm. Awards AAZPA Membership Category for Keepers	2 pm	Public Relations Educational Film Production Keeper Grants <i>Animal Keepers' Forum</i>
11am	AAZK History KEEPERS CARE Buttons Keeper Data Project Decals	3 pm	Conference Proceedings Book DIRECTORY Keeper Accomodations List ANIMAL DATA TRANSFER FORM
		4 pm	T-Shirts Review Constitution/By-Laws

BIRTHS HATCHINGS

ORNATE HAWK EAGLE HATCHED AT THE OKC ZOO Steve Clevenger

The recent hatching (8 August 1980) and, thus far, promising hand-rearing of an Ornate Hawk Eagle *Spizaetus ornatus* at the Oklahoma City Zoo is the culmination of nearly six years of work in attempting captive reproduction of this species. (See article in August issue of AKF, page 178.)

The egg was laid 20 June 80 and was incubated by the parents for almost three weeks. Unseasonably hot weather forced the parents from the nest and on 9 July 80 the egg was removed to the Nursery for artificial incubation. It hatched on 8 August 80 after an incubation of 49 days. Weight upon hatching was 56.2 grams.

Things are looking very promising with the youngster having tripled its birth weight by day 10.

BIRD BOOM IN TULSA Christopher Eckart

The Tulsa Zoo bird department has had its busiest breeding season in its history, including the hatchings of three species of birds rarely bred in zoos.

After a period of aggressive behavior which resulted in the removal of all conspecifics from the exhibit, our remaining pair of Orangequits *Euneornis campestris* produced three eggs laid June 4-6, 1980. On June 19, 1980, after noticing a marked increase in activity around the nest box, the box was checked and three newly hatched chicks were discovered. The parents were allowed to raise the chicks with a constant supply of softbill mix and mealworms. The young fledged on July 2, 1980. On July 16, 1980, with the three fledglings still in the same exhibit, the breeding pair laid two more eggs, these hatching July 28 and 29 and fledging August 7. We have found no record of a previous zoo hatching and would appreciate any information on zoo hatchings of this species.

After many morning sessions of giving chirp-barks to one another, our pair of Redlegged Seriemas *Cariama cristata* finally showed an interest in nest building by destroying decorative grasses placed in their exhibit. A nest platform and bale of hay were supplied and the pair produced one undersized egg on June 4, 1980. This was broken and thrown from the nest the next day, June 5. The pair continued chirp-barking sessions and on June 28, 1980, produced a normal egg. The front of the exhibit nearest the nest was papered over to provide the nesters semi-privacy and near the hatching date the area in front of the exhibit was roped off for ten feet around. The chick pipped late July 24th and hatched early on July 25th. The parents were supplied with a diet of Carni-fare, boiled egg yolk, pinkies, mealworms and crickets. The young chick fledged on August 13, 1980.

On June 28, 1980, our pair of Victoria Crown Pigeons *Goura victoria* produced a single egg. Because of many failures of the pair to incubate previous clutches, this was not given much attention. However, as the days passed without the parents abandoning the nest it became apparent they were serious this time. The egg hatched July 26, 1980, and both parents are sharing in feeding and sitting.

A FIRST FOR KANSAS CITY: SPECKLED PIGEON HATCHING. . . Wayne Theison

On Sunday, August 3, during an inspection of the Tropical Habitat building, I noticed a nest partially constructed on an overhanging limb on a tree that is an ideal perching spot for all birds in the building. I had not noticed any building activity, so decided to check the contents by climbing on one of the planters near the hippo pool that overlooks the nest site.

Upon doing so, I discovered our 0.1 African Speckled Pigeon *Columba guinea* sitting on a nest with two recently hatched chicks. This came as a total surprise since the sex of the (now) female was unknown and the male was acquired from the Denver Zoo in an exchange only three months ago.

The chicks will be left with the parents to be raised until they start getting around on their own and the chance exists that they may fall victim to the hippo pool which has taken many of our fledglings.

ATLANTA ZOO HATCHES RARE BOG TURTLES Dennis W. Herman

The Atlanta Zoological Park hatched two Bog Turtles *Clemmys muhlenbergii* on July 12, 1980, after an incubation period of 47 days. The eggs were laid in a grass clump in the adult turtles' outdoor enclosure on May 26, 1980. This marks the seventh consecutive year that the Atlanta Zoo has bred Bog Turtles.

The adults were acquired in 1967 as young adults and are now estimated to be 17-18 years old. They are housed in a natural bog habitat (outdoors) from March through October and are hibernated from November to mid-February at 50-55°. Their diet consists of crickets, minnows, earthworms shrimp, baby mice, and occasionally berries. A vitamin supplement is added to this diet periodically.

The eggs measured 1.58 and 1.54 cm. in diameter and 3.23 and 3.3 cm. in length. They were incubated in a gallon jar at 27-29° C. (84-86° F.) in a medium of vermiculite and water. The hatchlings weighed 3.4 and 4.0 grams and measured approximately 1.95 and 2.03 cm. an hour after emerging from the shells. The neonates will be fed a similar diet as the adults as soon as each has absorbed its yolk supply.

RECENT BIRTHS AND HATCHINGS AT ATLANTA ZOO Alan Sharples

On May 15, 0.0.5 Raccoons were born at the Atlanta Zoo. One did not survive but the remaining four are being raised by the mother.

On July 1, 0.0.8 Coatimundis were born and are presently being raised by the mother.

July 11 brought the birth of 0.0.3 Bobcats, which are being raised by the mother with the male and another female present. The father is 22 years old.

East African Crowned Cranes hatched 0.0.3 chicks on July 13-14. They are being raised by both parents. This is the fourth consecutive year that this pair of cranes have laid eggs. Since the first hatching in 1977, nine chicks have been produced, with eight surviving.

SATIN BOWERBIRDS HATCH AT NATIONAL ZOO Joan Smith

On July 17, 1980, two Satin Bowerbirds *Ptilonorhynchus violaceus* hatched at The National Zoological Park, Washington, DC, in a light fixture nest 30 feet from the ground in an indoor flight exhibit approximately 90' x 60' x 50'. Our research indicates these are the first hatchlings outside their native area (Australia) since 1902 when they were bred in England.

The male remained in the exhibit and confined himself to one side of the exhibit.

The female fed the chicks Bird of Frey, mealworms, crickets and earth worms. Upon fledging on August 8, they were pulled for hand raising and are thriving. The male refused to allow the female to feed the first fledgling that had flown to his side of the exhibit though he showed no aggression towards the baby.

Within several days, the pair were observed in courtship behavior.

The male is on breeding loan from San Diego Zoological Gardens, CA.

GIANT PANDA BORN IN MEXICO CITY

A giant panda cub was born at the Chapultepec Zoo in Mexico City on August 11, 1980, as a result of natural breeding. This is the first giant panda to be born outside of China. The male cub weighed 3 1/2 ounces and was born to Ying-Ying and Pe-Pe. According to an *Associated Press* wire source, Ying-Ying is caring for the healthy cub like a good mother.

PALLAS CATS AND GEOFFROY'S CATS BORN AT SACRAMENTO ZOO. . Linda Arnold

The Sacramento Zoo is exhibiting a spotted female Geoffroy's cat with her black phase babies and a spotted kitten who was born to black phase parents on 14 February. The spotted kitten was found out in the rain and was hand-raised. The Pallas kittens were born in April

The zoo also reports the hatching of a flamingo chick, Chattering Lori babies, two Blue and Gold Maccaws and a Rothchild's Mynah chick that was hand-raised.

THICK-BILLED PARROT HATCHING AT GLADYS PORTER ZOO. . David P. Thompson

The Gladys Porter Zoo of Brownsville, Texas, acquired a pair of Thickbill Parrots in February of 1975. Reproductive activity was noted in the summer of 1978 with one egg laid and then broken. In the Spring of 1980, the male began to guard the nestbox in which the female was spending considerable time. The highly excitable male was most vigorous in his guard duties and only two times did a keeper get a quick chance to see in the nest -- once on the 29th of May one egg was spotted and then on the 1st of June a large, well fed Thickbill baby was seen.

Other births and hatchings reported by the Zoo include two Siberian Tiger cubs, three Arabian Oryx, four Nene goslings, one Grevy's Zebra, one Bongo calf, a Speke's Gazelle and a Radiated Tortoise hatchling.

PHILADELPHIA ZOO CHAPTER

OF THE

AMERICAN ASSOCIATION OF ZOO KEEPERS

ADOPTS THEIR OWN SYMBOL

by

Patti Kuntzmann
Junior Keeper - Apes

The Philadelphia Zoo Chapter of the AAZK is growing by leaps and bounds. Since January we've grown from 10 to 17 members.

With this growth, we have adopted our own symbol -- the Quagga. The idea came from one of our members, Bill Altimari; the artwork and text was done by Patti Kuntzmann with 100% acceptance by the members. As you read the Quagga's story you will see why we chose this symbol.

We would like to acknowledge the fact that we are not doing this alone. The zoo management staff have supported us with financial help which is very greatly appreciated. They are paying for the printing of the button of the Quagga which we will sell to support our chapter. The text will accompany the button to educate the public on the fate of the Quagga.



The Quagga's Story

Early explorers in Africa spoke enthusiastically of a zebra-like animal called the quagga, a creature of beauty and speed. The explorer Sparrmann in the 1770's saw them on the southern coastal plain with bonebok and blaauwbok. They were seen by various other explorers with herds of zebras. Sir John Barrow between 1795 and 1802 saw quaggas and zebras together in the Geelbeck-Fontein district of southwestern Great Karro. The zebras were in a small herd and the quaggas were in a large one. The quagga, he said, was very tame; the zebra was rather savage.

In 1820, the Reverend John Cambell met a herd of more than 100 quaggas migrating south in the Orange river district near Ramah to winter around Mafeking where it is lower in altitude and milder. But already the big herds had been much depleted. Quaggas Flats, along the Great Fish river, had been named for its abundant quaggas, but by 1823, according to Thomson, there was no game at all except for a few elephants.

The Boers shot thousands and thousands of quaggas, ate their meat, and fed it to their workers, tanned their leather, or used their skin as grain sacks.

The last known wild quaggas were shot near Aberdeen in 1858 and King-williamstown in 1861. It is possible, however, that a few survived on the plains south of the Vaal river until about 1878.

continued

The Quagga-*Equus quagga quagga*, continued

From time to time, supposed quagga survivals have hit the headlines. Someone claimed to have seen them in the Kaokoveld in 1913; in 1920, they were sighted in Ovamboland. Both of these reports are very unlikely, as are others in that region. There is no likelihood that quaggas were ever found in northern Namibia, as the fauna is by now fairly well known and quite different from that of the Cape. Hartmann's zebra looks brownish from a distance and might be mistaken for a quagga; and this species, like Burchell's, sometimes abducts donkeys. A hybrid, between a donkey and a Hartmann's zebra which lived in Windhoek zoo was, according to Shortridge, striped on the foreparts only.

Quaggas were essentially plains animals, although they occasionally wandered into hilly country. When alarmed they took off at a gallop, and though not as fast as Burchell's zebra, they surpassed it in endurance. The cry was a shrill barking sound, not dissimilar to the 'qua-ha' of Burchell's zebra; although the cry is obviously the origin of the name quagga. Burchell's zebra were also known as quaggas to many people--if a distinction was made, the Burchell zebra was specified as bonte-quagga, meaning painted quagga.

The quagga was a little larger than the mountain zebra, large-headed and small-eared like Burchell's zebra, but narrow-hoofed like the mountain zebra. Where it differed from both was in the striping, which was essentially confined to the head and neck. The dark stripes were brown rather than black, separated by cream or buff intervening spaces. The body was brown, the legs and belly white. (This may throw some light on the old question "Are zebras white with black stripes or black with white stripes?") The body-stripes gradually faded out along the flanks.

The shame of all of this is, that quaggas had been kept in captivity and survived well, but because no one imagined that a creature said to occur in such abundance could become extinct, no attempt was made to breed them. In the 1820's a quagga was kept in the menagerie at Windsor Castel. In 1826, a phaeton drawn by a pair of 'horse-quagga' was the sensation of Hyde Park. One of these was doubtless the specimen painted by George Stubbs around 1820. The picture now hangs in the Royal College of Surgeons. About 1860, a team of quaggas drew the London zoo's forage wagon. The London zoo, in fact, had a whole series of quaggas, the last died in 1872. The last in the world died in Amsterdam zoo in 1883.

Today all that remains of this once so prevalent, graceful, beautiful creature are nineteen pelts, a few skulls, and three photographs, all parts of costly museum collections.

For this reason, the American Association of Zookeepers, Philadelphia Zoo Chapter, has chosen this extinct animal as our symbol. It will remind us that, as people dedicated to professional animal care, we must try not to let any species of animal slip through our fingers, as we did *Equus quagga quagga*.

REMEMBER, EXTINCTION IS FOREVER

Copies of the button and story will be available at the Annual Conference in Montgomery.



A ZOOKEEPER LOOKS AT AFRICA

by
Mary L. Swanson
Carnivore Keeper, Fresno Zoo

For the entire month of February 1980, an intrepid group of 18 travellers toured Africa at a mad pace -- and loved it. The group was led by Dr. Paul Chaffee, director of the Fresno Zoo. I was the only other staff member on the trip. The others were associated with our zoo in one way or another.

In a recent letter to all of us, our travel agent summed up the exciting and strenuous trip, "We travelled 24,404 air miles on 13 flights with 52 landings and take-offs, visited 9 countries and stayed in 25 hotels and lodges, averaging 1.24 days in any one place. We crossed the equator 4 times, functioned in 5 separate currencies and 4 main languages, and ate chicken as a main course 14 times."

We arrived in Dakar, Senegal, on February 1 after a direct flight from New York. Over half the group had been to Africa before, but none had been to West Africa. Those of us who were first-timers to Africa experienced considerable culture shock, even though we had been warned. It is one thing to be told you will be pestered relentlessly by the "traders" hawking their wares -- jewelry, carvings, snakeskins, etc. But it is quite another thing to actually experience the overwhelming pressure of them swarming around you saying "Give you good price, madam." Eventually we were to learn the essentials of bargaining and become familiar with "Last price, OK."

February in tropical Africa is summertime, so it was sunny and beautiful and also hot, and in some areas, very humid. In Senegal we toured the city of Dakar, including open markets and a fascinating artisans' village where we were able to watch carvers, weavers, etc., at work. We drove through villages admiring the colorful dress and the universal ability of the Africans to carry huge loads on their heads.

We saw huge red earth termite mounds where aardvarks had ripped holes. We were astonished to find baobob trees in a great leafless forest -- in East Africa they are found singly or scattered. We ate "monkey bread" made from the fruit of the baobob. From Keur Saloum Taubacouta we took a trip on the Saloum River in pirogues (long dugout canoes) to look at birds, including African fish eagles and goliath herons. Then we flew from Dakar to Douala, Cameroun, in a 12 hour flight (on a jet.) It took so long because we stopped in 4 other countries.

The first stop subjected us to our biggest "culture shock!" Guinea is a Marist military country -- most of the developing countries of Africa have military governments. As we walked to the terminal, I casually took a picture which was a big mistake! They confiscated my film and we had to bribe them to get my camera back. Later we were to experience body searches before boarding airplanes and many restrictions. We came out of it appreciating our own country more.

In 8 days in Cameroun we stayed at some plush hotels as well as more primitive lodgings. We had good meals, though lots of chicken. As throughout our trip, we drank lots of beer and bought lots of expensive bottled water to avoid the dread consequences of drinking the local water. We toured Waza National Park in the northern, more desert part of Cameroun. There we saw our first elephants -- a big herd of about

A Zoo Keeper Looks at Africa, continued

150. At a small pond we saw thousands of birds, a magnificent sight and sound. We saw Nubian giraffe with their whitish legs, red-fronted gazelle, and roan antelope. We visited the ancient village of Oudjilla, where the chief of the Kirbi tribe has 44 wives who put on a dance for us.

Our big adventure in Cameroun was supposed to be a trip to the jungle to see pygmies and lowland gorillas. From the town of Kribi we travelled up the Lobe River in big pirogues, camping overnight on a beach. We never got to see pygmies or gorillas, but weren't disappointed because the jungle was lush and beautiful and there were many interesting birds along the river.

Our biggest adventure proved to be getting out of Kribi. We had flown in by small plane and were supposed to be picked up in a 25-passenger plane on a small grass airstrip. Through a series of comedies of errors, we had left the airstrip because the plane was late and it was getting dark. Our travel agent was just leaving, too, when the plane arrived. He sent for us, and while we careened madly in a rickety van on a terrible road back to the airstrip, he persuaded the pilot to wait for the "distinguished" group of Americans. We piled in the plane -- in front, so it could get off the ground -- and took off in the dark!

From Douala, Cameroun, we flew to Addis Ababa, Ethiopia. Revolution has been recent there and the restrictions on us were heavy. We were supposed to visit a national park, but were not allowed to. So the only animals we saw were in the city -- goats, donkeys and cows -- and some lions and cheetahs in a tiny, pitiful zoo. The lions are probably the last remnants of a unique subspecies, unfortunately. We did get to eat some authentic Ethiopian dishes and see Ethiopian dances. The local liquors and wines were extremely deceptive, and had quite an effect on all of us!

Our last African country was Tanzania. Here we visited 4 national parks in 10 days -- Selous, Arusha, Manyara, and Serengeti. These were a paradise for the thousands of animals we saw. Selous is a huge 22,000 sq. mile park, not visited by most tourists as you have to fly in by small plane. We spent two wonderful days at Mbuyu Tent Camp on the Rufigi River. We toured a very small part of Selous by land-rover and by boat. On land we saw impala, wart-hogs, reticulated giraffe, brindled wildebeest, yellow baboons, elephants, buffalo, lions, and a nice group of wild dogs resting under a tree with full bellies. There were numerous bird species, including masked weavers with incredible numbers of nests on one tree. We filmed that tree during the eclipse of the sun on February 16, forgetting what day it was and grumbling over the failing light. On the river we saw hundreds of hippos, many bird species, and a few crocodiles. We flew back to Dar es Salaam in relays in 5 passenger planes.

We toured the other parks in more comfortable VW vans, with three remarkable guides. Ali, Said, and Babu could spot animals at incredible distances, (and always identify them correctly) spoke several languages, and were extremely skillful drivers under often difficult conditions. Just inside Arusha Park we filmed beautiful Colobus monkeys. In the park we saw lots of waterfowl on many lakes. Mammals we saw there included ellipsis waterbuck, Kirk's dik-dik, olive baboons, buffalo, Burchell's zebra, eland, masai giraffe, and elephants. At one point

A Zoo Keeper Looks at Africa, continued

we found ourselves in the midst of a group of forest elephants (small and different from the others) -- a terrific experience.

In Manyara park we saw blue monkeys, vervet monkeys, hippo, zebra, white-bearded wildebeest, impala, bushbuck, elephants with babies, lots of masai giraffe, loads of species of birds, and a monitor lizard, but none of the famous Manyara lions in trees. Ali said there are probably only 25 lions left in the 46 square mile park.

Serengeti Park, including Ngorongoro Crater, was incredibly vast, varied and beautiful. We witnessed unusual sights like a kori bustard in full display, olive baboons sitting on the tops of acacia trees eating flowers, hyraxes basking in the sun on rocks in the lodges' courtyards, genets at night, and buffalo and giraffe running on the road ahead of us. We saw elusive animals like oribi, Bohor reedbuck, klipspringer, and banded mongoose. There were many antelope -- Thomson's gazelle, Grant's gazelle and its subspecies, Robert's gazelle, topi, Coke's hartebeest, eland and De Fassa waterbuck. The white-bearded wildebeest were migrating in vast numbers along with zebra. We followed cheetah across the savannah and found hyena in big den areas, and even saw bat-eared foxes, common and black-backed jackals. We found lion prides resting under acacias and one crazy lion sleeping on top of an acacia bush. We visited Olduvai Gorge briefly.

Our last day was in beautiful Ngorongoro Crater. Besides all the zebra, wildebeest, elephants, antelopes, and birds we saw elsewhere in the park, here we saw millions of flamingoes on the lake, a few hyenas, jackals and ostrich, and lions. We saw only 4 magnificent black rhinos, a species rapidly disappearing in the wild.

In the 4 countries we saw a total of 55 species or sub-species of mammals and over 350 species of birds, and 3 species of reptiles. Some species like black rhinos were extremely scarce. We never saw one leopard -- they are difficult to find normally, but the guides told us they are extremely rare now.

The trip was an opportunity of a lifetime for me and a profound experience. It was especially meaningful to me, as a professional zoo keeper, to see these animals in their natural surroundings -- while they still exist in the wild. Many of these species are among our charges at the Fresno Zoo. Some of them may become extinct in the wild. The growing populations of man encroach on their habitat and many are still killed for their skins, ivory, etc. Hunting is still permitted in Cameroun, and poaching is everywhere. Therefore it is even more important for us in the zoo world to preserve and reproduce the world's wildlife.



coming events

WORKSHOP ON ELEPHANTS

October 11-12, 1980

Tulsa Zoo, see page 193

THIRD ANNUAL SYMPOSIUM

November 7-9, 1980

Louisville, AAZK Chapter

Louisville, Kentucky

see page 173, August AKF

REPORT ON THE 1980 AAZPA WESTERN REGIONAL WORKSHOP

by
Mike Carpenter, Phoenix Zoo
AAZK Regional CoCoordinator

From May 4 thru 6, Wildlife Safari of Winston, Oregon, was host for the AAZPA Western Regional Workshop. The sessions included 1 1/2 days of papers on topics varying from husbandry techniques through zoo economics, and included three papers by keepers. One half day was spent attending tours and workshops at Wildlife Safari. These workshops included: School education programs, Birds of Prey management, and African elephant training and were well attended and received. The highlight of the evening was a wine tasting and barbecue dinner at Wildlife Safari.

A show of hands indicated that about half of the approximately 75 delegates were members of AAZK and our theme presentation was well received as was the information table. "Keepers Care" buttons seemed to be the best seller. An AAZK meeting on Monday evening was only lightly attended, about 12 members, possibly due to the lateness of the hour after a busy day of workshops. Those in attendance were enthusiastic in furthering AAZK goals and the number of membership forms taken back to respective zoos should bring a number of new members.

My CoCoordinator, Jane Hansjergen and I would like to thank Director Frank Hart, Bill York, Laurie Marker, the rest of the Wildlife Safari Staff and docents for a very interesting conference and for allowing AAZK to be actively involved.

REPORT ON THE 1980 AAZPA SOUTHERN REGIONAL WORKSHOP

by
Jill Grade, Busch Gardens
AAZK Representative

The AAZPA Regional Workshop held in Orlando was quite a success. Approximately one hundred forty-three delegates attended, representing management staffs from animal institutions in Florida, Georgia, Alabama, Tennessee, North Carolina, South Carolina and Puerto Rico, making this conference the largest Southern Regional ever.

There were however, less than half a dozen zoo keepers in attendance, which was, at first, surprising to me, because keeper representation at past workshops throughout the country has been as high as twenty-five percent of the total number of delegates -- though many zoo keepers do not actually register for a full conference, most of them do try to be present for the paper sessions, which are free of charge.

In retrospect, I can only assume that the low keeper attendance in Orlando was due to the size of the zoos in the area. Most of them are so small that it is difficult for them to provide coverage in the work force when members of the keeping staff take time off.

I also feel that, although zoo management in the southern region seems to be supportive of AAZK, very few zoos are actively involved with the association at this time. For instance, I contacted several institutions in the Orlando area regarding housing for out-of-state keepers, but plans were somewhat abortive following the initial response. *cont'd.*

Report on Regional Workshops, continued

At this point you may be wondering what activities of interest to keepers are available at a conference presented by, and designed for, zoo management. I have found that, for the most part, you get out of a conference what you put into it. Observation and listening are both enlightening, but conversation and asking questions seem to be the keys to successful keeper participation in any conference.

The paper sessions at the Orlando conference were interesting because, while presentations given at an AAZPA National Convention are geared mainly to upper management, the papers presented at a Regional Workshop deal with subjects primarily on a curatorial level. Therefore, with most of the papers covering the planning and execution of zoo endeavors, it was a simple matter to pick out the keeper participation in the projects discussed.

One paper which dealt with the "Use of Artificial Formulas for Rearing ...Manatees" was, on a technical level -- that is, formula ingredients, preparation, temperature, etc -- designed for curator information. But a description of, and slides depicting, the actual handling of the animals and the methods in which the formula was administered, were of great interest to zoo keepers.

Slides can sometimes be the single most important part of a presentation to a zoo keeper because, while the verbal portion of a paper may not be keeper-oriented, there is usually plenty of keeper information available on the screen. For instance; while the text for "Propagation of Pheasants in the Southern Region" dealt with the variety of viable species, slides of these birds also exhibited types, arrangements and conditions of the facilities in which they were kept; a slide used in "Formation and Management of Captive Populations of...Pacific Harbor Seals..." showed how a nursing mother with active mammary glands is supposed to look if her infant is nursing properly; in "Propagation of Waterfowl as it Relates to Public Display", slides depicting the nestbox placement and brooder maintenance were used, as well as one shot devoted entirely to a zoo keeper in the act of raking!

I presented an introduction to AAZK on the final day of the program. I used an adaptation of a presentation put together by Larry Sammarco outlining the history of the American Association of Zoo Keepers, and our current projects and goals. This information was so well received that I have asked to have it printed in the *Animal Keepers' Forum*.

During the coffee breaks following every three or four papers, delegates had the opportunity to visit the exhibits hall, where a variety of zoo-affiliated displays were set up. In Orlando we had the usual animal products, (food, handling equipment, etc.) and book displays, as well as hand-out materials for the educational programs offered by several southern zoos. I set up a display of AAZK merchandise for sale, with AKF's and our new Animal Data Transfer Form(s) as free hand-outs. Sales went fairly well -- eight "Keepers Care" buttons, six patches, two directories and eight T-shirts, (decals were not available.) The AKF's were also snapped up, but the data forms were not the object of much interest. Apparently a large percentage of the delegates were Educational Curators who were mainly shopping for souvenirs to take home to the kids.

I also scheduled a meeting for those interested in learning more about the association. Attendance was low however, as there were only three

Report on Regional Workshops, continued

keepers at the conference that last day, and members of the senior zoo staffs were otherwise occupied at meetings not previously scheduled.

The most rewarding conference activity, whether you're a zoo manager, a zoo keeper or the spouse of a zoo affiliate, is probably the tour of the hosting institution(s). With the variety of subjects available to speakers at the paper sessions, it is quite possible that a number of the presentations given will not be of interest to everybody. But a trip to a good zoo or other animal-oriented park is always interesting and fun. Sea World of Florida was our host in Orlando, with side trips to Discovery Island at Disneyworld and Busch Gardens.

The types of tours given range anywhere from pre-arranged excursions with the various curators to meetings with zoo personnel most familiar with a particular species of interest to you. Zoo keepers naturally most often get together with their peers to exchange ideas and knowledge pertinent to their roles in zoos, and these gatherings are often worth the cost of the entire conference. I got together with keepers who were interested in AAZK, but who were unable to attend the conference.

The tours at Sea World were given by the curators and other senior staff members, although no formal arrangements had been made. Groups were developed according to the participants' areas of interest. Our group was fortunate in that our guide dealt with both the birds and marine mammals in the park. As bird fanciers, we were most attracted to the avian areas, but were delighted to see baby walruses and dolphins, and the inevitable Killer Whale, as well. We even made a stop at their laboratory facility. The sophisticated testing equipment dumb-founded most of us, but we lost a vet technician there for several hours.

The tours given at Discovery Island and Busch Gardens were even less formal. I visited the Island during the conference week -- a courtesy provided by the curator upon request -- to get a look at the impressive avian collection there, and to meet with a few of the keepers wanting information on AAZK chapters. Delegates visited Busch Gardens the week following the conference, and tours there, escorted by curators and supervisors, included visits to areas of personal interest as well as the opportunity to accompany the men on the feed truck for close observation of the wide variety of species on the "veldt."

Discussion on chimpanzee breeding techniques, or the validity of animal shows in today's zoos, or the type of spoon used to hand-feed a Rose-breasted Cockatoo chick, etc., most often occur after the paper sessions and zoo tours. Each evening a "hospitality suite" is hosted by an animal products company or zoo. This means the drinks and the conversation flow freely. If you're up to the late night hours after a full day of zoo-biz, you're in for a treat -- the chance to meet and really get to know, other zoo professionals. These happy hours can be especially beneficial to zoo keepers, because after a few drinks, anybody will talk to everybody about almost anything!

I was able to get together with a number of other bird people at the "hospitality suites," both private breeders and zoo professionals, to discuss species of interest to me. I visited with old friends and associates, and met new people; contact were made which will benefit each of us in our future communications with each other regarding our work with these animals.

continued

Report on Regional Workshops, continued

I also connected with several more of the local keepers interested in the American Association of Zoo Keepers. There are a dozen or so keepers from Sea World and Discovery Island who are definitely interested in forming an AAZK chapter. The new chapter will probably be Orlando-based as the key interest is there. But members from all of central Florida will be welcome to join. Proposed activities are local field trips and zoo tours, and meetings which would include lectures (by keepers and for keepers), and films. Other possibilities might include the design and sale of a chapter T-shirt (to offset trip costs, including the National Conference and support AAZK National), a chapter publication, and a local keeper exchange program. I will probably be active in this chapter myself, and can provide any information requested by interested keepers in the immediate area.

On the final evening of the conference, as is usual, a sort of gala happy hour is provided. Technically it's a buffet dinner at the hosting zoo, but it generally goes beyond that. After three days of papers, tours and "hospitality suites" with the same group of people, most everybody is in a congenial mood, ready for almost anything.

At this particular gathering, we feasted island-style on a Polynesian dinner complete with flaming pineapple which were soaked in rum, and presumably inedible, but which were relished by all. Native dancers provided the entertainment, following our meal. The final number was a guest participation hula, resulting in an illustrious chorus line composed of zoo directors, a usually staid docent and two native Buschmen, all gaily attempting a sort of "funky chicken" with their pants legs rolled up to their knees -- it must have been the pineapple!

Needless to say, a good time was had by all. I can honestly say that zoo people know how to mix business with pleasure. I, for one, am looking forward to next year's AAZPA Southern Regional Workshop. It will be held in Ashville, North Carolina, hosted by the new zoo there. I hope to see as many keepers attend as our zoos here can spare, and possibly even financially support, especially since it's less expensive when we travel in numbers -- a small conference can be attended for less than fifty dollars, if properly planned. Believe me, it's worth every penny of it!



INFORMATION PLEASE!

Information is requested concerning chain covers for the elephant bracelets. In the summer months, at night, one of the Norfolk Zoo's young African cows pulls wildly on her back chain which causes the chain to cut into her legs. Presently we are using canvas fire hose to cover the bracelets, but it is failing, too. Any information on successful use of bracelet covers would be greatly appreciated.

Thank you.

Elizabeth Pine, Zookeeper
Lafayette Zoological Park
Large Mammal House
3500 Granby Street
Norfolk, VA 23504

just for fun

S.A. CAPE FUR SEALS

by
Vanessa Pehlan
Metro Toronto Zoo



THE WHOLE GANG, DECIDING
WHETHER OR NOT TO COME IN



A SEAL NOT INTERESTED IN
COMING IN



DECIDED AGAINST ...



DECIDED FOR

Vanessa

ELEPHANT SURVEY

by
Ellen Leach
Cleveland Metroparks Zoo

The Elephant Survey begun at the Portland Conference seems to be coming to a standstill. There were thirteen (13) responses from that initial distribution of questionnaires. I'm still hoping to do a mail-out of questionnaires to other zoos, but I've been waiting for approval from AAZPA's Membership Services committee. All survey forms should be reviewed and approved by this committee to avoid duplications.

In fact, since the conference, I learned there was an elephant survey done in 1976 by Ken Kawata of the Tulsa, Oklahoma, zoo. Some of you may want to write for a copy of the survey. It's very interesting. The Elephant Interest Group is also working on a survey.

Whether or not this current survey will continue on a larger scale, I've decided to compile the data I now have. I'll start this month with the information on diets. Other information will be given in forthcoming AKF issues.

In the following chart, food amounts are given per animal, unless asterisked. An asterisk * denotes an amount for that particular group. Charts follow on the next three pages.

continued

ZOO	SPECIES	AGE	GRASSES	GRAINS	PRODUCE	OTHER
Millwaukee Wisconsin	African 0.2 Asian 0.3	23, 24 20, 30 30	*2-3 bales alfalfa *4-5 Bales Timothy	2# Crimped oats 2# Anderson pellets same as above plus 2# D & H	2# carrots, 2# beets 2# apples same as above	2# granulated charcoal, 10# of bread, branches when available same as above
Valley Zoo Edmonton Canada	Asian 0.1	6	1 bale Timothy	3-4 qts rolled oats 3 qts "Horse Tasties"	5 gallon fruits, and vegetables	summer: 20-30 min grazing winter: Branches
Potter Park Lansing Michigan	Asian 0.1	7 years now deceased	1 flake hay	Anderson's monogastric	Produce as treat (about once a month)	Diet until 2 years was Pet Milk, water, Gerber Baby Food, apples carrots, Omolene
Dickerson Park, Springfield Missouri	Asian 0.1	30	2 bales prairie hay	5 gallon Sweet Feed	Small amount of apples carrots, cabbage, lettuce, bananas, oranges	Small salt spool, occasional grass grazing and fresh branches
Roeding Park Fresno California	Asian 0.1	33	6 flakes oat hay 60# hydroponic barley grass	2 buckets "Round-up" horse pellets 2 buckets D & F dairy chow	Apples, carrots (at training)	Occasional carob pods and leaves

ZOO	SPECIES	AGE	GRASSES	GRAINS	PRODUCE	OTHER
Indianapolis, Indiana	African 0.1	3	Timothy 1 bale	6# sow grain 6# horse grain (Wayne Feeds)	about 1 gallon produce	some grazing, sow blocks, fruit for treats
Kansas City, Missouri	African 1.1	28 16	Prairie Hay	15# horse checkers 10# Omolene 3# Calf manna 3# soy bean meal 4# range checkers *250# Herbivore	10 onions, 5 cabbage 50 carrots, 10 apples 5 celery	1 cup Clovite
Metro Toronto, Canada	African 1.7	13 6, 6, 7, 9, 10, 10, 15	*18 bales Timothy 100# Hydroponic Grass			Browse as available Mineral Supplement
Cleveland Metroparks Ohio	African 0.2	28	1 3/4 bales timothy	20 Qts. Omolene 16 qts. D & H 2-4 qts Monkey chow	About 10 pieces fruit and vegetables	2 oz. Vionate-L Vitamin supplement 2-3 loaves bread Some browse & grazing 1/2 oz Vionate-L Vitamin supplement 1/2 loaf bread Some browse & grazing
Lincoln Park Chicago Illinois	African 0.1 Asian 0.2	9 9 4, 14	1/2-1 bale timothy hydroponic grass	17 qt mix of Omolene Zoo, D & H Purine Horse "Charge" Monkey Chow	About 10 pieces fruit and vegetables	
Lincoln Park Chicago Illinois	African 0.1 Asian 0.2	9 9 4, 14	1/2-1 bale timothy hydroponic grass	3 c. Golden milk grain	10 bananas, 12 apples 25# carrots 5# Sweet potato (par-boiled)	1 cup peanut oil
Oklahoma City Oklahoma	African 1.1 Asian 1.1	20 21 7 35	Prairie Hay Alfalfa	Purina Sweet feed Crimped Oats	Apples, carrots, Sweet potatoes	Clovite or Vitacil vitamins, tree cuttings, some whole peanuts Bambo, when possible

ZOO	SPECIES	AGE	GRASSES	GRAINS	PRODUCE	OTHER
Atlanta Georgia	Asian 0.2	34, 9	2 bales Timothy About half of the amount of adult ration	8# wheat bran 8# oats	12 apples 12 carrots	2 loaves whole wheat bread adjustments for growth
Detroit Michigan	Asian 0.2	25,35	1½ bales Timothy	25# Omolene	Apples, carrots as supplied (Min: 2# carrots)	Bread as supplied
Sacramento California	Asian 0.2	33,37	*1 bale (3 wire) oat hay 1 bale (2 wire) alfalfa distributed over one week	*9 gal Omolene 9 gal Round-up horse chow 1½ gal bran	*36# Mixed Produce	1/4 cup iodized salt daily on grain, bread, acacia, bamboo
Washington Park Portland Oregon	Asian 2.8	2, 18 9, 17, 18,25,25, 27,28,31	Timothy	1 gal rolled oats 1/2 or 1 gal zoo pellets 16% protein	40# lettuce trimmings 40# carrots	1/2 cup Shenandoah Vet-a-Mix Vitamin supplement 1 cup Rock salt 2/week in summer 1/week in winter 2 cups corn oil daily

THE STRUGGLE FOR SURVIVAL

UPDATED WORLDWIDE ENDANGERED SPECIES LIST PUBLISHED

The official U.S. list of endangered and threatened wildlife and plants worldwide now carries 773 species, 276 of which are native to the United States.

"That's up 77 from last year," Dr. Paul Opler of the U.S. Fish and Wildlife Service's Endangered Species Office said, referring to the previous list published in January 1979. "But that increase has more to do with improved research than the continuing, general deterioration of the world's wildlife environment. We're simply finding more plants and animals that need to be classified."

For more information, write Publications Unit, Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

ENDANGERED PEREGRINE FALCON CLEARS FINAL HURDLE-- CAPTIVE-BRED ADULTS HATCH YOUNG ON NEW JERSEY REFUGES

In an historic first for the endangered peregrine falcon, captive bred adults have returned to release sites on two of the National Wildlife Refuges in New Jersey to lay fertile eggs and hatch four chicks.

This is the first time in over 20 years that peregrine falcons have been known to fledge their own young from eyries in the eastern United States. The fact that captive-reared and released peregrines are able to reproduce and raise young on their own has given added encouragement to biologists who hope to re-establish self sustaining populations of the species in the East.

From 1975 to 1979, 204 captive-reared peregrines have been released at 20 locations in nine eastern States. This year, there are 15 active release sites on the East Coast.

Four refuges in the Fish and Wildlife Service's 412 unit chain of National Wildlife Refuges are currently hosting re-introduction projects -- Brigantine and Barnegat in New Jersey and Chincoteague and Fisherman Island in Virginia. Biologists first began releasing peregrines at Brigantine in 1976 and at Barnegat in 1977. The third New Jersey site in nearby Barnegat Bay has hosted a project since 1975, and a fourth release site has been established in Cape May County, New Jersey, this year.

At these sites, biologists construct 30 foot towers at isolated release locations. Young captive-bred peregrines are raised on the towers in a reintroduction process known as "hacking" until they are old enough to fly and

hunt for themselves. In subsequent years, the young birds often return to these towers, popularly characterized as "ecological magnets" that draw the peregrines back for potential breeding. Upon reaching sexual maturity at 2 to 3 years of age, the falcons can begin to reproduce.

+++++

chapter

News from Memphis Chapter
Memphis, Tennessee

Michael R. Maybry, President

The Memphis Chapter of AAZK has recently undertaken to recycle aluminum cans being dispensed from the employee soda machine. We are encouraging people to bring cans from home, also. Three collection points were set up around the zoo to facilitate handling. All funds collected from this project will be used to benefit the zoo in some fashion. While not a large sum of money will be generated, it does give the chapter an ongoing source of funds.

news

Our chapter along with Zoo Action Program, our Zoos' support organization, sponsored a "behind the scenes" tour for members of ZAP. This was the first time this had been done for the general membership and the turnout was substantial. Over 60 adults and children divided into five groups spent approximately 2½ hours touring the Pachyderm House, Giraffe Barn, Reptile Building, Aquarium, and the Reserve Bird House. Keepers from their respective areas talked to each group and answered any questions the visitors had. This was the first chance our chapter has had to repay the ZAP for sponsoring delegates to past conventions, and we hope to give more tours in the future.

* The Memphis Chapter also wishes to extend an invitation to *
* any keepers passing through Memphis on their way to or from *
* Montgomery this fall to stop in and see us. We're proud of *
* our zoo and will give anyone interested the "grand tour." *

**** See ya'll in October! ****

New Professional Members for July

BREITWISCH, Randall James
10511 SW 161 St.
Miami, Fl 33157

ELLER, Heinz
Zoo Curator
National Zoological Garden
P. O. Box 1204
A2-Ain / Abu-Dhabi
UNITED ARAB EMIRATES

JAMES, Susan
1510 Aberdeen St.
Jacksonville, Fl 32205

KILLAM, Lyn
4107 Walnut St.
Philadelphia, Pa 19104

LONG, Martin S.
2757 College St.
Jacksonville, Fl 32211

LUNGER, Cheryl
2819 Kline Rd.
Jacksonville, Fl 32216

MASTER, Terry
#3 E. Marthart Ave.
Havertown, Pa 19083

STROBLE, John A.
P. O. Box 102
Eatonville, Wa 98328

STURTS, Charlie
3651 Red Lion Rd. Apt. #E4
Philadelphia, Pa 19114

TURNER, Joyce
2870 Stout Rd.
Cincinnati, Oh 45239

ZYBURA, Martin W.
111 Plauderville Ave. #2
Garfield, NJ 07026

AAZK PROFESSIONAL MEMBERS RELOCATING IN ANOTHER COMMUNITY.

Stephen BAYNES
121 N. 129th Street
Madiera Beach, Fl 32708

John DINELEY
30A Rhos Road
Rhos on Sea
Colwyn Bay, North Wales
GREAT BRITAIN LL28 4RS

Suzanne FRANK
11714 Valley Road
Fairfax, Va 22033

Debra J. MUTCHLER
122 The Maine
Williamsburg, Va 23185

Kathy RETTIE
c/o Wayne Jackson
925 Baylyst Unit 73
Pickering, Ontario
CANADA L1W 1L3

AAZK ACCESSORIES AVAILABLE

DECALS

The official AAZK decal is available through the Memphis Zoological Park and Aquarium AAZK Chapter. The decal is a black and white reproduction of the AAZK rhino logo, suitable for any smooth, hard surface, especially a car window. Cost is \$1.50 complete, prepaid. Make checks payable to the Memphis Chapter, AAZK, and send directly to Mike Maybry, Decal Project Coordinator, 1887 Crump Ave., Memphis, TN 38107.

BUTTONS

Buttons printed with "Keepers Care" and a logo are available for fifty cents (50¢) from Larry Sammarco, Lincoln Park Zoo, 2200 N. Cannon Drive, Chicago, IL 60614. 50% of the sale price goes into AAZK's national treasury.



We are indebted to the AAZPA Newsletter for allowing us to reprint portions of this section from their "Positions Available" listings. This is a monthly service to us, for you.

PACHYDERM KEEPER... to participate in husbandry program of Asiatic and African elephants, rhinoceros and hippopotamus and to assist trainer with an elephant program that includes public demonstrations. Elephant experience desirable. Salary \$5.28 - \$5.55/hour, plus excellent fringe benefits. Submit resumes to: Nick Eberhardt, Field Curator, Oklahoma City Zoo, 2101 N.E. 50th, Oklahoma City, OK 73111

CURATOR/MAMMALS... available 1 October 1980. Under direction of General Curator, responsible for care and management of large mammal collection, specially hoofstock. Considerable knowledge required in husbandry, reproductive biology, captive behavior and personnel supervision. Four years' experience (three of which should be in a curatorial or supervisory capacity) at zoological park or related facility working with mammals desired. Four-year degree in Zoology, Biology or related field required. Starting salary \$16,700. Send resume to: Bill Ziegler, Metrozoo, 12400 S.W. 152 St., Miami, FL 33177.

CURATOR... responsible for overall management of diverse animal collection. Duties include supervision, planning, record keeping and husbandry programs. Applicant must have degree in Zoology, Biology or closely related field and at least three years' supervisory experience. Additional supervisory experience may be substituted for degree. Applicant should have effective writing and speaking abilities. A thorough knowledge of animal husbandry and natural history is required as well as a familiarity with animal regulations and ISIS record keeping. Salary \$14,000 - \$18,000. Send resume by 10 October 1980 to: Roy A. Shea, Director, Indianapolis Zoo, 3120 East 30th St., Indianapolis, IN 46218

CURATOR/EDUCATION... responsible for zoo's educational programs, with ability to develop and design new programs. Requirements include Bachelor's Degree from accredited college or university in Biological Sciences or closely related field. Contact: Roger Valles, Director, Williams Park Zoo, Providence, RI 02905. (401) 467-9230.

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MOVING?

PLEASE SEND ADDRESS CHANGES TO

Brenda Jarboe, Administrative Secretary
American Association of Zoo Keepers
National Headquarters, 635 Gage Blvd.
Topeka, KS 66606



INFORMATION FOR CONTRIBUTORS

Animal Keepers' Forum publishes original papers and news items of interest to the Animal Keeping profession. Non-members are welcome to submit articles.

Articles should be typed or hand-printed. All illustrations, graphs and tables should be clearly marked, in final form, and should fit in a page size of no more than 6" x 10" (15 cm. x 25½ cm.). Literature used should be cited in the text and in final bibliography. Avoid footnotes. Include scientific names.

Articles sent to *Animal Keepers' Forum* will be reviewed for publication. No commitment is made to the author, but an effort will be made to publish articles as soon as possible. Those longer than three pages will be separated into monthly installments at the discretion of the editorial staff. The editors reserve the right to edit material without consultation unless approval is requested in writing by the author. Materials submitted will not be returned unless accompanied by a stamped, self-addressed envelope.

Telephoned contributions on late-breaking news or last minute insertions are acceptable. However, phone-in contributions of long articles will not be accepted. The phone number is 913 272-5821.

DEADLINE FOR EACH EDITION IS THE 20th OF THE PRECEDING MONTH.

Articles printed do not necessarily reflect the opinions of the Animal Keepers' Forum editorial staff or of the American Association of Zoo Keepers.

Items in the publication may be reprinted. Credit to this publication is requested. Order reprints from the Editor.

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Animal Keepers' Forum



Dedicated to Professional Animal Care

OCTOBER 1980

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Animal Keepers' Forum is a monthly journal published by the American Association of Zoo Keepers, 635 Gage Blvd., Topeka, Kansas 66606.

Second class postage is paid at Topeka, Kansas. Return postage is guaranteed.

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The artist for this conference month is Yoshi, Yonetani. He works with the ZooDEL, the Zoo Design and Education Lab in Kobe, Japan. He is studying the zoos of the world and would appreciate zoo keepers sending him materials from their zoos. Thanks for an excellent Rhino cover for the AAZK! (Did you notice the shoulder patch?)

SCOOPS and SCUTTLEBUTT

PLEASE...PLEASE...PLEASE

WE HAVE MOVED. The AAZK office is now located at 635 Gage Blvd., Topeka, KS 66606. This is the same address as the *Animal Keepers' Forum*. Some mail is being incorrectly addressed and that means a delay.

Please make a note of the new address in your AAZK Membership directory and please make a mental note -- AAZK is in the heart of America now! Thanks.

U.S. ADDRESS FOR JERSEY TRAINING PROGRAM

In the August issue of the AKF, Ernie Karpeles wrote of "A Training Period at the Jersey Zoo." Joan S. Longnecker, Executive Director of the Wildlife Preservation Trust International, Inc., wrote that for persons from the United States, the most efficient way to obtain information or to apply for the program is through this address:

Wildlife Preservation Trust International
34th Street and Girard Avenue
Philadelphia, PA 19104

SEND YOUR NEWSLETTER TO ANIMAL KEEPERS' FORUM

Some of the news published in AKF is sent to us by zoo keepers, and some of it is gleaned from the Zoo Newsletters and the AAZK Chapter Newsletters that are sent. Can you make arrangements for AKF to be on the mailing list from your zoo? Thanks!

OLE DIAMOND DIES AT KNOXVILLE ZOO

Ole Diamond, who gained worldwide fame first for his orneriness and then as the proud papa of the first African elephants born in captivity in the Western Hemisphere, died at the Knoxville Zoological Park on September 10, 1980. He was 33.

The zoo was closed while Ole Diamond was buried on its grounds. An necropsy was performed but results were not known immediately. The Knoxville Zoo still has 10 African elephants to form a breeding herd, although most of them are still "teenagers."

INDIANAPOLIS FINISHES RE"ZOO"VENATION

The Indianapolis Zoo has completed an extensive re"ZOO"venation program which added and improved various animal displays and provided support facilities and improvements for the visitor. It is based on a safari theme.

BIRTHS HATCHINGS

MAMMAL BIRTHS AT CONSERVATION AND RESEARCH CENTER FRONT ROYAL Kevin Conway

Since June the following births have occurred at CRC: 0.2 Grant's Zebras *Equus burchelli*, 0.1 Onager *Equus hemionus onager*, 1.3 Red Pandas *Ailurus fulgens*, (0.3 surviving), and 0.4 Bush Dogs *Speothos venaticus* (0.3 surviving). In addition, 0.2.2 Matchei's Tree Kangaroos *Dendrolagus matchei* have been born since 12/79.

RARE RHINO BORN AT THE SAN DIEGO WILD ANIMAL PARK. Connie Carson

A male Indian rhino was born August 8 at the San Diego Wild Animal Park. He is the second-surviving Indian rhino born at the WAP and the third-surviving Indian rhino ever born in the United States. A total of 18 Indian rhinos exist in zoos in the US and only about 900 are known to exist in the world. The species, the largest of all existing rhinoceroses, is considered very endangered since poaching and destruction of its native habitat in India and Nepal have contributed to its severe decline in the wild.

BIRTH OF OKAPI AT SAN DIEGO WILD ANIMAL PARK Connie Carson

A male okapi was born at the San Diego Wild Animal Park on July 27. Announcement of the rare birth -- the first okapi born at the WAP in its eight-year history -- was delayed because staff were concerned about the youngster's chances for survival since his mother rejected him. However, the young okapi, named Afmadu, appears healthy and is being raised off-exhibit by keepers on a diet of cow's milk.

Afmadu is the first offspring of Kamina, an 11-year-old female on breeding loan from the Cheyenne Mountain Zoo and Mokola, a 7-year-old male born at the San Diego Zoo. Okapi young are born after a 440 day gestation.

SIBERIAN TIGER BABIES DEBUT AT THE PHILADELPHIA ZOO

Three female Siberian tiger cubs are now on exhibit at the Philadelphia Zoo. In deference to the fact that they were born on the 4th of July and also in honor of the Women's Movement, the cubs are named Martha, Abigail and Dolly for the wives of America's first four Presidents. (Jefferson's wife was Martha, too.)

The three weighed approximately three pounds each when they were born. They remained in the safety of their den for the first month. The mother Zeya is on breeding loan from the Milwaukee Zoo. The father Kundar is from the Philadelphia Zoo. Zeya is 6 years old and Kundar is 10.

The babies weighed almost sixteen pounds each when they left the cubbing den and were officially on exhibit August 29. There are fewer than 200 Siberian Tigers known to be surviving in the wild.

ON ESTABLISHING A NATIONAL
FISH AND WILDLIFE POLICY

by
Thomas L. Kimball

Executive Vice-President, National Wildlife Federation

At last, the federal government is undertaking the preparation of a comprehensive national policy for the management of fish and wildlife resources.

In our opinion, such a policy must have several basic ingredients in the nature of goals and objectives. First, the policy must encompass all forms of wildlife -- game and nongame, endangered species as well as those in abundance, and migratory as well as nonmigratory species. Second, it should encourage wholehearted cooperation among all governmental agencies and concerned private groups to foster and nurture public awareness of the values and benefits stemming from proper conservation of fish and wildlife. Third, it should encourage these same agencies and groups to coordinate their efforts to produce optimum varieties and numbers of fish and wildlife. And, fourth, the policy should recognize both the responsibility of state wildlife agencies to manage fish and resident wildlife on federal lands, except where contrary federal laws exist, and the authority of the federal government to manage wildlife habitats and regulate public use of its lands.

Unfortunately, the last point has long been a sticky one. In the belief that hunting and fishing could be more easily restricted or eliminated, protectionists have pressed for federal controls over all fish and wildlife on federal lands. Just as zealously, sportsmen have supported state management of fish and resident species. The inescapable fact is we will have both protection and wise use of wildlife, and the continuing strife over this issue detracts from the capabilities of both federal and state agencies to carry out their responsibilities.

A workable national fish and wildlife policy will set the record straight and let the country get on with the basic task of doing the best job possible of managing these highly important resources and their habitats for the benefit of everyone.

from the Wildlife DIGEST

STATE ENDANGERED SPECIES AID RE-AUTHORIZED

On May 23, President Carter signed a bill authorizing funding to continue the Federal Endangered Species Grant-in-Aid for another two years.

P.L. 96-246 provides for the appropriation of up to \$12 million for Fiscal years 1981 and 1982 under Section 6 of the Endangered Species Act of 1973 allowing States now participating in the 2-to-1 matching fund program to carry out ongoing conservation activities for their Endangered and Threatened species.

from Endangered Species Technical Bulletin

THE CONDOR

by

Melinda Mosher
Peace Corps, Bogotá, Columbia

The Inca people of South America have a culture and history of tradition and ritual. One of these, symbolizing the Spaniard-Inca relationship involves the Andean Condor and a native bull. The Andean Condor, representing the Incas, is tied to the skin of the bull, which represents the Spaniards. The Condor fights as hard as he can, but is not a match for the bull. The bull ferociously batters the condor on its back, as the condor's claws tear its flesh and the incredible beak tears at more flesh. It is not a quick battle -- a condor is a large bird and the bull must work hard to kill this 'parasite'-- but kill it, it does.

There is a great deal of pageantry leading up to this event. There is a long procession beginning in the town leading the bird up to the hill top area. One man holds a tether tied to one leg and two men each hold a wing. As they walk up the path, there is a sort of parade of men and children with the older men playing beautiful flute-like music from reeds they had made into instruments. Although there was excitement -- presumably from the feeling of a mass of people moving, an oncoming spectacle, and music in the air -- the feeling was not joyous. After all, these people are saying "Look what the Spaniards did to us... we never had a chance!" just as the condors will never have a chance in their individual battle with the bull.

Certainly, I cannot condone the murder of an animal for pure entertainment and spectacle. But in this case, who is 'right' and who is 'wrong'? The Andean Condor is a troubled species; the Incas are a dying race. Who's value judgement shall we use?

This ritual was filmed by Peace Corps Volunteers, the National Geographic and the Audubon Society. The film, The Condor, was made in 1968, and was begun in Colombia and finished in Peru. It so graphically depicted the life of the Andean Condor in Peru that it was banned in that country. The version that I viewed had a garbled Spanish sound track, but the photography was magnificent. The photographer so much wanted to capture on film the condors' natural flight movements, that he would follow them up in the air and cut off his plane engine so the sound would not scare them. Be on the look-out for the English version of The Condor.

Another cultural episode that was filmed is still part of the rituals, but lacks the emotion, tradition and possible justification that might be argued in the first case. During one of the Holy days, there was a German tradition to tie presents to a tree. Men and boys would run by on horseback, stand up in the saddle as they passed the presents and try to knock them down. It is like the Mexican piñata but they use their hands, not clubs. But the Colombians and Peruvians have added their own touch -- substituting a live Condor in the place of the inanimate presents.

They catch the wild Condor by slaughtering a calf or cow on a mountain top and then hiding in the trees until the birds of prey come. When the area is swarming with these large predators -- soon-to-be-prey -- the call is given and all the men spring out. Among the chaos and the pandemonium, a net is thrown and the bird is caught. *continued*

The Condor, *continued*

The procession up to the tree in the town plaza is similar to that in the previous account. The bird is tied up and the 'fun' begins. As you are all aware, a condor is a large bird and it takes a lot to kill one; indeed, the process may last over an hour.

Once the bird has been killed, one of the men goes up and bites off the tongue -- a final show of victory. The bird is then often thrown to the crowd where it is torn up and 'distributed' to the people as a sort of souvenir.

Another segment of the film shows a beach in Peru -- brown with tiny patches of white. A close-up shows the huge, incredibly enormous masses of birds, brown pelicans, penguins, and sea gulls with the tiny patches of white the sand. The birds like to lay their eggs on the sand and are terrified of the condors which pass overhead en route to the cliffs. In their panic, they would try to flee and smash their own eggs, so it became the duty of every Park Ranger to kill 50 condors a year. Shooting condors in this area means that a lot of them may fall in the ocean or deep into the cliffs. Therefore, far more than 50 were killed in order for each Park Ranger to show 50 carcasses. In 1970 (2 years after the release of the film) they stopped shooting condors.

Right now the adult population of Andean Condors is 90% of the total population -- which spells big future trouble for the species. Twenty-five years ago there were Condors found around Bogotá; there are now only an estimated one to two hundred in the entire country of Colombia. At this time, there is a National Park in the northern part of Peru where some 100 Condors can live protected.



BOOK ON REPTILE INVENTORY AVAILABLE

The "Inventory of Live Reptiles and Amphibians in North American Collection, Current January 1, 1980" is available now.

This inventory gives information on location and sex of all individual reptiles and amphibians of 912 species and 1,093 forms, held in 49 public and 33 private collections. There are also thirty-two pages of miscellaneous breeding information, including dates of egg laying and hatching, types of incubation media used, incubation temperatures, etc., as reported by the responding collectors. The report is 172 pages.

The 1980 inventory is limited in numbers and will not be reprinted. Copies are available for \$15 each, including packaging and postage, from
Frank L. Slavens
P.O. Box 30744
Seattle, WA 98103

Zoo and other institutions can be billed; all others please send check or money order with order.

ARTIFICIAL BREEDING IN CAPTIVE WILD MAMMALS

by

S.W.J. Seager, D.E. Wildt, C.C. Platz, Jr.

Institute of Comparative Medicine

Texas A&M University/Baylor College of Medicine

To date development of programs for artificial means of semen collection and insemination in the captive wild mammal population has been, for the most part, negligible. These methods have been developed to a high degree of proficiency in many domestic mammals, such as the bovine, ovine, porcine and avian species. In our laboratory, attempts are being made to adapt systems from domestic species, as well as develop new procedures and technical approaches, to provide a means of solving many of the breeding problems associated with the captive wild populations in zoos and game parks.

We have collected semen by electrical and manual stimulation in a number of species. Also, data from our laboratory has show that artificial induction of estrus and ovulation can be achieved routinely in the domestic feline with the aid of laparoscopy for direct observation of reproductive activity. We have obtained a number of viable progeny from the use of frozen semen in domestic dog, cat and Timber wolf *Canis lupus* (1,2,3).

Semen Collection

Anesthesia is generally required for electroejaculation. This process has been performed successfully in the squirrel monkey *Saimiri sciureus* and rhesus macaque *Macaca mulatta* without anesthetic; however, this may be traumatic to the animal. Drugs used either singularly or in combination for electroejaculation in the various species are Ketaset (Bristol labs), Sernylan (Parke-Davis), Surital (Parke-Davis), C1744 (Parke-Davis), Rompun (Haver-Lockhart), Acepromazine (Ayerst), Sparine (Wyeth), and M-99 (Reckitt and Colman).

A deep surgical plane of anesthesia is desirable for electroejaculation. Successful ejaculates have been collected, however, in animals in light to medium anesthetic planes. A list of the species that have undergone electroejaculation is shown in Table I. Table II illustrates the results of four parameters of semen analysis in some of these species.

The procedure for electroejaculation is similar to that reported in the domestic cat (4,5). A rectal probe is used with either AC or DC power source for the electroejaculation procedure. It is rarely possible to collect semen from any of the captive wild mammals using manual stimulation and an artificial vagina. In a few instances, successful collections have been obtained from Timber wolves, Siberian tigers, ocelots, and cheetah; however, only with great precaution.

After the semen is obtained, it is evaluated both macro and microscopically if freezing is desired. The semen sample is then equilibrated at 5°C, pelleted on dry ice and deposited into liquid nitrogen for storage. It can be inseminated immediately or, if good quality, held for two to three days at 5°C in proper extenders until used for insemination.

Semen stored in liquid nitrogen for more than six years is capable of fertilization in the dog. Cattle have been produced from artificial insemination of semen that had been stored 30 years. Based on this data, we assume that a similar result would be possible in the captive wild mammals.

continued

Artificial Breeding in Captive Wild Mammals, continued

TABLE I

SPECIES ELECTROEJACULATED TO DATE IN OUR PROGRAM

NON-DOMESTIC ANIMALS

Golden marmoset	<i>Leontideus rosalia*</i>
Lowland gorilla	<i>Gorilla gorilla gorilla*</i>
Baboon, Hamadryas	<i>Papio hamadryas*</i>
Squirrel monkey	<i>Saimiri sciureus*</i>
White-handed gibbon	<i>Hylobates lar</i>
Red Uakari monkey	<i>Cacajao rubicundus</i>
Grey gibbon	<i>Hylobates moloch</i>
Orangutan	<i>Pongo pygmaeus*</i>
Spider monkey	<i>Ateles fusciceps*</i>
Black and White Colobus monkey	<i>Colobus colobus</i>
Black and Red Tamarin	<i>Saguinus nigricollis</i>
Hamlyn guenon	<i>Cercopithecus hamlyni</i>
Assamese macaque	<i>Macaca assamensis</i>
Lion Tailed macaque	<i>Macaca silenus</i>
Moor macaque	<i>Macaca maurus</i>
Mandrill	<i>Papio sphinx</i>
Owl monkey	<i>Aotus trivirgatus*</i>
Chimpanzee	<i>Pongo pygmaeus</i>
Yellow baboon	<i>Papio cyanocephalus</i>
Greater kudu	<i>Tragelaphus strepsiceros</i>
Fallow deer	<i>Dama dama</i>
Black rhinoceros	<i>Diceros bicornis</i>
Bactrian camel	<i>Camelus bactrianus*</i>
Pere David deer	<i>Elaphurus davidianus</i>
Blesbok	<i>Tamaliscus albifrons</i>
Muntjac	<i>Muntiacus reevesi*</i>
South American tapir	<i>Tapirus terrestris</i>
Axis deer	<i>Axis axis</i>
Sitatunga	<i>Tragelaphys spekei</i>
Arabian oryx	<i>Oryx leucoryx*</i>
Red sheep	<i>Ovis orientalis</i>
Red Lechwe	<i>Kobus leche</i>
Slender horned gazelle	<i>Gazella leptoceros</i>
Eld's deer	<i>Cervus eldii eldii*</i>
Speke's gazelle	<i>Gavella spekei</i>
Yellow backed duiker	<i>Cephalophus sylvicultor</i>
Dik dik	<i>Madoqua kirki</i>
Brocket deer	<i>Mazamamericana temama*</i>
Pygmy hippopotamus	<i>Choeropsis liberiensis</i>
Onager	<i>Equus hemionus onager</i>
White or Square lipped rhinoceros	<i>Ceratotherium simum</i>
Dorcus gavelle	<i>Gazella dorcus*</i>
South American llama	<i>Llama peruana</i>
Binturong	<i>Arctictis binturong*</i>
Tree kangaroo	<i>Dendrolagus matschiei</i>
Meerkat	<i>Suricata suricata*</i>
Egyptian mongoose	<i>Herpestes ichneumon*</i>
Paim civet	<i>Paradoxurus hermaphroditus*</i>
Spotted hyena	<i>Crocuta crocuta*</i>

Continued

Artificial Breeding in Captive Wild Mammals, continued

TABLE I, continued

SPECIES ELECTROEJACULATED TO DATE IN OUR PROGRAM

NON-DOMESTIC ANIMALS

Lesser panda	<i>Ailurus fulgens</i>
Polar bear	<i>Thalarcos maritimus</i> *
American black bear	<i>Ursus americanus</i> *
Bush dog	<i>Speothos venaticus</i> *
North American red fox	<i>Vulpes fulva</i>
Canadian timber wolf	<i>Canis lupus canadensis</i> *
Kodiak bear	<i>Ursus arctos middendorffi</i>
Sloth bear	<i>Melursus ursinus</i>
European brown bear	<i>Ursus arctos arctos</i>
Spectacled bear	<i>Tremarctos ornatus</i> *
African water mongoose	<i>Atilax paludinosus</i>
Cougar	<i>Felis concolor</i> *
North Chinese leopard	<i>Panthera pardus japonensis</i>
Canadian lynx	<i>Felis lynx canadensis</i> *
Bobcat	<i>Felis rufa</i> *
Temminck's Golden cat	<i>Felis temminckii</i> *
Ocelot	<i>Felis pardalis</i> *
Geoffroy's cat	<i>Felis geoffroyi</i> *
Clouded leopard	<i>Neofelis nebulosa</i> *
Lion	<i>Panthera leo</i> *
Bengal tiger	<i>Panthera tigris tigris</i> *
Siberian tiger	<i>Panthera tigris altaica</i> *
Leopard	<i>Panthera pardus</i>
Sand cat	<i>Felis margarita</i>
Amur leopard cat	<i>Felis bengalensis euptilura</i>
Jaguar	<i>Panthera onca</i> *
African cheetah	<i>Acinonyx jubatus</i> *
Leopard cat	<i>Felis bengalensis</i>
Margay	<i>Felis wiedii</i>
Crab eating fox	<i>Cerdocyon thous</i> *
Bull snake	<i>Pituophis melanoleucus</i>
Angolan python	<i>Python anchietae</i> *
Green sea turtle	<i>Chelonia mydas</i> *
Galapagos tortoise	<i>Testudo elephantopus</i> *
Hog nose snake	<i>Heterodon platyrhinus platyrhinus</i>
Red eared pond turtle	<i>Pseudemys scripta elegans</i>
Degu	<i>Octodon degus</i> *
Patagonian cavy	<i>Dolichotis patagona</i>
White rat	<i>Mus norvegicus albinus</i>
Sugar glider	<i>Petaurus breviceps</i> *
Mexican fruit eating bat	<i>Artibeus jamaicensis</i> *

* denotes more than one ejaculation obtained from the species by electroejaculation

TABLE II
SEMEN COLLECTIONS AND FREEZING RESULTS FROM SELECTED ZOO ANIMALS

Date	Species	Volume Collected (ml)	Total Sperm Count (x10 ⁶)	Post Collection		Post Thaw	
				Percent Motile	Prog. Mot.	Percent Motile	Prog. Mot.
9-30-77	Arabian oryx	1.85	26	60	5	60	4
9-29-77	Axis Deer	0.024	2192	80	5	65	5
8-26-75	Baboon	0.25	115	30	4.5	25	4
3-14-77	Sloth Bear	0.88	156	60	5	40	3
4-23-77	Cheetah	1.45	14	60	5	55	5
1-6-77	Degu	0.078	640	85	5	80	5
12-9-78	Dorcus gazelle	143	143	80	5	65	5
9-29-77	Sitatunga	1.69	316	60	5	55	5
12-9-78	Eld's Deer	3.20	2957	80	5	60	5
6-27-78	Jaguar	7.30	526	80	5	30	5
9-13-76	Leopard cat	0.093	532	90	5	70	5
1-5-77	African Lion	3.05	64	70	5	70	5
5-20-73	Canadian Lynx	0.40	25	60	4.5	20	4
4-23-77	Margay	0.35	127	90	5	30	5
9-15-76	Meerkay	0.03	28	40	5	70	2.5
9-13-76	Mongoose	0.09	192	50	5	30	4.5
4-23-77	N. Chinese Leopard	6.30	16	65	5	30	4.5
4-1-73	Ocelot	0.20	5	40	4.5	20	4.5
1-11-78	Bacterin Camel	10.3	1256	80	5		
6-79	Black Rhinoceros	44.6	440	60		20	

S.W.J. Seager, D.V.M., Dept. of Veterinary Physiology & Pharmacology, TAMU, College Station, TX 77843
C.C. Platz, B.S., Dept. of Veterinary Physiology & Pharmacology, TAMU, College Station, TX 77843

Artificial Breeding in Captive Wild Mammals, continued

Laparoscopy

Laparoscopy has been a valuable technique for monitoring reproductive cyclicity in both domestic and wild mammals. It has been used successfully to monitor the effects of exogenous hormones on follicle development and ovulation in the domestic cat. Successful pregnancies have been produced in our laboratory in the domestic cat from the artificial induction of estrus and ovulation followed by artificial insemination with previously frozen semen. Future attempts of obtaining pregnancies in wild animals will be based on these successful procedures developed in the domestic cat and dog (6).

Table III illustrates the species in which laparoscopy has been performed.

Table III

Species in Which Laparoscopy Has Been Utilized

Man	Dog	Lion
Mouse	Nonhuman primate	Tiger
Rat	Birds	Cheetah
Guinea pig	Sheep	Leopard
Hamster	Pig	Jaguar
Rabbit	Cow	Polar Bear
Cat	Horse	Reptiles
Fish		

Discussion

Our program has been very successful in most species in respect to semen collection and freezing. The artificial insemination, estrus and ovulation induction program is currently being investigated in several of the large species of felines and other captive animal species (8,9).

The eventual goal of this project is to establish a program of artificial breeding in non-domesticated animals. The reasons for establishing such a program are the following:

1. To establish reproductive physiological parameters.
2. To develop and refine methods:
 - a. of physical restraint for artificial insemination and semen collection.
 - b. of electroejaculation, semen freezing and artificial insemination.
 - c. of estrus and ovulation induction, detection, and pregnancy diagnosis.
3. To improve breeding and preservation of common and endangered zoo animals.
4. To preserve valuable cells for future breeding and research study.
5. To establish a national and eventually an international semen bank.

Continued

The advantages of a frozen semen-artificial breeding program are to:

1. Eliminate the risk and expense of shipping captive wild animals for breeding.
2. Inseminate the female without the male being present, or to eliminate the problem of incompatible pairs.
3. Prevent possible disease transmission from outside animals brought in for breeding.
4. Introduce new bloodlines into gene pool from the wild animal game parks and reserves and zoos.
5. Help eliminate complicated legal procedures and animal shipment involved with breeding loans.
6. Improve bloodlines with possible reduction or elimination of undesirable genetic traits.
7. Make available the possibility of progeny testing males.

The authors advocate the use of an artificial breeding program only as a part or an aid in an overall breeding program. We believe that animals given ideal situations and habitat need little help from man to reproduce. It is when man has put such constraints on the 'ideal' situation, whether it be disease, caging, diet or other stress, that we suggest artificial insemination can play a vital role in wild animal reproduction. The success thus far observed leads us to believe that the capability for breeding many captive wild mammals, including some of the endangered species, can be brought about using artificial methods.

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OBSERVATIONS ON COURTSHIP
AND EGG INCUBATION OF THE
SOUTH AMERICAN RED-FOOTED TORTOISE

Geochelone carbonaria

by
Roger C. Cogan
Reptile Keeper, Phoenix Zoo

Reptile
Amphibian
potpourri

At the Phoenix Zoo we have one pair of adult South American red-footed tortoises which are housed with a small colony of green iguanas. These animals are kept in a large, circular, open-air enclosure with an equal amount of available sunlight and shade and a small pool of water. The tortoises and iguanas are simultaneously fed a mixture of in-season fruit and vegetables, canned dog food and vitamin supplements. The tortoises also eat a fair amount of grasses growing in the exhibit.

From April 5-10, 1979, and periodically from June 12 to September 4, 1979, courting behavior was witnessed between the red-foots. The most notable activity consisted of the male chasing the female, with the female spending most of her time retreating from the male. While in pursuit the male would repeatedly bite at the female's hind legs and attempt to mount while vocalizing in a very audible croak-like bark. The chase episode would last from five to fifteen minutes, ending with the male tiring or the female finding a crevice or hiding place where she would withdraw head and limbs, further frustrating the male.

On none of these occasions was actual copulation observed. However, on November 11, 1979, in late afternoon, the female was sighted digging a nest at the base of a banana plant near the pond. The female was left undisturbed and checked again at sundown. By that time the female had finished her work at the site, having done a poor job of concealing the nest. One egg was still exposed. With the impending Arizona winter, it was decided to try to artificially incubate the three eggs.

The eggs were then taken from the nest site and placed in a 20 cm. unglazed flower pot filled with a mixture of sand, vermiculite, and mud from the nest site which was soaked with a liquid the female had expelled. Care was taken to keep them in the original position they were found in the nest. They were buried at a depth of 3.5-5.0 cm. The flower pot was then placed in a small infant incubator. The temperature was kept between 24.4 and 27.0° C. Temperature fluctuations occurred due to heating elements burning out over the long incubation period.

Regulating humidity was also difficult. A piece of plate glass was used to cover the top of the flower pot in an effort to maintain a consistent level of moisture. A piece of thin plywood was placed over the glass to shut out the light, then both were slid back to allow 1.5 cm. gap for ventilation. Water was added to the mixture when the top of the soil felt dry.

The first hatchling appeared on April 4, 1980, after 149 days of incubation. The second hatchling broke through the egg on April 5 and emerged on April 6. The third failed to hatch -- possibly due to fluctuations in temperature and humidity.

continued

Observations on Courtship and Egg Incubation, continued

Average measurements for the hatchlings were: weight of 33 grams, carapace length of 4.7 centimeters, plastron length of 4.4 centimeters. When three months old, the tortoises had an average weight of 54 grams, carapace length of 6.4 cm. and plastron length of 5.7 cm.



ZOO NEWS FROM JAPAN

by
Yoshi. Yonetani
Zoo Design & Education Lab, Kobe, Japan

A young pair of Baikal Seals *Phoca siberica* were presented from the Moscow Zoo, the Soviet Union, to the Toba Aquarium, Mie prefecture, on August 1. The presumed age is 2 years old; the length is 50-60 cm. and the weight about 20 Kg.

This Seal is the only fresh water seal in the world and lives in the deep Lake Baikal. They were difficult to obtain and are very unique exhibits. At the present time, the Moscow Zoo has a young male seal and the St. Louis Zoo, USA, has 2 pair in captivity.

In this animal exchange, Japanese Monkeys *Macaca fuscata* 1.3 and "poison" Asian Lance-head Snakes *Trimeresure flavoviridis* 1.3 were sent from Japan in May to the Soviet Union. We hope for breeding success in 2 or 3 years.

The Toba Aquarium has also set two new records. The Dugong *Dugong dugon* renews a world live record, and the Finless Porpoise *Neophocaena phocaenoides* succeed in the only captive propagation in the world.

The female Dugong came in May 20, 1977 and was placed in the same exhibit on April 20 with a male Dugong who came in last September 11 after being captured off the Philippines.

The female Finless Porpoise had successful breeding three times. The first two cases (1976 and 1977) both babies lived only a short time. But the third baby, a male who was born May 1, 1979 is growing well now.

A pair of Two-spotted Palm Civets *Nandinia binotata* in Asa Zoological Park, Hiroshima prefecture, had 2 babies on April 22, 1980. That's an excellent first birth in Japan. This species is seldom seen in the zoo world. Data at the time of birth: length of body 14 cm, tail's length 14 cm, and the weight 90 grams. The babies, both females, are being hand-raised.

The same pair had two babies again on July 16. The second set of babies (unknown sex) are being raised by the parents. In the Nocturnal House, along with the above mention Civets 1.3.2 are Aardvarks 1.1, Spring Hares 2.3, Bat-eared Foxes 1.2 and an African Sparrow Owl (the only one in captivity in a Japanese Zoo.) Recently, 1.2 Fennecs were part of the facility as first comers to Japan.

This news is based on data as of mid-August 1980.

THOUGHTS

by

Sue Corey

Seneca Zoological Park, Rochester, New York

Ever since some of our Keepers joined AAZK last November, we have been trying to decide what we can write for the *Animal Keepers' Forum*. The articles we have read have generated much interest and we would like to add our Zoo's contribution. Back copies have been scanned; our zoo events discussed. Our chimp's 50th birthday? The training of our two baby elephants? Our male snow leopard's contribution to the raising of three cubs last year? There is this need to hear from other keepers to solve problems and share happy endings; to learn better ways to feed, house and look after our individual creatures.

All very good, all very necessary. The AAZK is our medium and an end to our isolation -- since we are a small zoo. We want to be considered professionals and want due respect accorded us by our directors, zoo societies and fellow keepers.

The thing with knowledge and the hunt for improvement is that I find myself reading books and articles critical of zoos and the attitude shown by those who work in them. I can ignore them and make excuses, give the answers given to me by zoo public relations and confident directors and curators. These are the critics of zoo "philosophy."

Why do we buy a rare expensive antelope? Why add another species to our "collection?" Public demand? To liven a stale zoo? Are we meeting the biological and psycholological demand of our present animal population?

Do we know if breeding occurs because of us or in spite of us? No matter how often or common a birth we take pride in it. Do you even wonder where these young go? How many of us are aware how "over-populated" the market is on some species: Some you can hardly give away. Each year for these common births the wait to trade or sell grows longer; yards and exhibits more crowded. Is there any guarantee that when they do leave, they will not become someone's exotic pet or a cast-off in a roadside menagerie?

Every zoo is proud of its birth record. We are told it is a sign of well-being and demands met. We have done a good job. Or is it out of boredom and constant exposure to a mate causing hyper sexual activity? Are any of us guilty of inbreeding because it is cheaper than bringing in new stock?

What about those who are not breeding. Are they lacking in their "naked cage" some simple need? nesting material, room for courtship, certain foods or maybe just privacy? If they do bear young, can the parents raise them in a natural manner? Are we willing to take a crowd pleaser off-exhibit for months to provide for these needs? Do we even have these extra facilities?

Should we try to raise them ourselves if the atmosphere and environment is lacking? Will these "pets" ever be normal representatives of that species' behavior or are we perpetuating abnormal captive behavior? The animals may be unfit for breeding and taking up space due to the pressure of a good record we have interfered again -- a double sin.

continued

Thoughts, continued

If the right environment is present and the young raised successfully, then what? Do we sell or trade to another zoo which does not have the needed requirements to propagate this particular species? Will they be just "trophies" because of their rarity and difficulty?

Is this all in the name of conservation? What are we conserving them for? a diminishing wild habitat? to sit on other zoo shelves? On the other side, do we continue to take wild-caught to freshen our zoo blood? At the expense of how many who die in the attempt or who die while waiting at various ports for the paper work to be completed.

Is it for education? Who are we educating -- ourselves, the visitors? For all our educational attempts, it is often at the expense of the animal. What does this education mean for this species is a good question. Are we unconsciously still generating a profit for collectors and not asking too many questions? Are we depleting unnecessarily a vanishing species that may have adjusted to the changes around it just to exhibit a status symbol?

Is there an end to our means? Is it justified? Do we Keepers think about this or leave the answers to the future and philosophies of the individual zoo management? Do we have any responsibility to educate the zoo societies who make these decisions -- life and death in some cases -- as to the direction of our animal keeping?

How we do our jobs, our attitudes and our research is important. Maybe it takes so much time and energy that we leave the questions and answers to the experts. If we are doing jobs so well, however, we become the experts. We've shown our concern already. Our research leads us to these questions. Other Keepers have brought them to the attention of zoo management. Even the visitors ask some disturbing questions that stop us and make us wonder.

This will come if we allow ourselves to be disturbed by zoo philosophies and some of its lack of insight. If not us, who will try to provide the answers and influence future policy? Maybe we can stop long enough our microscopic look at what we do and start thinking about the future of our zoo and the people who have the power to help us make these decisions.

After professionalism, then what? We know there is more than just taking pride in ourselves for being good Keepers.

Some of these questions may be unpopular. They seem to challenge the existence of zoos and the huge amounts of money and institutions that depend on us not to change. If you do not accept the answers, you can be considered a trouble maker. We Keepers also deserve some of the charges laid upon us by management and societies. Our "rights" are sometimes more important to us than the dedication we should show.

Seriously approaching the idea that we are all in this together -- we should at least be able to ask some questions. Directors, curators and societies should not feel threatened. Neither should we feel indignant when our ideas are questioned or our carefully planned exhibits shown to have some shortcomings.

The AKF is our means of communication between us and the public. What can we contribute to our zoos if we all ask questions and as an association show how serious we are.

legislative news

compiled by Kevin Conway
Front Royal, Virginia

KEY DEER RECOVERY PLAN APPROVED

A recovery plan which has as its objective the stabilization of the Florida Key deer *Odocoileus virginianus clavium* population, as opposed to an effort to boost its numbers, has been approved by the Service. Although the population has apparently stabilized at around 350-400 deer, high mortality from road kills and a limited range keep this species in jeopardy.

A distinct geographical race of the Virginia white-tailed deer *Odocoileus virginianus*, the Key deer is the smallest race found in the United States. The average weight of an adult male is 80 pounds and an adult female weighs about 63 pounds. The average shoulder height ranges from 24-26".

The center of the Key deer population is Big Pine Key, Florida, with an estimated 200-250 deer. Road kills by automobiles are the most serious threat to the deer on Big Pine Key, accounting for 76% of known mortalities from 1968-1973.

IMPORTATION, EXPORTATION AND TRANSPORTATION OF WILDLIFE

The final rules on a licensing system for regulating all persons who import or export wildlife for gain or profit was published in the Federal Register, Vol 45, No. 166, Monday, August 25, 1980. Interested persons may read the ten page report in the Federal Register or contact Kevin Conway for specific information.

BOX SCORE OF SPECIES LISTINGS

Endangered Species Technical Bulletin

June 30, 1980

Category	Number of Endangered Species			Number of Threatened Species		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Mammals.....	35	251	286	3	21	24
Birds.....	67	145	212	3		3
Reptiles.....	12	55	67	10		10
Amphibians.....	5	9	14	2		2
Fishes.....	31	11	42	12		12
Snails.....	2	1	3	5		5
Clams.....	23	2	25			
Crustaceans.....	1		1			
Insects.....	6		6	3		3
Plants.....	49		49	7	2	9
Total....	231	474	705	45	23	68

Number of species currently proposed: 54 animals, 2 plants.

Number of Critical Habitats listed: 36

Number of Recovery Teams appointed: 68

Number of Recovery Plans approved: 38

Number of Cooperative Agreements signed with States: 36 Fish & Wildlife,
6 plants

NOTICE OF REVIEW OF 18 SPECIES OF FOREIGN REPTILES

The U.S. Fish and Wildlife Service gave notice in the Federal Register, 45:160, August 15, 1980 that there is evidence on hand to warrant a review of the status of 18 species of foreign reptiles to determine whether they should be proposed for listing as Endangered or Threatened species under provisions of the Endangered Species Act of 1973, as amended. The common and scientific names, and ranges, are provided in the table below. The threats which are believed to be causing declines of these species are: habitat destruction, the introduction of non-native predators, exploitation as a source of human food (mainly local), and overcollection.

Comments and materials relating to the status of these species should be submitted by November 13, 1980, to John L Spinks, Jr. Chief, Office of Endangered Species, U.S. Fish and Wildlife Service, Washington, D.C. 20240

Common name	Scientific name	Range
Serpent island gecko	<i>Cyrtadactylus serpensing</i>	Mauritius
Acklins ground iguana	<i>Cyclura rileyi nuchalis</i>	Bahamas
Allen's Cay iguana	<i>Cyclura cychlura inornata</i>	Bahamas
Andros Island ground iguana	<i>Cychura cychlura cychlura</i>	Bahamas
Cuban ground iguana	<i>Cyclura nubile</i>	Cuba, Cayman Is.
Exuma Island iguana	<i>Cyclura cyclura figginis</i>	Bahamas
Jamaican iguana	<i>Cyclura collei</i>	Jamaica
Mayaguana iguana	<i>Cyclura carinata bartsohi</i>	Bahamas
Turks and Caicos iguana	<i>Cyclura carniata carinata</i>	Turks and Caicos Is.
Watling Island ground iguana	<i>Cyclura rileyi rileyi</i>	Bahamas
White Cay ground iguana	<i>Cyclura rileyi cristata</i>	Bahamas
Gray's monitor lizard	<i>Varanus grayi</i>	Philippines
Hiero giant lizard	<i>Galiotia simonyi</i>	Canary Island
Aruba Island rattlesnake	<i>Crotalus unicolor</i>	Venezuela
Asiatic box turtle	<i>Cuora trilasiata</i>	Hong Kong, People's Republic of China
Central American river turtle	<i>Dermalemys mawei</i>	Belize, Mexico, Guatemala
Chinese big-headed turtle	<i>Platysternon megacephalum</i>	Hong Kong, People's Republic of China
Lar Valley Viper	<i>Vipers latiffi</i>	Iran

PROPOSED DESIGNATION OF CRITICAL HABITAT FOR THE ENDANGERED MARYLAND FOR THE ENDANGERED MARYLAND DARTER

The Fish and Wildlife Service proposes to designate Critical Habitat for the Maryland darter *Etheostoma sellare*. Self-sustaining populations of this fish species are now believed to exist only in two small segments of streams in Harford County, Maryland. Comments on the proposed rule, published in the Federal Register, 45: 169, must be submitted by November 26, 1980.

EAGLE SUCCESS STORIES IN 1980

HACKED EAGLES NEST IN NEW YORK

Endangered species specialists in New York have announced an unexpected victory: Two bald eagles have been hatched in the wild by birds that were themselves reared at a hack site in the State in 1976.

Biologists first noticed the pair of 4-year-old birds attempting to establish a home territory and nest earlier this spring, but were unable to confirm the presence of an egg. A ground check around the 1st of July, however, revealed two eaglets in the nest. Both appear healthy, and are expected fledged around the end of July.

Peter Nye, coordinator of the State's endangered species program, called the event "truly historic," demonstrating that eagles in the wild in New York can now produce viable eggs with shells strong enough to withstand incubation. "It is a significant step toward our goal of restoring a breeding population of bald eagles in New York State," Nye said. Until this year, only a single active bald eagle nest remained in New York.

In the first 4 years of the program, 15 eagles were hacked at the Montezuma National Wildlife Refuge in central New York (where 5 more birds are being reared this season.) *Ed. Note...see AKF, page 146 for details of one of the eagles.*

Unfortunately, biologists have been unable to band the eaglets because of an active honeybee hive directly under the nest.

Endangered Species Technical Bulletin, July

COMMENTS ON EAGLES HATCHING

In an article in the New York *TIMES*, July 19, 1980, Dr. Tom K. Cade, head of the Peregrine Fund and the Laboratory of Ornithology at Cornell and one of the nation's leading experts on birds of prey, agreed that the births were "an extraordinary event."

"Several important steps have been surmounted," he said. "The eagles survived; they formed a pair; they laid eggs; the eggs were viable, and they produced eagles. Put all of those improbabilities together and it makes an interesting story from that standpoint alone.

"But the significant implications beyond that are that it shows that the DDT levels in upstate New York have lowered so it is possible to again support a native bald eagle population. It also suggests that we can do the same for other large birds of prey, such as the California condor and the sea eagles of Scotland."

EAGLE COUNTS UP 30 PERCENT

A second annual mid-winter survey of bald eagles in the lower 48 states sponsored by the National Wildlife Federation in January has produced a preliminary total of 12,199 eagles -- some 3,000 more birds than were sighted during the 1979 survey.

William S. Clark, director of the Federation's Raptor Information Center, cautions that we should not look to the 30 percent increase as positive evidence that the bald eagle is making a comeback in the U.S. "We

1980 Eagle Success Stories, continued

attribute the higher count mostly to the fact that our survey was more intensive this year, with more participants, better coordination, and coverage of more area." But Clark believes this year's figures do seem to show that we are not losing ground in our effort to save the bald eagle, with the number of young and immature birds especially encouraging.

The survey also helps officials learn more about the movements of wintering eagle and their habitat, so that they may determine which areas should be better protected.

Survey results are available from the Raptor Information Center, National Wildlife Federation, 1412 - 16th St., NW, Washington, D.C. 20036.

Endangered Species Technical Bulletin, July

EAGLES ON THE UPSWING IN THE CHESAPEAKE

The productivity of the bald eagle is up again this year in the Chesapeake Bay area. A record total of 72 eagles fledged this spring from 49 successful nests in Maryland, Virginia, and Delaware -- actually exceeding the previous known high of 1936, when 71 eagles were hatched in 35 nests in the Bay area.

Almost all of the active nests were visited and climbed to by members of the Chesapeake Bay Bald Eagle Banding Team, a project of the National Wildlife Federation's Raptor Information Center, organized in 1977 to assess the status, life history, productivity, and problems of nesting bald eagles in the Bay area. Since the project's inception, co-operators have learned a great deal about the life history of Chesapeake Bay bald eagles -- all of which should better equip them to protect essential nesting habitat, determine probable sources of contamination and disturbance that may inhibit reproduction, and learn the migratory habits of the eaglets once they have fledged.

Endangered Species Technical Bulletin, July



PROPOSED ENDANGERED STATUS FOR U.S. POPULATIONS OF FIVE SPECIES

Due to an inadvertent oversight, the U.S. individuals of the shorttailed albatross, thickbilled parrot, wood bison, northern swift fox, jaguar, margay and ocelot, species which may occur in the U.S., are not officially listed as Endangered species although all individuals which may occur in foreign countries are listed.

The present document proposes to list as Endangered five of the above seven species in their U.S. ranges and corrects the oversight which resulted in their inadvertent exclusion when only individuals which occur in foreign countries were listed. The northern swift fox is not being proposed for listing at this time because of uncertainties regarding its taxonomic status and distribution in the U.S. The wood bison is not being proposed because no pure bred individuals of this subspecies are known to occur in the U.S.

ENDANGERED RHEAS THRIVE AT THE SAN DIEGO ZOO'S
NEW AVIAN PROPAGATION CENTER

Thirty-five chicks of the endangered Darwin's rhea of South America were a dramatic testimony to the value of the San Diego Zoo's brand new Avian Propagation Center when the official dedication ceremonies were held June 18. Last year only one Darwin's rhea survived its artificial incubation at the old facility; this year the 35 will be joined when others hatch out of the eggs that were still incubating at the time of the opening of the off-exhibit incubating and brooding complex.

The San Diego Zoo has the only captive breeding colony of Darwin's rhea in the world with about 20 adults being maintained at various locations in the zoo. The new chicks will be shipped to other zoos to spread the stock so a natural disaster or disease will not be as serious.

Besides rheas, other bird species are being successfully hatched and raised at the new complex which began phasing in operations in late March. Emus, elegant crested tinamous, Palawan peacock pheasants, Hume's bar-tailed pheasants, Kenya crested guinea fowl and mikado pheasants are among the species.

The Avian Propagation Center will house more than 100 dozen eggs in the new 721-square-foot incubator building. The hundreds of hatchlings will graduate to the 4,416-square-foot brooder rooms and pens. In addition, there are 59 bird breeding cages which brings the total area to 8,086 square feet.

The Center's design separates functions and therefore minimizes contamination and spread of diseases harmful to the young birds. Each day keepers check the Zoo's bird population for eggs laid the day before by birds which are not expected to sit on the eggs and incubate them naturally. Each egg is placed in a fumigation chamber upon arrival to kill any bacteria picked up from the outside. The eggs are then assigned a number so that keepers can follow the progress of individual birds and monitor the success rates of parent birds so that future breeding strategies can be planned. The egg then goes into one of five incubators. These can be set at different temperatures for different bird species and each has a separate air circulation system to prevent the spread of bacteria between incubators.

Periodically, keepers candle each egg to see whether it is fertile and whether the bird embryo is developing properly. Infertile eggs are culled from the incubators and fertile eggs are eventually sent to the hatchery, a special incubator for eggs three days from hatching. Eggs here are turned four times daily by keepers. Generally, chicks hatch unaided by keepers and spend their first few hours in the hatchery drawer, drying out and resting from their ordeal.

The baby birds are then moved to the brooder building where they are checked by Zoo veterinarians and begin to feed on their own. The brooder room provides both indoor and outdoor pens with room for exercise and heat lamps for warmth on cool days. Birds can be separated according to species and size -- a flexibility which allows for continued accurate recordkeeping. A daily cleaning schedule keeps the facility sanitary and disease-free. A collection of pens nearby holds groups of young birds awaiting placement in the Zoo or shipment to other institutions.

continued

San Diego Zoo's New Avian Propagation Center, continued

Other special features of the new Avian Propagation Center include an emergency power generator to keep incubators warm in event of a power failure, rooftop solar heating panels to provide hot water for the complex, separate temperature and humidity controls for the incubator building and the brooder building, and an emergency flashing light to indicate a nighttime power failure to the Zoo's security officers.

Also included in the complex are 19 roof cages and 40 breeding cages to house exotic birds which may be too sensitive to breed and nest while on public exhibit.



RARE AND POPULAR PYGMY CHIMP DIES AT SAN DIEGO ZOO. . . . Conny Carson

Kakowet, a 22-year-old male pygmy chimpanzee and a favorite of San Diego Zoo keepers and visitors alike, died August 24 at the zoo hospital. He leaves 10 living offspring -- nearly a third of the 33 pygmy chimpanzees in captivity worldwide.

Thanks to Kakowet and his lifelong mate, Linda, the San Diego Zoo displays the world's largest captive colony of pygmy chimps -- three male offspring and six female. Negotiations are underway with the zoo in Stuttgart, West Germany, to exchange male pygmy chimpanzees and thereby introduce a new bloodline into the San Diego Zoo group.

Playful and inquisitive, Kakowet showed a talent for untying his keeper's shoelaces and engineered several escapes during his time at the Zoo. Gentle and fond of humans, Kakowet was usually found gorging himself on fruit and would readily come to his favorite zookeeper and stroll calmly, hand-in-hand, back to his enclosure.

The pygmy chimpanzee differs considerable from the common chimpanzee. It is about half as large with more narrow shoulders, a more spherical skull and spends more time in the treetops than the common chimp. It is now recognized as probably the closest primate to humans in terms of superior intelligence, personality, behavior and even genetic characteristics.

BLACK RHINOCEROS LISTED AS ENDANGERED

The U.S. Department of the Interior, Fish & Wildlife Service, published a final rulemaking on 14 July 1980 in the *FEDERAL REGISTER* establishing the Black rhinoceros *Diceros bicornis* as an endangered species. The effective date of such status is 16 August 1980. Robert Wagner of AAZPA noted that this means a FWS permit will be required to move the Black rhino across state lines in the course of a commercial activity, even though such rhinos may have been held in captivity, or even born in captivity, prior to the effective date of the Black rhinoceros being listed. The effective date of the Endangered Species Act is 28 December 1973. Thus, all Black rhinos moving commercially across state lines will require permits with the exception of those held in captivity in a non-commercial activity prior to 28 December 1973.

AAZPA Newsletter

coming events

THIRD ANNUAL SYMPOSIUM, sponsored by Louisville AAZK

Infant Care and Development

November 7-9, 1980

see AKF, page 191,

Congratulations to the new officers
of the San Diego Zoo AAZK Chapter:

chapter

President....Conny Carson
Vice/Pres....Diana Quintero
Sec/Treas....Edward Hamilton

The San Diego Chapter sponsors "Night Walk through the Zoo" holds a plant sale and a swap meet, and the whole zoo is involved in Softball for the summer months.

New officers for the Roeding
Park Zoo AAZK Chapter are:

President....Kitty Kenyon
Vice/Pres...Linda Cover
Sec/Treas...Brenda Lodge

news

Some of the Roeding Park fund raisers have been a Christmas bake sale, a swap meet, and the selling of posters at the Zoo. They are setting up Zookeeping classes for the staff to be conducted by the Director. They are initiating CPR classes. They take advantage of the Zookeeper Accommodations list for housing vacationing Keepers. They will be very busy this coming year as the 1981 AAZK National Conference will be held at the Roeding Park Zoo.

RIO GRANDE AAZK CHAPTER NEWS

The Rio Grande AAZK Chapter in Albuquerque, New Mexico is an active group. The Chapter pays one-half of each member's dues. President Gary Tibbetts asked each member to write a paper, minimum one page, relating to their field. The papers are filed in the library and are published in their paper *The Good Gnus*.

Meeting of the Rio Grande Chapter are business reports from the committees (Program, Refreshment, Newsletter, Education, and Funding), ideas and complaints for discussion and entertainment which is usually a guest speaker. Twice a year they have a party. They also take field trips.

Funding comes from the profit from two Coke machines, recycling cardboard and selling carnations on Mother's Day.

The Zoo Society sponsors as AAZK member attending the National Conference with \$50 from their general fund.

+++++

NEW PROFESSIONAL MEMBERS

Ruth DUNMIRE
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Roxana WHITWAM
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Topeka, KS 66605

NEW INSTITUTIONAL MEMBERS

Toledo Zoological Gardens
Philip C. Skeldon, Executive Director
2700 Broadway Ave
Toledo, OH 43609

Zoological Society of Broward County,
Linda L. Erickson, President
D.B.A. Markham Park Zoo
16001 West State Road 84
Ft. Lauderdale, FL 33326

AAZK PROFESSIONAL MEMBERS
RELOCATING IN ANOTHER COMMUNITY

Carleton BAILIE
1602-A Tree Top Trail
Akron, OH 44313

Chris & Vicky LA RUE
P.O. Box 50565
Tucson, AZ 85703

Thomas A. LOCKE
319 Lincoln
Downer Grove, IL 60515

Peter W. SHANNON
8841 S. Claiborne Ave
New Orleans, LA 70118

AAZK ACCESSORIES AVAILABLE

DECALS

The official AAZK decal is available through the Memphis Zoological Park and Aquarium AAZK Chapter. The decal is a black and white reproduction of the AAZK rhino logo, suitable for any smooth, hard surface, especially a car window. Cost is \$1.50 complete, prepaid. Make checks payable to the Memphis Chapter, AAZK, and send directly to Mike Maybry, Decal Project Coordinator, 1887 Crump Ave., Memphis, TN 38107.

BUTTONS

Buttons printed with "Keepers Care" and a logo are available for fifty cents (50¢) from Larry Sammarco, Lincoln Park Zoo, 2200 N. Cannon Drive, Chicago, IL 60614. 50% of the sale price goes into AAZK's national treasury.



We are indebted to the AAZPA Newsletter for allowing us to reprint portions of this section from their "Positions Available" listings. This is a monthly service to us, for you.

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ZOO KEEPER I... The Jackson Zoological Park is now accepting applications for the entrance level of Zoo Keepers. Salary range \$817.00 - \$945.00 per month. Standard benefits. Duties include the general care and maintenance of a wide variety of mammals, birds, reptiles, and children's zoo animals. Applicants must have a high school education. Practical experience desirable; however, we will train the proper persons. Certified candidates will remain on an active list for six months. Send resume to James L. Swigert, Director, Jackson Zoological Park, 2918 West Capitol Street, Jackson, Mississippi 39209.

LARGE MAMMAL SUPERVISOR... supervise routine daily care of approximately 500 specimens and direct work of 17 animal attendants. Work under direction of Superintendent of Mammals. Applicants must be familiar with husbandry, restraint and shipping of large mammals, especially ungulates. Supervisory experience and at least five years of animal experience required. Send resume by 31 October 1980 to: Russell Smith, Staff Zoologist, San Antonio Zoo, 3903 N. St. Mary's Street, San Antonio, Texas 78212.

REPTILE KEEPER... full-time position available. Preferred qualifications include an Associate or four-year degree in Animal Science or Biology field. Prefer previous experience with diversified, venomous, herpetological collection; keeper or related experience may be considered as substitute for educational requirement. Salary \$10,140 - \$12,675, plus benefits. Submit applications to: Frederick L. Paine, Curator/Birds and Reptiles, Buffalo Zoological Gardens, Delaware Park, Buffalo, NY 14214. Equal Opportunity Employer.

ZOO KEEPER I... assist in care of domestic and exotic animal collection. Bachelor of Science Degree in biological field plus parasitology and microbiology or equivalent experience. Starting salary \$12,775. Send resume to: Chuck Wikenhauser, Manager, Glen Oak Zoo, 2218 N. Prospect Ave., Peoria, IL 61603.

EDUCATION CURATOR... two positions available. Responsible for Zoo's education and public information programs. Requirements include graduation from recognized four-year college or university, plus two years' full-time paid professional experience developing, implementing, presenting and evaluating education or information programs at a zoo, natural history museum or related facility - OR - graduation from recognized four-year college or university, plus three year's full-time paid experience as animal keeper at large zoo. Salary \$1,433-- \$2,107 per month. For application and information, contact by 24 October 1980: Richard Garcia, Room 100, Los Angeles City Hall South, 111 East First St., Los Angeles, CA 90012. (213) 485-4142

POSITION WANTED

KEEPER/SUPERVISORY KEEPER...B.S. in Zoo Operations and Animal Management. Four years experience as a Keeper with a variety of animals in various zoo departments. Five years experience in educational volunteer activities with Docents and Zoological Society organizations. Resume and references upon request. Judie Steenberg, P.O. Box 4101, Aspen, CO 81621 (303) 925-1400, Business, (303) 927-4297, Home.



INFORMATION FOR CONTRIBUTORS

Animal Keepers' Forum publishes original papers and news items of interest to the Animal Keeping profession. Non-members are welcome to submit articles.

Articles should be typed or hand-printed. All illustrations, graphs and tables should be clearly marked, in final form, and should fit in a page size of no more than 6" x 10" (15 cm. x 25½ cm.). Literature used should be cited in the text and in final bibliography. Avoid footnotes. Include scientific names.

Articles sent to *Animal Keepers' Forum* will be reviewed for publication. No commitment is made to the author, but an effort will be made to publish articles as soon as possible. Those longer than three pages will be separated into monthly installments at the discretion of the editorial staff. The editors reserve the right to edit material without consultation unless approval is requested in writing by the author. Materials submitted will not be returned unless accompanied by a stamped, self-addressed envelope.

Telephoned contributions on late-breaking news or last minute insertions are acceptable. However, phone-in contributions of long articles will not be accepted. The phone number is 913 272-5821.

DEADLINE FOR EACH EDITION IS THE 20th OF THE PRECEDING MONTH.

Articles printed do not necessarily reflect the opinions of the Animal Keepers' Forum editorial staff or of the American Association of Zoo Keepers.

Items in the publication may be reprinted. Credit to this publication is requested. Order reprints from the Editor.

MEMBERSHIP INFORMATION

Professional (full-time personnel)	\$20.00 annually
Affiliate (part-time keepers, managerial personnel) . .	\$15.00 annually
Associate (interested individuals)	\$10.00 annually
Contributing/Institutional.	\$50.00 annually

All memberships include subscriptions to the *Animal Keepers' Forum*. 50% of the member's dues are budgeted for the publication. The journal is not available by subscription only.

All new members receive a membership card good for free admission to many zoos and aquariums in the U.S. and Canada.

The AAZK National Headquarters has shoulder patches available for \$2.00 and back issues of the *Animal Keepers' Forum* for \$1.00.

Send name and address and a check or money order, payable to American Association of Zoo Keepers to

AAZK NATIONAL HEADQUARTERS
TOPEKA ZOOLOGICAL PARK
635 GAGE BLVD.
TOPEKA, KS 66606



**American Association
of Zoo Keepers
Topeka Zoological Park
635 Gage Blvd.
Topeka, KS 66606**

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Animal Keepers' Forum



NOVEMBER 1980

Dedicated to Professional Animal Care

Editor-in-Chief: Ron Kaufman
Executive Editor: Mike Coker
Managing Editor: Lois Bogia
Editorial Assistant: Diana Brey
Art Consultant: Elaine Shea

Animal Keepers' Forum is a monthly journal published by the American Association of Zoo Keepers, 635 Gage Blvd., Topeka, Kansas 66606.

Second class postage is paid at Topeka, Kansas. Return postage is guaranteed.

AMERICAN ASSOCIATION OF ZOO KEEPERS
NATIONAL HEADQUARTERS, 635 GAGE BLVD., TOPEKA, KS 66606
Brenda Jarboe, Administrative Secretary

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The Keeper/artist for November is Kristine Smith of Eatonville, Washington. She took exotic animal schooling in Colton, Ca and has worked at the Cougar Mountain Sancturay near Yelm. She has raised and released to the wild orphaned deer and raccoons. Thanks for a fine sketch of a keeper and baby tiger charge, Kris!

SCOOPS and SCUTTLEBUTT

NEW DIRECTORY OUT SOON

The 1980/1981 AAZK Directory will be published soon. If you need to update your information, please write Pat Sammarco now. Some members did not indicate their zoo or area of interest when they joined or renewed and might wish to send her that information. As in the current directory, the name of the zoo will be followed by a list of keepers from that zoo and then names and addresses of other members who are in that area will follow. To notify Pat of any changes, write: Pat Sammarco, Lincoln Park, 2200 North Cannon Drive, Chicago, Illinois, 60614.

If Professional members did not receive their 1979-1980 Directory, they may write Brenda Jarboe, Administrative Secretary of AAZK, 635 Gage Blvd., Topeka, Kansas, 66606, to request their copy.

NOBODY'S PERFECT

AKF and the printer want to apologize for some very faint copy on last month's issue. It was due to the scarcity of silver for the photographic process, and it should not happen again.

1980 CONFERENCE OVER AND 1981 CONFERENCE COMING

The 1980 Conference in Montgomery is now a good memory. President Pat Sammarco's report is on page 244 and the list of awards presented at the Conference is on page 245.

The Conference Proceedings and the papers presented will be together in one publication rather than in several month's issues of AKF. This will be available without charge to Professional members, to Institutional members and to those who attended the Conference. It will be available for \$2.00, prepaid, for other members. More details will be given later.

The 1981 Conference will be held in Fresno, California on September 20-24, 1981. The Roeding Park Zoo is already working on plans.

PRESIDENT PAT VISITS NATIONAL AAZK/AKF OFFICES

President Pat Sammarco and her husband, Larry, visited the AAZK and AKF office while on an extended trip back to Chicago after the AAZK Annual Conference. They toured the Topeka Zoo as well as getting acquainted with the staff and discussing many items of business.

We encourage you to visit the National Office in Topeka. Drop us a line or give us a call about a visit or a problem. 913 272-5821.

BIRTHS HATCHINGS

SLOW LORIS TWINS AT LOUISIANA PURCHASE ZOO *Charlie Welch*

On May 23, 1980, one of our female Slow Lorises on exhibit in the Nocturnal Building gave birth to twins. Initially, we were concerned that the Loris method of infant care by "parking" the youngsters on a branch, rather than carrying them, might result in one offspring being neglected. This was not the case. On the first day she carried them both, clinging to her underside. After day one, she either carried only one at a time, or parked them both, but always retrieved the two of them before bedding down when the daylight cycle began. Only days after birth, the mother would leave an infant unattended for as long as four hours. This caused us some concern. However, both remained healthy and strong so it was decided not to pull one for hand-rearing. Now, four months after their birth, it is evident that the twins have developed at a normal and equal pace; at the expense of one tired Loris mother.

Though L. Crandell reports two incidences of twinning (of which both sets died within a few days of birth), I have been unable to find any other reported cases. I'd be interested to hear from anyone else experiencing twinning in Slow Lorises. Please write Charlie Welch, Primate Supervisor, Louisiana Purchase Zoo, P.O. Box 123, Monroe, LA 71201.

GORILLA BORN AT PHILADELPHIA ZOO

For the first time in its 106-year-old history, a Philadelphia Zoo gorilla has been born and has survived its first and most demanding week. The baby, whose sex is unidentified as yet, was born October. The mother and father, Samantha and John are both twelve years old. They and a female are sharing the same quarters with the new baby. The Rare Mammal House, where the family is, has been closed since the birth to give the gorillas an opportunity to adjust to the new addition.

GREY CHEEKED HORNBILLS HATCHED IN METRO TORONTO ZOO

It's another "Captive Breeding" first for the Metro Toronto Zoo with the hatching of several Grey Cheeked Hornbills in the African pavilion. The Metro Zoo is the first in North America to have these Hornbills hatch.

The zoo has two pair of Hornbills, all six years old, located in separate aviaries. The female used approximately three quarts of clay to wall herself into the nest leaving only a small hole for feeding purposes. The first hatching took 113 days and when the chicks came out they were almost the same size as the adult birds. They had moulted, had all their feathers and were ready to fly.

GIRAFFE BORN AT BROOKFIELD Sired BY FATHER-OF-THE-YEAR

When Shorty giraffe was named Brookfield's Father-of-the Year, he had already sired 16 babies. In July another, a male, was born, and on September 21, 1980, a female calf was born to Shorty and Sandra.

Births and Hatchings, continued

FLAMINGO HATCHINGS AT PHILADELPHIA ZOO

The Philadelphia Zoo's flamingo colony is back to breeding with its first multiple hatching since 1977.

The 19-member colony's reproductive slump was a result of the noise from the construction of the Bear Country. The birds broke all their eggs in 1978 and produced only a single hatching in 1979.

Now the Bear Country is completed, two new American flamingos were hatched on July 23 and August 1. The Philadelphia Zoo allows the birds to build their own nests on the private breeding island.

FIVE FEMALE BABIES AT CLEVELAND METROPARKS ZOO

The Cleveland Metroparks Zoo has enjoyed a late summer- early fall animal population explosion with five births, all females. Animals born are a Grant's Zebra, an Axis Deer, a Guanaco, an Eland and a Thomson's Gazelle. All babies are being reared by their mothers.

Another matter of significance occurred in the bird department: the Coscoroba Swans hatched three clutches of eggs this year. The last cygnet hatched on Septebmer 22.

coming events

* * * * *

Nutrition of Captive Wild Animals

December 5 & 6, 1980
Registration - \$20

Lincoln Park Zoo
Chicago, IL

For more information write:
Dr. L.E. Fisher, Director
Lincoln Park Zoo
2200 N. Cannon Drive
Chicago, IL 60614

Hotel accommodations are up
to the individual. The AAZK
Chapter will house keepers.
Contact them in advance.

* * * * *

INFORMATION PLEASE!

Please send any information on sedating Harbor seals and ways of transporting. Harbor Seals and California Sea Lions to Diana Weinhardt, Lincoln Park Zoo, AAZK Secretary, 2200 North Cannon Drive, Chicago, IL 60614. Thank you.

from the President

Nearly 80 AAZK members attended the Montgomery National Conference, being treated to true "Southern Hospitality" thanks to the Dixie Zoological Society, Montgomery Zoo and the Birmingham Zoo. Laura Strickland deserves special congratulations and thanks for coordinating this very successful meeting. Thanks are due also to the zoos, zoological societies and AAZK chapters who supported the attendance of 35 of the delegates to the conference.

Many fine papers were presented and tours of the two zoos gave Keepers many opportunities to compare notes and learn new techniques. Atlanta Zoo invited all those passing through on their way home to a post-conference open house there.

The business conducted at the board meetings was influenced by the welcome attendance of over 25 members, giving input on all the various topics of discussion. There will be more detailed reports of the reports made to the board and membership published in a separate CONFERENCE PROCEEDINGS available soon. Project heads will be busy outlining new programs and requesting member input to help make them work.

An exciting long range plan is starting in the development of an educational film on the future of zoos and zoo keeping. Research grants will be available from AAZK to members, and Frank Kohn of Audubon Park Zoo will advise Keepers on developing research projects. Ellen Leach, AAZK Librarian, will be introducing a plan to have members earn books by reviewing them. Details of these activities will be published in the AKF.

Membership vote made some minor changes in the BY-LAWS, defining membership categories in Section 6 of Article 1, and changing the wording of Article 2, Section 3 to read "The Committee Chairperson shall cause to be distributed to each voting member a biographical sketch of each nominee, an official ballot and balloting envelope pre-addressed to the Administrative Secretary."

Thanks to all our hosts and to all the delegates for making this such a successful conference.

Sincerely,

Patricia E. Sammarco

AMERICAN ASSOCIATION OF ZOO KEEPERS AWARDS

Awards for Excellence in Zoo Keeping

Yvonne Clippinger, Columbus Zoo, Ohio

Dave Kahn, Lincoln Park Zoo, Chicago,
Illinois

Ann Petric, Brookfield Zoo, Chicago,
Illinois

Roland Smith, Portland Zoo, Oregon



Animal Keepers' Forum Awards for Excellence in Journalism

Judie Steenberg, Best Narrative Paper, "The Keeper's Role in Zoo
Animal Health"

Jill Mellen, Best Mammal Paper, "Husbandry, Development, and Communication
of Captive Mandrills."

Cindy L. Pemberton, Best Bird Paper, "An Initial Study on the Behavior
of Humboldt Penguins in Captivity."

Frank Twohy, Best Bird Paper, (tie) "Hand-rearing Adelie Penguins at
Sea World, San Diego."

Certificate of Merit to Recognize the Keepers Involved in the
Institutional Award for Successful Propagation

Fish: Steven F. Borton, Aquarium Biologist
Seattle Aquarium
The propagation program involving the Pacific
Spiny Lumpsucker, *Eumicrotremus orbis*

Birds: William Todd III, Senior Keeper
Rochelle Plasse
Scott McKnight
Houston Zoological Gardens
The propagation of the Scarlet Cock-of-the-Rock
Rupicola peruviana

Frank K. Twohy, Senior Aviculturist
Sea World, Inc. San Diego
The penguin propagation program

Mammals: Keepers of the Golden Lion Tamarin
National Zoological Park
The propagation program involving
the Golden Lion Tamarin *Leontopithecus*
rosalia rosalia

A REHABILITATION PROGRAM FOR BALD AND GOLDEN EAGLES

by
Walter English and Christopher Servheen

During the fall of 1971, a raptor program was initiated at the Woodland Park Zoological Gardens, Seattle, Washington. Called "Project Babe", it was named after an imprinted Golden Eagle *Aquila chrysaetos* (Foster 1976). At its inception the primary goal of the program was to gain information about the reproduction of birds of prey in captivity and, if successful, to help re-establish wild populations by releasing surplus birds back into their natural habitat. It was felt that this program would not only provide a worthwhile research project for the Zoo's staff and volunteers, but would also aid in fulfilling part of every zoological park's conservation responsibility. The first breeding season was very successful in that two Prairie Falcons *Falco mexicanus* and two Harris' Hawks *Parabuteo unicinctus* were hatched and fledged. A great deal of data on the reproductive behavior of these birds was also collected.

It was soon apparent that a second phase was needed in the program. Since the Zoo was the logical place for the treatment and rehabilitation of sick birds, a surplus of Bald Eagles *Haliaeetus leucocephalus* and Golden Eagles had accumulated at the Zoo. Shooting was the main cause of injury to the eagles brought to the Zoo for rehabilitation (Servheen and English 1976). Many of the eagles shot were not initially killed, and were brought in for care and treatment which, when successful, created a need to return birds to the wild. Of the 27 injured Bald and Golden Eagles received from 1971 through 1977 at Woodland Park, 14 have been returned to the wild (51% and comparable to other projects. - Fuller et al. 1974, Snelling 1975, Wisecarver and Bogue 1974). This paper deals with the techniques developed and used successfully to release rehabilitated Bald and Golden Eagles in western Washington.

All eagles are judged releasable according to: 1) proper wing condition and use, 2) flight and tail feather regrowth or potential regrowth, and 3) proper foot and leg condition and use. The possible cumulative effect of several small injuries on the potential survival of the eagle in the wild is considered in each case.

Feather damage is often present on injured eagles and is usually due to improper handling prior to arrival at the Zoo and/or as a direct result of the injury. When feathers are damaged due to improper handling, they are repaired by imping the damaged part with a good feather molted by another eagle. If the feather follicle or blood supply is damaged, the eagle is held through one molt to determine if growth of sound feathers is possible. If follicle damage which will inhibit flight is permanent in the large flight feathers, the eagle is not released.

Eagles with broken legs are released if the leg is usable after healing and tendon damage is not present. Criteria used to judge leg function are the ability to place full body weight on the leg and to grasp effectively with the foot of the injured leg. Missing toes are not cause for permanent captivity except in cases where more than two toes are missing from one foot.

All Bald Eagles are released on the Skagit River near Rockport, Washington, a traditional wintering area for Bald Eagles (Servheen 1975). There are 100 to 180 wintering Bald Eagles in the area, which is now protected as an eagle sanctuary by the Nature Conservancy and the

A Rehabilitation Program for Bald and Golden Eagles, continued

Washington Game Department. Bald Eagles are attracted to this area by the large numbers of salmon that spawn and then die in the river each year (Servheen 1975). Rehabilitated Bald Eagles are usually released in December and January when salmon carcasses are most abundant.

All the Golden Eagles are released on San Juan Island which is located in northern Puget Sound. This is also a wintering area for Bald Eagles, but a large number of Golden Eagles winter there, too. There are approximately 50 to 85 Bald and Golden Eagles on the island each winter, and the portion where the eagles are released is now a national park. Both the Bald and Golden Eagles are attracted to the area because of the exceptionally large number of rabbits *Oryctolagus cuniculus* with 25 to 120 to be found per hectare (2.5 acres) (Stevens 1975). The rehabilitated Golden Eagles are also released in the winter in order to avoid territorial conflicts with the resident nesting populations of Bald and Golden Eagles.

Bald Eagles are fed salmon, and Golden Eagles are fed rabbit, for at least two weeks prior to release in order to condition them to the most abundant food source they will have once in the wild. At Woodland Park, all eagles to be released are held in a rehabilitation cage 4 x 8.5 x 8 meters in height, in groups of three. Every effort is made to keep the release eagles as wild as possible (Servheen and English 1976). Handling is minimized to prevent trauma, so no effort is made to man the eagles. The rehabilitation cage is partly shielded from public view through the use of plants and shrubs so that contact with humans is reduced prior to release.

Just prior to release, orange patagial tags (for Bald Eagles only), radio transmitters, and Fish and Wildlife Service riveted aluminum bands are placed on each bird. Radios are mounted either as back-packs or as tail-feather mounts (Servheen 1976). When sufficient salmon carcasses are available in the Skagit release area as verified by field checks, the birds are hooded and wrapped to prevent injury and are transported to the release site. For both Golden and Bald Eagles, human disturbance is always kept at a minimum. The actual release is done away from open water so that there is a reduced possibility that the eagles will attempt their initial flight over water.

All the eagles are monitored closely for several weeks to observe their adaptation back to the wild and their movements in the area. Food availability is also monitored during this initial period, and if it becomes low, salmon and rabbit carcasses are distributed to the birds. Notices are sent throughout western Washington describing the project and encouraging the public to become involved in the work by reporting sightings of released eagles (Servheen and English 1976).

BEHAVIOR AFTER RELEASE

Of the 14 eagles to have been released in the past four years using these rehabilitation methods, all have successfully returned to the wild except for one Golden Eagle. A large amount of migratory data has also been compiled. Several releases have been recorded on a portable video-tape unit and stored for future reference in the Zoo's library (Hutchins and Gledhill in press).

Because wintering Bald Eagles on the Skagit River are gregarious at feeding and roosting sites (Servheen 1975), we were concerned with the

A Rehabilitation Program for Bald and Golden Eagles, continued

potential effects of brightly-colored patagial markers on the behavior and acceptance of the released eagles by those in the wild population. Special attention was given to observing the behavior of wild eagles that came in contact with the marked birds. No behavioral abnormalities have been noted among either the marked or wild eagles as a result of the patagial markers, however (Servheen and English 1976). Marked eagles interacted normally with wild eagles at feeding areas; marked and wild eagles perch and roost side-by-side.

Difference in the ability of released eagles in their adjustment to freedom, were probably due to individual variation and the amount of time the bird had been in captivity. Most of the eagles were observed feeding on salmon (or rabbit in the case of Golden Eagles), soon after release. Some birds attempted to fly immediately, while others did not move from the release site for several hours; in three cases this time period was several days.

All eagles have displayed a marked reduction in flight ability upon release, mainly due to a loss of muscle tone in captivity. They usually misjudge the distance and height they can fly in initial flights and land in brush below, or just short of intended perches. No injuries have resulted, however, and because human activity and interference is minimal in the release areas, the eagles are not in danger during this initial period of flight inability. Flight ability improves very rapidly with exercise, and usually within three to four days the eagles are perching in trees 10 to 15 m. (27-41 feet) above ground, flying normally once again.

CONCLUDING REMARKS

Although we do not employ all of the traditional falconry techniques when rehabilitating injured eagles, we should stress that without the assistance of falconers and individuals having a raptor background, all interested in the preservation of birds of prey, this program would not be the success that it is today.

The success of this rehabilitation program also very greatly depends on the availability of an abundant, easily obtainable food source in the release areas and a minimum amount of human disturbance when the eagles are regaining their powers of flight. This allows the eagles to develop muscle strength on their own with no need to man and fly them. The birds remain wild and wary of man, and there is no danger of injury or feather damage as a result of accidents during training.

The release of eagles in a wintering area eliminates the dangers of territorial aggression from resident adults and allows the rehabilitated birds to learn secure feeding and roosting sites by following the local wintering population. Since the rehabilitated eagles are released several months before the abundant food supply dwindles, they have sufficient time to develop the strength and skill necessary to compete in the wild state.

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DALLAS - FT. WORTH PROPOSED AS DESIGNATED PORT

Dallas-Ft. Worth, Texas, was proposed (F.R. 7/14/80) to become the ninth Federally designated port-of-entry for wildlife and wildlife products. Conferring port status on Dallas-Ft. Worth would allow the importation and exportation of fish and wildlife and related products through the world's seventh largest airport, serving both the metropolitan area and the south-central and south-western United States. Currently designated ports-of-entry are New York City, Los Angeles, Chicago, Miami, San Francisco, New Orleans, Seattle, and Honolulu. Under Federal law, most wildlife products must be routed through one of these ports for inspection by the Fish and Wildlife Service.

The 1980 census of the Kirtland's warbler *Dendroica kirtlandii* population was up 30 pairs from last year's census. The inventory found 242 pairs in the six-county survey. The goal of recovery efforts for this species is a population of 1,000 pairs. A recent fire in the warbler's nesting habitat did not affect the population. The birds simply left the area for other sites.

A NEW USE FOR OLD TREES

by
Chris LaRue, Head Aviculturist
International Crane Foundation

The beginning of a new year for some people means time for annual reports, animal inventories, the start of a new fiscal year, or perhaps the half-way point of the current fiscal year. For the International Crane Foundation (ICF) the new year means the beginning of another great Christmas tree roundup.

Old Christmas trees are used at ICF to line the fences of crane pens for a variety of reasons. The trees act as visual barriers between breeding pairs which become territorial in the spring, separate unfriendly neighbors, and sometimes separate individuals of incompatible pairs. The trees also protect the birds from injuries if they are frightened and fly into the fence or if they must be captured. Birds handled routinely for artificial insemination can be caught easily in a tree-lined corner of their pen without damage to wings and beaks.

The trees also serve as a natural backdrop for exhibit pens and can act as screens to hide buildings and service roads. The visual barrier effect of the trees give the birds a sense of security from other birds and people. Long after the trees have lost their needles they continue to function as a hedgerow. Shrubs and grasses grow rapidly along fences under the protection provided by the trees and will eventually replace the trees as visual barriers. Occasionally old trees may need to be replaced with fresh green trees, particularly in capture corners.

In the winter the trees act as wind breaks giving the birds additional shelter from cold winds. When used to separate individuals of incompatible pairs short trees are used to form a hedge which allows visual contact but not physical contact. This permits pair bonding and courtship behavior but prevents injuries caused by misplaced aggression which sometimes occurs.

Used Christmas trees play an important role at ICF and the number of trees needed each year varies between 100 and 500 trees. To acquire a large number of trees requires as much work as tying up the trees with twine. The best sources of trees are Christmas tree sales lots. After Christmas many lots have left-over trees which can be had for the asking. A large lot may have several hundred trees which are ideal because they have not been decorated. Other sources are city brush dumps, front yards, and donations from individual homes. Many of these trees will have tinsel and other decorations which must be removed before the trees can be used.

Recycled Christmas trees can be of great value to private captive propagation facilities, zoo exhibits, or off-exhibit breeding areas. Several zoos and deer parks have successfully used Christmas trees as visual barriers, nesting cover, and wind breaks in hoofed animal enclosures, waterfowl exhibits, and other pens. Christmas trees are readily available, naturalistic, and best of all, free.

The author has recently moved to Tucson, Arizona.



DICKERSON PARK ZOO ELEPHANT PROGRAM UPDATE

by
Mike Crocker

In 1978 Dickerson Park Zoo embarked on an elephant management program for Asiatic elephants. This was reported in earlier editions of the AKF. Since that time, our program has expanded from what once involved one adult female to the present one cow and two bulls.

One young bull was obtained from Washington Park Zoo in Portland, Oregon, where it was born in May of 1978. Very recently, a 16-year-old bull was obtained from a circus trainer based near our zoo. This animal had come into musth and attacked and injured his owner and trainer. Initial attempts to place this animal in another zoo with suitable facilities failed, whereupon the owner decided to destroy it. Dickerson Park Zoo agreed to take the animal and from there proceeded to lay out plans for moving and handling the animal.

The bull had been anesthetized with Xylazine (trade name Rompun), injected by a dart pistol, the day after the attack occurred so that it could be chained more securely, as it had been secured by only one light chain at the time. A total of 2900 mg were given, reported to be far in excess of the lethal dose. However, much of this drug was given subcutaneously rather than intramuscularly as intended because the needles on the darts weren't long enough to penetrate the animal's thick hide.

The elephant was anesthetized again several days later with the same drug, this time receiving a total of 750 mg intramuscularly via a pistol syringe. All chains were removed and replaced with new chain in preparation for handling and transport. At this time, the animal was still thought to be in musth.

Four days later, when it was determined that the animal was out of the dangerous musth period, we began to work with it. The animal was chained up short to minimize its movement, and DPZ personnel began working with it. After a period of about one and a half hours, punctuated by a great deal of aggression on the part of the bull, followed by physical discipline from the people, the animal submitted and began responding well to commands.

The animal was worked twice a day thereafter and was finally transported on the third day following. It was led to a van semi-trailer where it was loaded and chained down for the 60-minute drive to the zoo. There it was walked out of the trailer, attached to a drag line and hobble anchored to our female, which was used as a braking device should the bull decide to run. Having been around the bull only a short time, we didn't know exactly what to expect and so used every possible precaution.

The move was accomplished without any major problems, and at the time of this writing -- three days later -- the bull is being worked twice daily, led in and out of the building with no chains, and is getting along well with the cow. The young bull has temporarily been moved to another area and will be reintroduced slowly and cautiously.

An event of this nature was a new experience for Dickerson Park Zoo. Having never tranquilized an elephant nor handled an adult bull elephant, it was a great learning experience for all of us. The operation went very smoothly and with no injuries, and we can take pride in the fact

Dickerson Park Zoo Elephant Program Update, *continued*

that we were able to save the elephant from destruction, a fate which has unfortunately befallen many other captive male elephants.

At this point, we don't know for sure whether we will keep it permanently or not; but, at any rate, we hope to learn much more from it in the next few months. We plant to obtain another female elephant soon, whenever the opportunity arises. This will complete our herd as we envision it at this time, and we will then begin work toward our goal of breeding Asian elephants. Our concept for accomplishing this is based on the one used so successfully by Portland. Whether or not we will succeed is hard to say, but we have high expectations.



SOCIETY FOR THE STUDY OF AMPHIBIANS AND REPTILES
GRANTS-IN-HERPETOLOGY

The Society for the Study of Amphibians and Reptiles is pleased to announce that proposals are now being accepted for the 1981 Grants-in-Herpetology program. This program was designed to provide financial support to deserving individuals and institutions engaged in research on or the conservation of reptiles and amphibians. Two of the four categories under consideration are of interest to zoo personnel and are as follows:

1. Herpetology-oriented conservation. Proposals should address research on endangered or threatened species at the state, national or international levels, or address research on critical herpetological habitats. Proposals may be received from individuals only.
2. Herpetological research in zoos. Proposals may address any herpetological research endeavor which is conducted at a zoo. A letter from the represented zoo or supporting institution should accompany all proposals.

Each proposal should include 1. Background and Objectives, 2. Methods, 3. Budget, and 4. Letter of Support. Grants of as much as \$250 will be awarded for proposals in both categories. For further information contact:

Marty Rosenberg,
Dept. of Biology
Case Western Reserve University
Cleveland, OH 44106

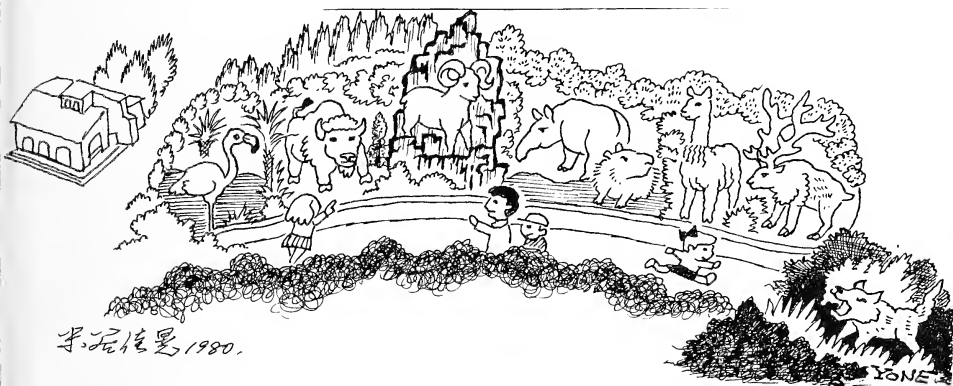
Bern W. Tryon
Dept. of Herpetology
Houston Zoological Gardens
P.O. Box 1562
Houston, TX 77001

WELCOME TO "THE AMERICAN CONTINENT'S CORNER"

by
Yonetani

The Higashiyama Park Zoo, Nagoya, opened a new geographical exhibit on June 1, 1980. This facility was planned in remembrance of years of friendship. It is in commemoration of the 20th anniversary of sister concord between the cities of Nagoya and Los Angeles, USA and the 10th anniversary of their mutual association in Zoos.

The "American Continent's Corner" corresponds to about 1 hectare from among about 30 ha. of the Zoo site. It's an excellent landscaped display which represents habitable environment with several concrete barns made in imitation of a blockhouse. The background is arranged with various American plants, and the enclosure for Dall Sheep has a rocky mountain (...not the Rocky Mts.) making use of natural stones. The three Dall Sheep arrived from the Los Angeles Zoo as a gift exchange. The Higashiyama Park Zoo sent Japanese Serow and Hawk Eagle *Spizaetus nipalensis* to Los Angeles in December 1979. The LA Zoo has the only 2 pairs of Japanese Serow in the USA. Wolf-Woods and a service center are expected to be completed next March in the 'Corner'. We'll have the first Wolf-Woods as this kind of display in Japan.



ZONE	TOTAL AREA	BARN	FIELD OR POOL	STATUS (at opening)
1 Flamingo	573m ²	10m ²	563m ²	20
2 American Bison	1429m ²	51m ²	1378m ²	1/2
3 Dall Sheep	687m ²	20m ²	667m ²	1/2
4 South American Tapir and Capybara	365m ² 317m ²	36m ² ---	329m ² 317m ²	1/1 1/1
5 Vicuña	450m ²	56m ²	394m ²	1/2
Caribou	456m ²	77m ²	379m ²	1/1

WAR ON WILDLIFE: IRAN

by

Robert Berghaier
Philadelphia Zoo

In my previous article, War on Wildlife in the January 1980 issue of the Animal Keepers' Forum, I made reference to the problems that the wildlife of Iran could face due to the revolution. Information on environmental matters is just now getting back to the West. Not surprisingly, the news is bad.

The natural resources that were carefully preserved by the Shah are being destroyed. Fishermen in the Caspian Sea have taken to dynamiting fish. They have been concentrating on the caviar bearing sturgeon. The sturgeon, already under heavy pressure due to industrial pollution, can not stand this type of exploitation for long.

The forests of Iran are being destroyed for firewood. Gazelles are being chased across the desert, and machine gunned by motorized hunters. One area, the Kavir National Park (near Tehran) has been particularly hard hit. Mohammed Vahad, Iran's deputy director of the environment, feels this destruction is understandable in a country without strong government, or new set of laws.

Tragically, before the fall of the Shah, Iran was to embark on several novel conservation projects. One would have involved an Iranian release site for the Asiatic Lion. The project had been in the planning stages for some time. A group of lions had been removed from the Gir Forest for a breeding project in an Indian Safari Park. The offspring would have been released in an area of Iran with similar vegetation and ample prey.

Another project involved the Siberian Crane. A small flock that wintered in Iran was to be supplemented with eggs from the International Crane Foundation. Political upheavals in Iran have made this plan uncertain.

An important International Union for the Conservation of Nature project, the restoration of the Persian Fallow Deer, has surely been affected. The two reasons previously holding down deer populations were illegal poaching and habitat destruction. Now that central order has broken down these problems have surely increased.

At one time, a model zoo had been planned for Tehran. According to the master plan, it would have been one of the finest zoos in the world. The plan included a representative worldwide collection (organized zoo-graphically) along with an extensive exhibit devoted to native wildlife. The zoo's major theme would have been to demonstrate the effect of man on the environment. This emphasis could possibly have helped get the support of the people of Iran for the various conservation projects that were being implemented across the country.

As the reader can see, Iran and the world have lost a great deal due to the revolution.

War on Wildlife: Iran, continued

References

Article from the Philadelphia Inquirer, Washington Post Service.

Detente for Cranes. Animal Kingdom, Dec. 1979/Jan. 1980.

The World Cats: Volume B-#1. Contribution to Status, Management and Conservation.

Editor's Note: This was written and submitted before the present war in the Iran-Iraq area. Although the press releases document the loss of lives of people and the damage to the oil fields, wildlife in the area must also be affected.



Editorial opinion from the National Wildlife Foundation

U. S. SHOULD TAKE LEAD IN INTERNATIONAL WILDLIFE CONSERVATION

There is some qualified good news on the international wildlife scene this summer. After the situation quieted down somewhat in Uganda, that country's government requisitioned a study of the status of wildlife in its three national parks. The recently-released results provide a glimmer of hope for Uganda's wildlife resources: there is wildlife left within its borders. The government of Uganda is willing to work to rebuild its national park facilities and enforcement staff, but outside help will be needed.

A bill introduced last March by Sen. John Chafee (R.I.) as an amendment (No. 1680) to the House's Elephant Protection Bill (H.R. 4685) would go a long way towards creating a mechanism within the U.S. Department of Interior for coordinating and facilitating conservation of the world's wildlife resources. This International Wildlife Resource Conservation Act of 1980 has three main parts. First, it establishes an advisory panel made up of related federal agency directors, plus two members each from state fish and wildlife organizations and non-governmental organizations having scientific and management expertise. This panel would be responsible for administering the Act and publishing a report to both Houses of Congress on its progress.

Second, the amendment creates a volunteer conservation corps similar to the previous Peace Corps/ Smithsonian program. Administered by the Interior Department, its expertise would be available to any country upon request. A third somewhat controversial provision authorizes the Secretary of Interior, in consultation with the Secretary of State, to assign conservation liaison officers to several key Third World embassies.

Markup in the Senate Subcommittee on Resource Protection is expected soon. We find all three of the bill's provisions sound and necessary, and have testified to that effect at hearings held earlier this year. We applaud this landmark legislation to create unprecedented international cooperation on natural resource use, development, and conservation. It is time for the U.S. to take a definitive leadership role in international wildlife conservation.

THE STRUGGLE FOR SURVIVAL

CAPTIVE-BRED ANDEAN CONDORS RELEASED IN PERU

The first release of Endangered, captive-bred Andean condor. *Vultur gryphus* into wild habitat has been an apparent success. Shortly after the six young vultures were set free several weeks ago, they joined a small existing population in the coastal mountains of Peru, soaring alongside the older birds and adopting their feeding habits.

This encouraging news follows a 13-year experimental condor breeding project conducted by the U.S. Fish and Wildlife's Patuxent Wildlife Research Center near Laurel, Maryland. Although the Andean condor is the immediate beneficiary, the ultimate goal is to gain new information for saving its more critically Endangered relative -- the California condor *Gymnogyps californianus*.

Before their release, the introduced condors were fitted with small solar-powered radio transmitters which will allow researchers to track them through the remote mountains for up to 5 years.

NATION'S MOST ENDANGERED SPECIES MAY BECOME EXTINCT WITHIN FOUR YEARS

For the Nation's most endangered species, the dusky seaside sparrow of Florida's east coast, it may only be a matter of time. Only five of the small birds are known to exist -- all males.

Despite intensive searches, no females have been found. In the last 5 years there have been no sightings of nests, fledglings, or females. The population of the species has drastically declined over the past 10 years. Since the birds (which are now in captivity at a breeding facility in Gainesville, Florida) are not capable of reproducing, the species is likely to become extinct in 4 years.

COACHELLA VALLEY FRINGE-TOED LIZARD LISTED AS THREATENED

The Coachella Valley fringe-toed lizard, found only on windblown sand deposits in the valley for which it's named near Palm Springs, California, has been declared a threatened species by the U.S. Fish and Wildlife Service. One of the most completely sand-adapted creatures in the world, the lizard has been losing its specialized habitat. The most essential portion -- about 18 square miles has been designated as its "critical habitat."

IF YOU THINK TIMES ARE HARD NOW

by
Connie Cloak
Topeka Zoo

On July 24, 1980, the federal government released a report begun in 1977 which uses current world trends to project conditions in the year 2000.

The "Global 2000 Report" is sponsored by the Council on Environmental Quality and the Department of State with the participation of nine other agencies. Its authors consider it to have an 'optimistic bias.' Among its prognostications are: greater disparities in wealth between richer and poorer countries and within countries; fewer resources, including a 50% per capita decline in petroleum and 35% in water; 100% increase in the real cost of food, and 150% increase in energy costs.

The most terrifying trends involve the environment. "The environment will have lost important life-supporting capabilities. By 2000, 40% of the forests remaining in the less developed countries in 1978 will have been razed. The atmospheric content of CO₂ will be nearly 1/3 higher than pre-industrial levels. Desertification may have claimed a significant fraction of the world's rangeland and cropland. Over little more than 2 decades, 15-20% of the earth's total species of plants and animals will have become extinct -- a loss of 500,000 species. The world will be more vulnerable both to natural disaster and to disruptions from human causes. The loss of diverse germ plasm in local strains and wild progenitors of food crops, together with the increase of monoculture, could lead to greater risks of massive crop failures."

According to an article in the August 1, 1980 issue of Science magazine the findings of this study are in good agreement with several similar models prepared by other nations and groups. Those which project beyond the year 2000 show that the 'most dramatic developments' will occur in the first half of the 21st century.

Some of these models include recommendations for avoiding this gloomy future. A task force on global resources and environment has been formed to follow up the Global 2000 report with such recommendations.

The Science article also points out, "A major international effort to cope with global conservation and development problems seems unlikely unless people in the U.S. and other (industrialized) countries become convinced that their welfare depends on it." Fostering a public understanding of the interrelationships which tie our fate closely to that of the natural world, and of the extent and desperation of the problems facing us, is clearly a vital function of zoos.

Copies of "The Global 2000 Report to the President" can be obtained from the Superintendent of Documents, Government Printing Office, Washington, DC 20402. Volume I is the summary volume and costs \$3.50.



CONFERENCE OF THE PARTIES TO THE CONVENTION ON INTERNATIONAL TRADE IN
ENDANGERED SPECIES OF WILD FAUNA AND FLORA: THIRD REGULAR MEETING

The Convention on International Trade in Endangered Species of Wild Fauna and Flora, hereinafter referred to as CITES or the Convention, is an international agreement designed to control international trade in certain animal and plant species which are or may become threatened with extinction. Currently 59 countries, including the United States, are CITES Parties. CITES provides for biennial (regular) meetings of the Conference of the Parties to review its implementation, make provisions enabling the Secretariat of CITES to carry out its duties, consider adopting amendments to the lists of controlled species, consider any reports presented by the Secretariat or any Party, and make recommendations for improving the effectiveness of CITES.

The provisional agenda for the third regular meeting of the Conference of the Parties which is to be held in New Delhi, India on February 2-13, 1981, has been received by the Fish and Wildlife Service. The Service has developed a number of principles to assist it in developing and presenting the United States position for the New Delhi meeting and are here set forth in full.

Fundamental Principles for the Development and Presentation of the United States Position for the Third Regular Meeting of the Conference of the Parties.

1. Promote and support the conservation goals of CITES, especially (a) the effectiveness of Scientific Authorities in controlling import and export of protected species, and (b) taking into account the wise use of resources.
2. Support and encourage full and effective implementation and enforcement of CITES in each Party, including the development and implementation of practical tools and systems.
3. Encourage and assist nonparties, especially major wildlife and plant traders, to become parties.
4. Encourage development of sound financial and administrative structures to enhance the capabilities of the Secretariat.
5. Encourage broad public participation and cooperation in the process of developing a coherent, integrated and achievable U.S. position.
6. Propose and support amendments to the species appendices which satisfy the Fundamental Principles of Article II, the Berne Criteria and the Format for Proposals.
7. Select a delegation based on the following points: a. small enough to avoid negative impression on other delegations and to enhance coordination and control of delegation activities; b. broadly representative of the American people; c. composed of essential negotiators, from key agencies or fields of expertise. d. prepare the delegation through the development of a position paper covering all anticipated points, developed with thorough public and agency input.

Federal Register

IN MEMORIAM

Sandy Richards, Keeper at the Topeka Zoo, died recently in her home. She had served as a Keeper for three years with special interests in Hoofed stock and Felines.

legislative news

compiled by Kevin Conway

NONGAME WILDLIFE BILL THROUGH CONGRESS

A nongame wildlife bill nearly four years in the making was cleared for the President's signature on September 16 when the House agreed to amendments made to H.R.3292 by the Senate September 9.

According to the Senate Majority Leader Robert C. Byrd (W.Va.), speaking for Sen. John Culver (Iowa), chairman of the Subcommittee on Resource Protection of the Senate Committee on Environment and Public Works, this final version of the Fish and Wildlife Conservation Act of 1980 retains two significant elements of nongame legislation (S.2181) passed by the Senate in May: 1) a FY82 funding authorization to provide immediate benefit to the 21 or so states with existing nongame programs or approvable portions of state nongame wildlife plans, and 2) a U.S. Fish and Wildlife Service study of potential financing mechanisms other than appropriations for the program (i.e., excise taxes similar to the Dingell-Johnson or Pittman-Robertson programs). The coverage of invertebrates by state management programs contained in S.2181 was deleted.

Up to \$5 million in each of fiscal years 1982-85 is made available to reimburse states for developing and implementing fish and wildlife conservation plans following a complete inventory and assessment of population status. States with approved conservation plans would then be eligible to receive 75 percent federal matching grants. All 50 states and more than 260 environmental organizations supported the legislation.

Sen. Byrd urged states to make use of the bill's incentives to manage their fish and wildlife resources on a broad, ecosystem basis, enhancing the past emphasis on traditional game species and consumptive use. State Rep. Edwin Forsythe, (N.J.), ranking member of the House Subcommittee on Fisheries and Wildlife Conservation and the Environment: "Enactment of the Fish and Wildlife Conservation Act represents no less than the dawning of a new era in fish and wildlife management in this country, especially for the approximately 83 percent of all U.S. vertebrates considered nongame species (not hunted for sport, food, or fur).

Conservation Report

SENATE RATIFIES TWO TREATIES

By a unanimous vote of 94 yeas, the Senate on September 17 agreed to the resolutions of ratification of two treaties: an amendment to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), and proposed amendments to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter. The CITES amendment would establish a trust fund of \$984,000 to pay for the implementation of the Convention through 1981 (U.S. share = \$246,000), since UNEP financing has been curtailed. The Marine Pollution amendment provides a system for the arbitration and settlement of any dispute arising from treaty interpretation, allowing a choice between arbitration and the International Court of Justice.

Conservation Report

REVISION OF THE SPECIAL RULE ON THE AMERICAN ALLIGATOR

The Service proposes to revise the special rule on the American alligator. Fabricators, who are engaged in the business of manufacturing products from American alligator leather, would no longer be required to obtain a permit issued under the special rule, yet buyers and tanners engaged in trade in American alligators would remain highly regulated to insure that fabricators receive only lawfully taken American alligators. The sale of meat and parts, except hides, from lawfully taken American alligators would no longer be restricted to the State where the taking occurs but would be allowed nationwide if such a sale is in accordance with the laws and regulations of: (1) the State in which the taking occurs and (2) the State in which the sale occurs.

U.S. POSTAL SERVICE
STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION
(Required by 39 U.S.C. 3685)

Title of Publication: *Animal Keepers' Forum*
Publication Number: 01649531
Date of Filing: 20 October 1980
Frequency of Issue: Monthly. Number of Issues Published Annually = 12
Annual Subscription Price =
Location of Known Office of Publication: Topeka Zoological Park, 635 Gage Blvd., Topeka, KS 66606
Publisher: American Association of Zoo Keepers, Topeka Zoological Park, 635 Gage Blvd., Topeka, KS 66606
Editor: Ronald L. Kaufman, 635 Gage Blvd., Topeka, KS 66606
Managing Editor: Lois Bogia, 635 Gage Blvd., Topeka, KS 66606
Owner: American Association of Zoo Keepers, Topeka Zoological Park, 635 Gage Blvd., Topeka, KS 66606

The purpose, function, and nonprofit status of this organization and the exempt status for Federal Income tax purposes have not changed during the preceding 12 months.

EXTENT AND NATURE OF CIRCULATION

	Average No. Copies Each Issue during Preceding 12 months	Actual No. Copies of Single Issue Published nearest to Filing Date
Total Number Copies Printed	1150	1200
Mail Subscriptions	1000	1011
Copies not Distributed (Office Use, left-over)	150	189
TOTAL	1150	1200

I certify that the statements made by me above are correct and complete.

Signature and Title of Editor

Ronald L. Kaufman
Ed. in Chief

INTERNATIONAL WHALING QUOTAS

1976-80¹

from

The Whale Report, Summer 1980

	28th Meeting 1976	29th Meeting 1977	30th Meeting 1978	31st Meeting 1979	32nd Meeting 1980
Southern					
Minke	8,900	5,690	6,221	8,120	7,072
Sei	1,863	771	0	0	0
Sperm (male)....	3,894	4,538	3,820	580	300
(female) ..	897	1,370	1,055	-	-
Bryde's	-	-	-	264	264 ⁴
North Pacific					
Minke.....	541	400	400	1,361 ³	1,361 ³
Sei.....	0	0	0	0	0
Bryde's	1,000	524	454	479	529
Sperm (male)....	4,320	5,150	3,800 ²	1,350 ²	890 ²
(female) ..	2,880	1,339	-2	- 2	- 2
North Atlantic					
Fin.....	455	459	455	604	701
Minke.....	2,438	2,555	2,552	2,543	2,554
Sei.....	132	84	84	100	100
Sperm.....	685	685	685	273	130
TOTAL COMMERCIAL QUOTAS					
	28,050	23,520	19,526	15,656	13,901
Aboriginal Quotas					
Bowhead (U.S. Eskimos).....				18	17 ⁵
Gray (U.S.S.R. catcher vessels for Siberian Eskimos).....				179	179
Humpback (Greenland Eskimos).....				-	10 ⁶
TOTAL ABORIGINAL QUOTAS.....					
				197	206
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
	28,050	23,520	19,526	15,853	14,107

¹Quotas established at IWC Annual meetings are for the Antarctic whaling season (December of the year of the meeting through April of the following year) and all coastal seasons of the year after the meeting, in this case, 1981.

²The December 1978 Special Meeting of the IWC established a quota of 3,800 males. This figure includes a permissible bycatch of up to 11.5 % (437) females. Once 3,800 animals or 437 females have been taken, whichever comes first, all whaling for sperm whales in the North Pacific must cease. The same 11.5 bycatch of females has been permitted since. Last year the sperm whale quota was reduced and the bycatch was 155. This year the quota was reduced further and the bycatch will be 102 females.

³This figure is based on an allowable catch of 940 minke whales in the Sea of Japan and 421 in the Northwest Pacific as established at the 1979 meeting of the IWC. This quota was given a five year duration. 1981 is the second year.

continued

Lincoln Park Zoo Chapter
elected new officers.

chapter

President....Patricia Wiard
Vice-Pres....Al Johnson
Secretary....Diana Weinhardt
Treasurer....Larry Sammarco

The Lincoln Park Chapter raised money through a book sale for Dave Kahn's air fare to the AAZK Convention to accept his "Keeper of the Year" award. They are also developing a Keeper hand book as a guide to Zookeeping in general and specifics about the Zoo.

New officers for the AAZK Chapter at the Folsom Children's Zoo in Lincoln are:

President....Laura Trechsel
Vice-Pres....David Dustin
Secretary....Melody Bietz
Treasurer....Kipp Haight

news

The Tulsa Zoo AAZK Chapter has been selling a T-shirt designed by a member. They sponsored an all Zoo Part, a "Pig-Out", roasting a pig on the beach. Their officers are:

President....Beth Mathews
Vice-Pres....Chris Eckart
Secretary....Linda Putnum
Treasurer....Carol Eames
Editor of *Newsletter*....
Stephen Walker
Programs/Projects Director...
Betsey Olsen

The Topeka Zoo AAZK chapter has elected these officers:

President....Connie Cloak
Secretary....Marlena Young
Sec/Treas....Mike Coker

The Chapter sponsored a dog-wash for a money raising project.

International Whaling Quotas, *continued*

⁴Additional quotas were set for three other divisions in the Southern Ocean totaling 622. Because of the factory ship moratorium, however, these quotas cannot be taken.

⁵The Alaskan Eskimos were given a three-year block quota of 45 whales landed or 65 struck, with an upper limit of 17 permitted in any one year.

⁶This quota was not included in our chart last year but was allocated and reallocated this year. The Greenland Eskimos' whaling interests are managed by Denmark.

NEW PROFESSIONAL MEMBERS

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Memphis TN 38104

AAZK ACCESSORIES AVAILABLE

DECALS

The official AAZK decal is available through the Memphis Zoological Park and Aquarium AAZK Chapter. The decal is a black and white reproduction of the AAZK rhino logo, suitable for any smooth, hard surface, especially a car window. Cost is \$1.50 complete, prepaid. Make checks payable to the Memphis Chapter, AAZK, and send directly to Mike Maybry, Decal Project Coordinator, 1887 Crump Ave., Memphis, TN 38107.

BUTTONS

Buttons printed with "Keepers Care" and a logo are available for fifty cents (50¢) from Larry Sammarco, Lincoln Park Zoo, 2200 N. Cannon Drive, Chicago, IL 60614. 50% of the sale price goes into AAZK's national treasury.



We are indebted to the AAZPA Newsletter for allowing us to reprint portions of this section from their "Positions Available" listings. This is a monthly service to us, for you.

**OPPORTUNITY
KNOCKS**

ANIMAL TECHNICIANS... applications are being accepted for future openings, including: Veterinary Technician, Carnivores & hoof stock, Pachyderms, Birds I, Birds II, and Primates. Positions require completion of accredited program in veterinary assistance or life science, plus two years' experience in related animal care area. Prior supervisory experience desired. Salary \$10,932 - \$15,552, plus benefits. Nonresidents must agree to reside in city. Closing date 1 December 1980. Send resume to: Earl Unell, Chief Examiner, City Hall, Personnel Dept., 414 East 12th St., Kansas City, MO 64101. EOE.

BIOLOGICAL ZOO KEEPER... positions funded for one year by a USDI/FWS contract, with the possibility of continuing for a second year. Responsibilities include care and maintenance of Dusky Seaside Sparrows and participation in the construction of their enclosures. Position also includes assignments in other aspects of the operation of the Zoo. Requirements include a degree from SFCC or a B.S. in Biology, with experience in avian captive management. Minimum salary \$8,500. Contact Santa Fe Community College, Personnel Department, 3000 Northwest 83 St., Gainesville, FL 32602, or call Jim Ellis (904) 378-9868.

ZOO KEEPER... duties include care and maintenance of variety of exotic and native birds. One year's experience preferred. Salary \$5.87/hour, plus full benefits. Send resumes to: Ken Kawata, Curator, Tulsa Zoo, 5701 E. 36th St. North, Tulsa, OK 74115.

ZOO KEEPERS... responsible for animal care and management of carnivores/primates in expanding and progressive zoo. Requires two years' experience in recognized zoo and references. Starting salary \$8,940 - \$10,344, plus excellent benefits. Contact: Dale Stastny, Personnel Director, Audubon Park and Zoological Gardens, P.O. Box 4327, New Orleans, LA 70178.

The following positions are available: 2 **AQUARISTS** - collecting and husbandry of fresh and saltwater fish required; scuba certification. **MAMMALOGIST** - marine mammals experience. **LAB BIOLOGIST** - fish diseases and water quality. **ASST. CUR./EXHIBITS** - design and maintenance of exhibits and related graphics. Contact: Robert Mottice, National Aquarium in Baltimore, 10 South St., Baltimore, MD 21202 EOE

AQUARISTS... The Houston Zoo's new aquarium is scheduled to open in early 1981. Those interested in locating in Houston during 1981 should contact Nelson Herwig, Curator of Fishes, The Houston Zoo, P.O. Box 1562, Houston, TX 77001.

MOVING?

PLEASE SEND ADDRESS CHANGES TO

Brenda Jarboe, Administrative Secretary
American Association of Zoo Keepers
National Headquarters, 635 Gage Blvd.
Topeka, KS 66606

AAZK MEMBERSHIP APPLICATION

Name _____

Address _____

_____ \$20.00 Professional Full-time Keepers only and International Members
_____ \$10.00 Associate Individuals not connected with an animal care facility
_____ \$15.00 Affiliate Other staff and volunteers
_____ \$50.00 Contributing Organizations and individuals

Directory Information

Zoo _____ Work Area _____ Special interests _____

Mail this application and check or money order, payable to American Association of Zoo Keepers, to: AAZK National Headquarters, Topeka Zoo, 635 Gage Blvd., Topeka, KS 66606.

Memberships include subscription to the *Animal Keepers' Forum*.
The membership card is good for free admission to many zoos and aquariums in the U.S. and Canada.



INFORMATION FOR CONTRIBUTORS

Animal Keepers' Forum publishes original papers and news items of interest to the Animal Keeping profession. Non-members are welcome to submit articles.

Articles should be typed or hand-printed. All illustrations, graphs and tables should be clearly marked, in final form, and should fit in a page size of no more than 6" x 10" (15 cm. x 25½ cm.). Literature used should be cited in the text and in final bibliography. Avoid footnotes. Include scientific names.

Articles sent to *Animal Keepers' Forum* will be reviewed for publication. No commitment is made to the author, but an effort will be made to publish articles as soon as possible. Those longer than three pages will be separated into monthly installments at the discretion of the editorial staff. The editors reserve the right to edit material without consultation unless approval is requested in writing by the author. Materials submitted will not be returned unless accompanied by a stamped, self-addressed envelope.

Telephoned contributions on late-breaking news or last minute insertions are acceptable. However, phone-in contributions of long articles will not be accepted. The phone number is 913 272-5821.

DEADLINE FOR EACH EDITION IS THE 20th OF THE PRECEDING MONTH.

Articles printed do not necessarily reflect the opinions of the Animal Keepers' Forum editorial staff or of the American Association of Zoo Keepers.

Items in the publication may be reprinted. Credit to this publication is requested. Order reprints from the Editor.

**American Association
of Zoo Keepers
Topeka Zoological Park
635 Gage Blvd.
Topeka, KS 66606**

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Animal Keepers' Forum



Dedicated to Professional Animal Care

DECEMBER 1980

Editor-in-Chief: Ron Kaufman
Executive Editor: Mike Coker
Managing Editor: Lois Bogia
Editorial Assistant: Diana Brey
Art Consultant: Elaine Shea

Animal Keepers' Forum is a monthly journal published by the American Association of Zoo Keepers, 635 Gage Blvd., Topeka, Kansas 66606.

Second class postage is paid at Topeka, Kansas. Return postage is guaranteed.

AMERICAN ASSOCIATION OF ZOO KEEPERS
NATIONAL HEADQUARTERS, 635 GAGE BLVD., TOPEKA, KS 66606
Brenda Jarboe, Administrative Secretary

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The "jolly old Elf" on the cover and his bag full of animals are the artistic work of Jan Janas, Educational Coordinator at the Tulsa Zoo, Oklahoma. Her drawing and the poem by Claudia McBride in this issue appeared in the Tulsa AAZK Newsletter. The AAZK and AKF's staff send to all of you "Seasonings Greetings."

SCOOPS and SCUTTLEBUTT

CONFERENCE PORTFOLIOS AVAILABLE

We still have a few of the AAZK National portfolios available for those who were not able to attend the conference. They are black vinyl, zippered, 16" x 12". In the upper left hand corner is the Montgomery Zoo logo and in the lower right hand side is the AAZK logo with the inscription "American Association of Zoo Keepers, 6th National Conference, Montgomery Zoo, Montgomery, Alabama; October 5-9, 1980"

We will sell for cost -- \$3.00. Send check or money order to:
Laura Strickland
Montgomery Zoo
P.O. Box ZEBRA
Montgomery, AL 36109

HELP WANTED!

The Board of the AAZK approved a study to determine the feasibility of producing a film for use by zoos and schools about the future of zoo keeping and the concerns of the zoo community in the coming years. The film will also take a look at the zoo of the future.

We are now soliciting ideas and keeperpower. If you have an interest in film making, graphic arts, writing, editing, still photography, marketing, or grant writing, please contact:

Karen Starr Wakeland
Route 2, Box 770
Midlothian, Texas 76065 214 775-6228

RON KAUFMAN RESIGNS AS EDITOR-IN-CHIEF OF ANIMAL KEEPERS' FORUM

It is with a deep sense of pride and regret, that I announce my resignation from the post of Editor-in-Chief of *Animal Keepers' Forum*, effective 1 January 1981. There will be no interruption in service, as AKF will be in the very capable and experienced hands of Mike Coker and Lois Bogia. I am proud that AKF has developed into a major zoo publication with world-wide distribution. I am equally proud of the staff for their hard work and dedication to AAZK and AKF. I regret having to leave something which I strongly believe in and have worked for over the last five years. We all can look forward to even better issues of AKF in the future and to an ever stronger, more influential force of AAZK professionals. I will continue to support AAZK to the best of my ability in the years to come. I look forward to your continuing support of and involvement in AAZK and AKF.

Ron: We wanted to say publicly "Thanks" for your guidance and policy formulating and for being there when we needed you. Mike and Lois

BIRTHS HATCHINGS

MARMOSETS BORN AT THE FRESNO ZOO *Kitty Kenyon*

Two male Cotton-top Marmosets were born at the Fresno Zoo on August 16, 1980. The babies have been successfully raised by their parents and were weaned at 2 months. A standard Cockatiel nest box was provided. The Marmosets are kept in the Nursery, as it is temperature controlled. The cage area is 3.5' x 4.5' x 7'. Their diet consists of Marmoset diet and fruit, with cottage cheese, egg, pinkie mice, crickets, meal worms and sunflower seeds in small amounts.

For the first few weeks both parents carried the babies, usually one baby on each parent. After that time, the female only took the babies when nursing. If they would jump on her back, she would rear up and try to bite them. At 20 days one baby was first noticed off his father's back for ½ minute. By 30 days they would venture 2 or 3 feet away from their parents. Also, by 30 days old, the babies began to beg fruit off their father and eat crumbs of Marmoset diet. Mother was not as prone to give them anything. By 36 days the babies began eating by themselves from the food dish. At 2 months old the babies are eating well on their own.

Cotton-Top Marmosets are more vocal than other Marmosets and vocalizations have increased significantly since the babies have been born. This was the first breeding of Marmosets at our Zoo.

LOWLAND GORILLA BIRTH AT DALLAS *Karen Starr Wakeland*

On October 26, a female lowland gorilla was born at the Dallas zoo. This is the first gorilla birth in ten years. She weighed 4 lbs. 12 ozs. (2.12 kg) She joins the zoo's other five gorillas: Fubo her father; Shamba her mother; and Om Bom, Jenny and Demba. She is presently being raised by her mother.

LAFAYETTE ZOO REPORTS REPTILIAN BIRTHS AND HATCHINGS. *Chris Pague and Connie Waterstradt*

The Reptile keepers at the Lafayette Zoo, Norfolk, Virginia, are working to change the reptile collection from a consuming unit to a producing unit. The breedings listed below may seem commonplace, but it is a major step in the right direction. Techniques learned from the experience in hatching and rearing the listed reptiles will be used in future work with rare and more difficult species.

The following are the first recorded reptilian births and hatchings and took place from May, 1979 to October, 1980.

Snapping turtle, *Chelydra serpentina*: Wild bred, 23 eggs laid 15 June, 1980. 17 hatched 15 August, 1980.

Pancake tortoise, *Malacochersus tornieri*: 2 captive bred females. 1 egg laid 22 August, 1979. Infertile, 1 egg laid 15 June, 1980.

Lafayette Zoo Reports Reptilian Births and Hatchings, continued

Incubating. 1 egg laid 26 July, 1980. Infertile. 1 egg laid 11 August, 1980. Incubating.

Box turtle, *Terrapene carolina carolina*: Captive bred. 7 eggs laid 4 August, 1979. 1 egg hatched 29 September, 1979. 8 eggs laid 28-30 April, 1980. 2 inviable, 6 infertile.

Yellow-bellied turtle, *Chrysemys scryta scryta*: Wild bred. 8 eggs taken from euthanized female 21 May, 1980. 8 hatched 4 August, 1980.

Haitian boa, *Epicrates striatus striatus*; Captive bred. 18 young born 28 September, 1980.

Burmese python, *Python malurus bivittatus*: Captive bred. 25 eggs laid 16 February, 1980. Infertile.

Black rat snake, *Elaphe obsoleta obsoleta*: 2 wild bred females. 7 eggs laid 17 and 18 June, 1980. All hatched 20 August, 1980. The other female laid 10 eggs 2 August, 1980. All hatched 20 September-3 October, 1980.

Corn snake, *Elaphe guttata guttata*: Captive bred. 11 eggs laid, date unknown. 11 hatched 12-17 August, 1980.

Red bellied water snakes, *Nerodia erythrogaster erythrogaster*: 2 wild bred females. 25 young born 6 September, 1980. The other female is presently passing yolked ova and dead embryos.

Eastern garter snake, *Thamnophis sirtalis sirtalis*: Wild bred. 8 young born 2-3 July 1980. (4 born dead).

SECOND GENERATION ZEBRA BORN AT PHILADELPHIA ZOO

A male zebra born September 29 at the Philadelphia Zoo marks the second generation of Hartmann's Mountain Zebra to be born from an original pair which arrived at the Zoo in 1957. Currently, there are fewer than 7000 of this endangered species left in the wild.

AFRICAN ELEPHANT BORN AT METRO TORONTO ZOOVanessa Phelan

The First African Elephant to be born in Canada and the fourth born in the Western Hemisphere arrived at the Metro Toronto Zoo, Ontario on Oct. 18, 1980 at 6:42 p.m. Within an hour of birth, it was standing, 37" high and weighing approximately 200 lbs. (90 kg). Mother is Tequila, sired by Tantor. Mother, infant and elephant keepers are doing well.

NATIONAL ZOO ANNOUNCES SUCCESSFUL HATCHING OF CHINESE ALLIGATOR

On September 28, 1937, a pair of Chinese alligators was brought to the Zoo by the National Geographic-SI East Indies expedition. Over the years, sporadic breeding was observed but no successful hatchings. In 1975, the pair was loaned to the N.Y. Zoological Society and were shipped with a Bronx zoo pair to a special breeding enclosure at the Rockefeller Wildlife Center in Louisiana. The male died and the female remained

National Zoo Announces Successful Hatching of Chinese Alligator, con.

alone until 1979 when she was permitted to enter the neighboring enclosure containing the pair from the Bronx Zoo. Interactions between the three alligators had some exciting results. Four eggs, laid by the Bronx Zoo's female, hatched in August 1979 resulting in the first known successful captive breeding of Chinese alligators in the world. Eighteen alligators hatched this August from eggs laid by the NZP's female.

HONOLULU ZOO HAS GECKOS AND GATORS

Honolulu Zoo reports that 20 leopard geckos have hatched out so far this year. The American alligator eggs from both the alpha and beta females were fertile with three hatched from the alpha clutch in August and eight hatching September 9 with more coming.

SECOND GENERATION CHEETAHS BORN AT WILDLIFE SAFARI, WINSTON, OREGON

Wildlife Safari, Winston, Oregon, announces two cheetah cubs born to captive born parents. In the drive-through wild animal park's eight year history, this is the first time second generation cheetahs have produced young.

PREHENSILE-TAILED SKINKS AT PHILADELPHIA ZOO

Three prehensile-tailed skinks from the Solomon Islands, born at the Philadelphia Zoo earlier this year, are now on exhibit. The three are the youngest of the Zoo's 18-member skink colony, the largest breeding group in the United States. Since December 1977, the Philadelphia Zoo has produced six skinks, more than any other Zoo in the country.

Although plentiful in the Solomon Islands, these reptiles are still somewhat rare because of their limited habitat. They are the largest of the skinks, reaching up to 32 inches when full grown.

TWO LOWLAND GORILLA BIRTHS AT METRO TORONTO

Two Lowland Gorillas were born in the Metro Toronto Zoo's African Pavilion. One was born to Samantha at 4 p.m. on November and the next born to Josephine at 6 a.m. on November 6. Both mothers were doing fine caring for the offspring.

Human pregnancy tests were performed during the last few weeks. Both Josephine and Samantha showed positive on the first test and negative in subsequent test, a normal test reaction. As the term approaches, positive goes to negative. Amanda, the dominant female of the group, also tested positive, so there may be one more birth to come.

A new outdoor gorilla exhibit is scheduled for occupancy in January 1981 for the nine member group.

CHIMPANZEE BORN AT PHILADELPHIA

A chimpanzee was born on October 16 to Molly and Smoke of the Philadelphia Zoo. The baby, sex undetermined, has a three-year-old brother.

ANATOMY OF A GIRAFFE BIRTH

by
George Fingerhut, Herb Kingsbury, Rick Heithaus
Elephant House Keepers, Cincinnati Zoo

September 27th brought an end to a 462 day wait when a Masai Giraffe gave birth to a healthy female at the Cincinnati Zoo. It was Georgette's first offspring; she had been born at the Cincinnati Zoo on December 5, 1976. There was some concern during the gestation period about the birth because of the young age of the mother. That concern proved unnecessary as three keepers and the Curator witnessed the entire normal birth of the 5' 10", 110 pound baby.

A time table of the birth follows:

6-20-1979....Georgette was bred

9-27-1980....Day of the birth

- 1:00 p.m....Georgette was observed pacing nervously in outside lot in front of her door with a clear mucous discharge.
- 1:15 p.m....All three giraffes brought into their individual cages
- 1:25 p.m....Amniotic sac observed hanging pendulously
- 1:30 p.m....Observed one front foot of baby protruding, sac still intact
- 1:39 p.m....Observed second front foot coming out above the first one which was now out 10 inches, sac still intact
- 1:44 p.m....Both front legs out 18 inches, sac hanging down 2½ feet
- 2:10 p.m....A contraction was seen, legs still hanging down 18", mother urinated
- 2:17 p.m....Another contraction, but legs no further out
- 2:24 p.m....Nose passed out, legs dropped down several more inches
- 2:26 p.m....Head all the way out, legs now out 2', baby kicked.
- 2:34 p.m....Neck out 6", legs out 2½', ears moved
- 2:45 p.m....A series of strong, rapid contraction, neck 12" out, legs out 3'
- 2:50 p.m....More hard contractions, baby is half-way out
- 2:51 p.m....Baby fell to the ground with a loud thud followed by a lot of fluid, the second fluid-filled sac now protruding, baby's front left leg hanging over its head, mother circled and smelled curiously
- 3:00 p.m....Baby maneuvered left front leg into proper position
- 3:02 p.m....Mother licked baby
- 3:04 p.m....Baby struggling to stand (sand substrate had been provided for better footing), was unsuccessful, was holding head 18" off ground
- 3:15 p.m....Baby stood half way up before falling
- 3:58 p.m....Baby stood up for 1 minutes before falling
- 4:42 p.m....Baby up again, tried to walk for 14 minutes before it fell
- 4:48 p.m....Baby got up without struggling, walked cautiously for 17 minutes before falling again, fluid-filled sac still hanging from mother
- 5:05 p.m....Two keepers helped it up as it fell with one leg partly in a gap between the floor and the door, baby sexed as a female
- 5:16 p.m....Baby started nursing

continued

Anatomy of a Giraffe Birth, continued

5:44 p.m....Placenta seen

6:17 p.m....Baby was walking and nursing satisfactorily,
keepers left, placenta was passed sometime during
the night.

After the day of the birth, the baby was seldom seen nursing during the working hours so a night watch was kept. As it turned out, the mother, who is exceptionally shy, preferred to nurse at night when distractions were minimal. It was also observed that the mother preferred the baby to nurse from her left side and encouraged that. Twenty days later, the baby was nibbling on wet alfalfa and at 24 days she made frequent visits to the grain and alfalfa box and water bucket. At one month old, she had grown 12 inches and 40 pounds and had an 8" umbilical cord stub. She is extremely active. Patricia, the baby's grandmother, is expecting her sixth offspring this summer.

BUMPER CROP OF BINTURONGS AT CRC. Kevin Conway

Eleven binturong *Arctictis binturong* births have occurred this year at the National Zoo's Conservation and Research Center, Front Royal, Virginia. Two litters of four (1.3) and (0.0.4) and a litter of three (0.0.3) were responsible for all eleven births.

As of mid-November nine of the eleven cubs are alive; seven cubs still remain with their mothers while two are being handreared at the National Zoological Park.

The eleven births this year is the greatest single year increase in the binturong population at CRC. Of the three females which gave birth, one female was having her first litter. This litter of four has experienced two deaths and the remaining cubs have been pulled for handrearing. The other two females have had earlier reproductive success.

Data is being collected by the CRC staff to help determine growth rates of binturongs in captivity as well as maternal behavior and social development.

TURTLE HOTLINE

The Southeastern U.S. Marine Mammal and Sea Turtle Stranding Network has established a toll free "hotline" number in Florida (800 432-6404) for reporting cetacean and sea turtle strandings. To report strandings in the continental United States outside of Puerto Rico and the U.S. Virgin Islands, call 305-350-7310 (direct dial, reimbursable). Calls involving sea turtles will be forwarded to the appropriate State coordinator.

The previously established manatee "hotline" (800 342-1821) is still in effect.

The Fish and Wildlife Service, the National Marine Fisheries Service, and the University of Miami are cooperating in this effort.

conference..... 81

The Fresno Conference coordinating committee plans to have the 1981 Conference from September 20th to the 24th. The theme will be

A Transition to Professionalism from the 70's to the 80's

Our mascot will be "AAZK", our female Orangutan, who was born at the 1969 regional conference, the very first AAZK Conference.

We plan to have morning sessions at the Ramada Inn, where papers will be given. Free lunch will be provided at the zoo where workshops will be in progress in the afternoon. We will have a "Night at the Zoo" with Mexican entertainment and dinner. Of course, the Conference will end with the traditional banquet and auction. The remaining two nights we will have local speakers or films at the hotel where attendance will be optional.

Anyone planning to attend the 1981 Conference is urged to send the Coordinating Committee their ideas on possible pre-conference and post-conference tours.

Please fill out the form below and mail to
Brenda Lodge
Secretary/Treasurer
Fresno Chapter AAZK
894 West Belmont Avenue
Fresno, CA 93728



Please check any tours you would be interested in:

- Los Angeles Zoo
- San Francisco Zoo
- Sacramento Zoo
- Back-Packing Day Trip
- Yosemite Day Trip
- Trip to the Pacific Ocean-Monterey, California
- Other

Please check:

- Pre-Conference - Saturday, September 19th
- Post-Conference - Friday, September 25th

Thanks!

Name _____
Address _____

TULSA ZOO ELEPHANT SYMPOSIUM

by

Mark Swanson
Lead Elephant Keeper, Tulsa Zoo

The Tulsa Zoological Park hosted an elephant symposium on October 11 and 12. Twenty-two zoos were present plus two other institutions, one of which was a representative from the Humane Society of the United States in Washington, D.C.. Several retired elephant handlers attended, bringing the total attendance to fifty-three people representing thirteen states.

Saturday morning October 11, the symposium started with Dr. William Russell, the Tulsa Zoo veterinarian, giving a foot-care demonstration on our elephants showing different techniques on cuticle, nail and pad care. Then the symposium proceeded with papers and presentations, as follows:

1. Elephant Management at Dickerson Park Zoo by Paul Price; Dickerson Park Zoo, Springfield, MO.
2. Foot Care of African and Asian Elephants by Bill Neville; Denver Zoo, Denver, CO.
3. Elephant Handling by Herb Medzacher; Henry Vilas Zoo, Madison, WI.
4. Elephant Management in Washington Park Zoo by Doug Grove; Washington Park Zoo, Portland, OR.
5. Laborers-Zookeepers/Animal Management by Don Meyer; Joe-Don Farms, Inc., Franksville, WI.
6. Elephant Hearing Study by Katy Lake; Sedgwick County Zoo, Wichita, KS.
7. Elephants in Other Zoos by Ed Rice; Oklahoma City Zoo, Oklahoma City, OK.
8. Memorable Males by Ken Kawata; Tulsa Zoo, Tulsa, OK.

The lunch was provided by the Tulsa Zoo Chapter of AAZK. During the lunch break panelists were chosen for several topics to be discussed. The panel discussions and panelists were:

1. Elephant training; pros-cons/purpose -- Benny Henry and Con Meyer.
2. General care -- Dr. William Russell

At 3 o'clock, the group moved to the elephant exhibit for the elephant show and tour of the Zoo. After the tour, panel discussion resumed with the final topic for the day as follows:

3. Housing and Environment -- Dr. William Russell and Doug Grove.

At 7, a picnic supper was provided by the Tulsa Zoo which lasted all night.

continued

Tulsa Zoo Elephant Symposium, continued

Sunday morning October 12, the group moved to the Oklahoma City Zoo. The proceedings started with a train ride through the Zoo and a tour of the elephant barn until noon. The Oklahoma City Zoo provided lunch, also.

Ed Rice gave a presentation on drugs and application, followed by panel discussion on:

1. Safety -- Larry Nunley, Paul Price and Marianne Martinez.
2. Personnel -- Don Meyer and Ingrid Schmidt.
3. Reproduction -- Doug Grove and Dale Tuttle.

The symposium was a success. Many people commented favorably. It is our belief that similar symposia should be held annually or bi-annually by other zoos for the benefit of both elephants and elephant care personnel.

legislative news

compiled by Kevin Conway

96TH CONGRESS LEAVES UNFINISHED WILDLIFE LEGISLATION

The Congress of the United States has returned for a Lame Duck Session to complete unfinished legislation. However, AAZPA Washington representatives have learned from a staff official of the Fisheries, Wildlife Conservation and the Environment Subcommittee that all pending zoological bills will be put on the "back burner," with legislative activity to be reinstated at the beginning of the 97th Congress in January 1981.

The House Fisheries, Wildlife Conservation and the Environment Subcommittee will resume legislative activity next year on the following bills:

1. Legislation to establish a Zoological Foundation. The "Whitehurst Zoo Bill" would give the Foundation the authority to award scholarships and fellowships for the training of professional and paraprofessional staffs for zoos and aquariums, in addition to establishing recommended standards for accreditation of zoos and aquariums.
2. Legislation to protect the African elephant. H.R. 4685 passed the House 19 December 1979, but received no Congressional action in the Senate. The legislation, as passed by the House, would provide a six-month ban on the importation of elephants and elephant products.
3. Legislation to establish a conservation fund for international wildlife habitats, by imposing a luxury tax on U.S. wildlife imports. H.R. 7241, the International Wildlife Conservation Act, would place a 7% luxury tax on imported fish, wildlife and plants, which would be used to provide grant awards to assist developing nations in conserving their critical wildlife habitats.
4. Legislation to curb the illegal trade in endangered species
H.R. 5046. *from AAZPA Newsletter*

THE NEW FILING SYSTEM AT THE INTERNATIONAL CRANE FOUNDATION

by
Paula Strasser, Aviculturist
International Crane Foundation

In his book, *The Stationary Ark*, Gerald Durrell states that the primary objective for any zoo or collection of wild animals should be the extensive study of its living creatures. To that end, the amassing of data on each individual should be as detailed and wide-ranging as possible, running the gamut from medical to breeding data, history and genealogy. In addition to being wide-ranging and detailed, the data collected should be readily retrievable and easy to use. When the International Crane Foundation decided to redesign its bird files last winter, these were the objectives we kept in mind, i.e., complete and useable data on each bird in our collection. The result of this re-designing is the subject of this paper.

Before the change, each bird at ICF had its own separate manilla folder, which contained a medical sheet, history sheet and breeding sheet. The early history sheets contained a short identification section which included the bird's ICF band number, common name, scientific name, ICF name, and sex; an origin section containing birth date, birthplace, sire and dam ICF band numbers, arrival date, condition, approximate age and loan reference; a short space for special instruction; and a disposition section including date of death, cause of death, date of transfer and destination.

The old medical sheet included the same identification information as above, and space for date, description and treatment of ailments. Also on the page was space allotted to date of death, age and weight at death, autopsy report, pathologist, reference number and date (the last three spaces being for pathologist use.)

The breeding sheets were the same for males and females, with the same identification information as above. Egg data for females included the egg number, date of laying, fertility (fertile or infertile), and the chick's band number. Fertility data for males simply included the amount and quality of each semen sample given via artificial insemination.

The record system was adequate for the Crane Foundation's needs at that time; in addition to these three sheets any other pertinent information, such as correspondence, medical reports, etc, were included and bound together with metal clips. But as the crane population grew and we were trying to make decisions on who should be bred, at what time, and who the owners of the offspring were, this simplified system was no longer useable as it stood. What follows is the revised system now in use at the International Crane Foundation. Any comments or suggestions would be most welcome.

1. Basic Format

The crane records are no longer in manilla folders, held together with metal clips. Instead each bird has a 9" x 12" envelope in which are all pertinent documents, studcards (for the Red-crowned cranes), ISIS cards, medical and genealogy sheets, correspondence, pathology and necropsy reports, etc. The result is a complete package that slips in and out of the file drawer easily, with no clips to get caught and bent. on the front of these envelopes is printed the bird's history.

continued

The New Filing System at the International Crane Foundation, continued

2. History

As in the old system, the history includes an identification section which consists of the bird's common name, ICF name, ICF reference number, species, sex, ISIS number and studbook number. The reference number is the same as the bird's ICF band number, and is the only piece of identification on the other sheets inside the envelope. This first section is designed to give the staff an instant recognition of each bird. We go by the birds' ICF names first, followed by common names and band numbers (which are coded as to species.) About the only time we use the scientific or species names is when writing papers, but this information, too, is readily available on the envelope. We hope to have studbooks for all of the endangered species of cranes; space was made available for this, although we are not using it yet except in the case of the Red-crowned (or Japanese) crane, where a studbook is already in existence.

Next comes the history section. This includes date and place of hatching of the bird in question, its sire and dam identification (if we know that the sire and dam are wild-caught, this is indicated here), arrival date, age on arrival, where the bird arrived from, loan reference, owner, how long the bird has been owned by a particular institution, and the owner's ID. This information is particularly useful when filling out breeding loan updates, or when some information is needed from a previous owner. The next bit of data is particularly useful in the case of cranes, but can be adapted to other animals. Because cranes are easily imprinted upon humans, and because they can sometimes be more aggressive if they are hand-raised (in contrast, they are sometimes much harder to handle when they are wild-caught or parent-raised), we have included information on how and where a bird was raised. Birds can be captive-reared or wild-caught. If captive-reared, they can be hand-reared, parent-reared, or foster parent-reared. If foster parent-reared, the species of the foster parent is included (for example, Whooping cranes raised by Sandhill crane foster parents.) If the bird is wild-caught, the place, date and age when collected are all indicated. We also include a place where pinioning information can be indicated (pinioned or full-winged). Finally, there is space for other information; for example, incompatible or imprinted birds, or other brief descriptions that would be useful to future staff members.

The last section on the history envelope is removal. Date, place and cause of death are indicated here, as is the disposition of the carcass. Alternatively, date of transfer and the bird's destination can be noted. Lastly, the type of removal (check one):died, loaned, sold, traded, gift, returned to owner. Theoretically, the history envelope should give past and removal data. Current data is found inside.

3. Medical Information Sheet

The medical information sheet contains the bird's reference/band number and these instructions: "Describe all injuries, illness, medications and treatments. Enter date first, followed by a brief description." We try to enter all medical information, even down to beak and feather trimmings, even though it may seem trivial and no medical treatment is given. We also enter dates of moult, health check dates, and experimental manipulations (e.g. cloacal swabs for virus testing).

continued

4. Genealogy Card

The ICF genealogy card is of a heavier paper to add some rigidity to the envelopes. It, too, has the reference number in the upper right hand corner. The front side is ancestral data. We go back four generations, starting with sire and dam. For each bird listed, no matter what generation, the bird's name, owner, ISIS and ICF numbers are listed, if known. If an ancestor was wild-caught the word "wild" is put in the space provided, as well as any indication of death. So far, only with the Red-crowned cranes are we able to go back farther than sire and dam, but when some of our younger birds reach breeding age and produce offspring, the cards should fill up. The reverse side contains descendent information with the following columns: Mate's reference number, chick's reference number, date of hatch, sex and fate of the chick. This information is necessarily duplicated in both the male's and female's records, but is one way to keep track of a particular bird's breeding success.

5. AI Summary Data Sheet

This card is only found in a male's file envelope. Its headings are the bird's name and reference number. It is designed to be a running total of a male's reproductive life, and artificial insemination record, other than just the offspring he produces. The sheet has columns for the year, number of attempted semen collections, number of samples collected, number of A samples (under the microscope sperm cover the field of view), dates of first and last samples, number of days of semen production and the average volume per ejaculation. This information is all filled in after the end of the breeding season from the AI log, and allows comparisons between birds, between years and between species.

6. Individual Egg Record

This is the female counterpart to the AI summary. It also starts off with the female's name and reference number, but is a running inventory of the female's eggs of the year with a summary after the season is over. For each egg the following is noted: the egg's succession number (the number assigned to it upon being placed in the incubator), fertility, and date of hatching. The yearly total columns include the year, total number of eggs, number fertile, number infertile, percent fertility, number hatched and the percent hatch.

Each of these cards and forms are differently colored -- blue for medical, green for genealogy, yellow for breeding information. They are supplemented by ISIS cards, studcards as they arrive or are developed and other information.

7. Other Standard Forms

Egg Data Sheet - One of these forms is filled out for each egg regardless of fertility. Instead of reference number, the heading is egg succession number, and the date the egg is picked up. Next comes the incubator number (we have three incubators, each set at a slightly different humidity), whether the egg is fertile or infertile, egg number (which include's the dam's band number, and a number assigned to the egg,) dam, sire, egg length, width and beginning weight, ending weight and percent weight loss. The eggs are weighed every other day and this information is indicated on this sheet. Below the egg weight data is space for pipping and hatching notes and any remarks. *continued*

The New Filing System at the International Crane Foundation, continued

is indicated on this sheet. Below the egg weight data is space for pipping and hatching notes and any remarks. The amounts of time for scratching, pipping, emergence and total hatching time are indicated near the bottom of the sheet.

Daily Temperature Report - There is space on this for each incubator, and the hatcher, and is a record of wet and dry bulb temperatures and the initials of the person who checked them. It's just another way to keep track of any oddities in the incubation procedure.

Daily Chick Log - This is filled in every day with comments, weight changes, medical treatments, behavioral data; in short, everything pertaining to the chick's daily life from hatching to fledging.

Daily Aviculturist Report - This is a daily log from which the medical sheets in the birds' folders are filled in. We also report behavioral data, changes in diet, appetite, maintenance completed or needed, supplies needed and nesting and breeding data. The Daily Report is our basic original source document and is filled in as completely as possible.

Breeding loan agreements and updates are kept in a separate file, with each one bearing the bird's reference number. We also have separate correspondence, literature, egg and AI files, medical (case histories and literature), and zoo files. Much of the information can be found in more than one place and the file system will, we hope, continue to evolve as more research is done and new information is gathered.

Paula Strasser has recently moved to New Orleans.



WILDLIFE IMPORT/EXPORT LICENSES REQUIRED

Persons engaged in business as an importer or exporter of fish or wildlife and their parts or products, are now required to be licensed by the Service (Federal Register 8/25/80). Applications for the \$50.00 license must be filed with the Service's Division of Law Enforcement on or before December 31, 1980.

Temporary permission (F.R. 3/5/74) was granted to importers and exporters to continue trade in wildlife until further notice. This permission expires 12/31/80, unless a person engaged in the wildlife import/export business has filed a complete application, as mentioned above. Any person filing an application after 12/31/80, may not engage in business until the license is obtained from the Service.

"Along with existing civil and criminal penalties, the potential loss of a business license will be an added deterrent to would-be violators of wildlife law," said Clark R. Bavin, Chief of the Service's Division of Law Enforcement. "A person whose livelihood depends on this license will think twice before embarking on criminal activities that may lead to its revocation."



The Night Before Christmas Revisited



by
Claudia McBride

Hoofstock Keeper, Tulsa Zoo

Based on "The Night Before Christmas" by Clement C. Moore

'Twas the night before Christmas and all through the zoo
Not a creature was stirring, not even a gnu.

I was late with feeding -- the day had gone wrong
But now things were finished -- it wouldn't be long

'Til I closed up the barn and went home to bed,
The last were the zebra, then all would be fed.

The moon had just risen as I turned out the light.
Snow was still falling, it was peaceful and quiet

When out on the grounds there arose such a clatter,
I ran from the barn to see what was the matter.

Gazelle stood aqiver, all ready to run
The gnu frolicked gayly -- just ready for fun.

And all through the zoo, the animals were stirring,
I heard snortings and rumblings and soft little chirrings.

When, what to my wondering eyes should appear
But a silvery sleigh and eight prancing reindeer

With a laughing driver, so awesome and quick,
I knew in that moment it must be St. Nick.

More rapid than eagles, his coursers they came
And he whistled and shouted and called them by name:

"Now, Dasher! Now, Dancer! Now, Prancer! and Vixen!
On, Comet! On, Cupid! On, Donner and Blitzen!

From the skies, to the earth and over the wall!
Now, dash away, dash away, dash away all!"

As dry leaves that before the wild hurricane fly
When they meet with an obstacle, mount to the sky.

So on to the zoo grounds they settled like thunder
And I could only stare, my gaze filled with wonder.

But pawing and prancing, as real as the moonlight
They stood there before me, a strange, glittering sight.

I drew in a breath, all quick and astounded
When out of his sleigh St. Nicholas bounded.

His eyes were like lightnings, come down from the sky,
His laughter a challenge, the thunders to try.

The moon around him gave a silvery glow
And his image, it shifted and seemed now to flow.

He was bigger than mountains, taller than trees
His spirit filled the whole world and overwhelmed me.

The animals all knew him, they came at his word,
And he passed right among them, from lion to small bird.

One by one, thru the zoo grounds, he called and they came,
And he gave them his blessings, and he spoke their true names.

Then he turned at the last and his gaze fell on me.
In his eyes were the ages -- those past, those to be.

He smiled once in passing and my fear passed away
But the night seemed stiller as he leaped in his sleigh.

He drew up the reins and his reindeer were dancing,
Like snowflakes on air, on a moonbeam went prancing.

They rose like a new sun -- it was brighter than day.
Then the darkness came back as he went on his way.

But echoed his laughter as he vanished from sight,
"Happy Christmas to all, and to all a good night!"

*Reprinted with permission from the Tulsa AAZK Chapter Newsletter,
December 1979.*

INFORMATION PLEASE!

I would like to compile information on captive Cheetahs including a more exact count. I would like to know: How many Cheetahs are in your zoo's collection? From where did they originally come? How old are they? How many have died, from what, and at what age, if known? Any CBC and blood chemistry results would also be appreciated.

Please send to Laurie Marker
 Wildlife Safari
 P.O. Box 600
 Winston, OR 97496

I would be interested to hear from anyone who has information on breeding, artificially incubating, and/or hand-rearing of cassowaries.

Please write to Carl F. Watson, Assistant Director
Louisiana Purchase Gardens and Zoo
P.O. Box 123
Monroe, LA 71201

chapter

The new Audubon Park Zoo AAZK Chapter is helping build holding areas for the new bird rehabilitation program. They are also starting a winter garden to supplement animal feed. Good Luck, Audubon AAZK!

Metro Toronto Zoo AAZK elected new officers:

- President...Kathy Rettie
- 1st Vice Pres....Frances Turner
- 2nd Vice Pres....Wayne Jackson
- Secretary....Vanessa Phelan
- Treasurer....Neville Pike

news

coming events

FOURTH INTERNATIONAL WILDLIFE FILM FESTIVAL

April 10-12, 1981

University of Montana
Missoula, Montana

The University of Montana Student Chapter of the Wildlife Society will sponsor the Fourth Annual International Wildlife Film Festival in 1981.

The Festival was initiated to encourage film makers to produce better wildlife films, both in technical quality and content. Such films are essential in teaching ecological and environmental concepts to the public.

The deadline for submission of applications and films is March 14, 1981. All entries must have a predominantly wildlife theme and have been produced or released during 1980. Judging will be held prior to the Festival. A panel of qualified film makers, humanists and biologists will judge both amateur and professional categories of wildlife films. Winning entries will receive certificates and the results will be internationally publicized.

The winning films will be shown to the public on April 10,11,12, 1981 Panels and workshops of film makers and biologists will also be a feature along with an art exhibit of wildlife paintings and photos.

"Homes for Birds" provides blueprints for constructing houses and conservation suggestions for common species of American songbirds. The revised publication is available for \$1.75 from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

The Bear Biology Association produces a Newsletter and sponsors regional and international conferences. For further information contact;

Al LeCount
Bear Biology Association
222 W. Greenway Road
Phoenix, AZ 85023

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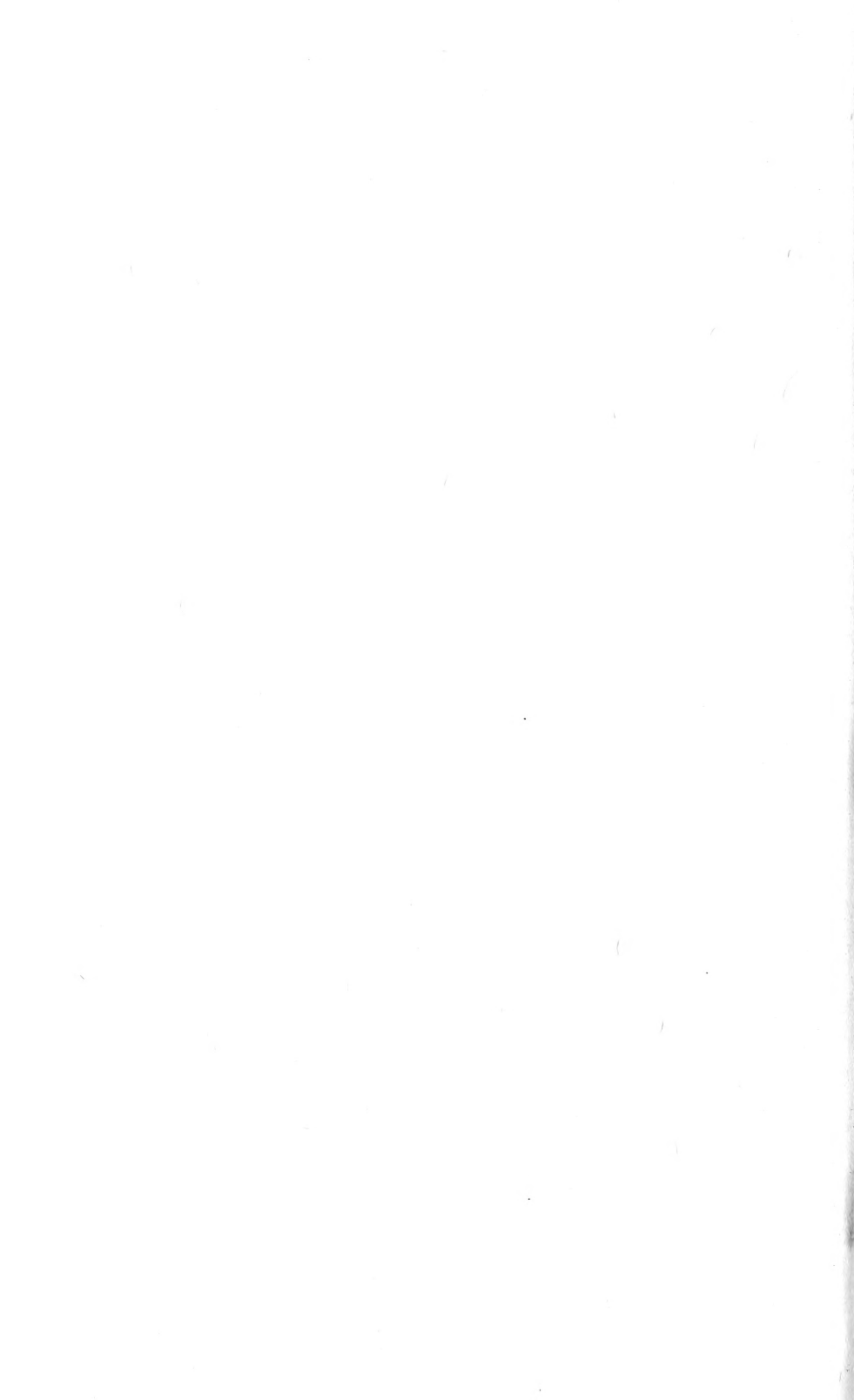
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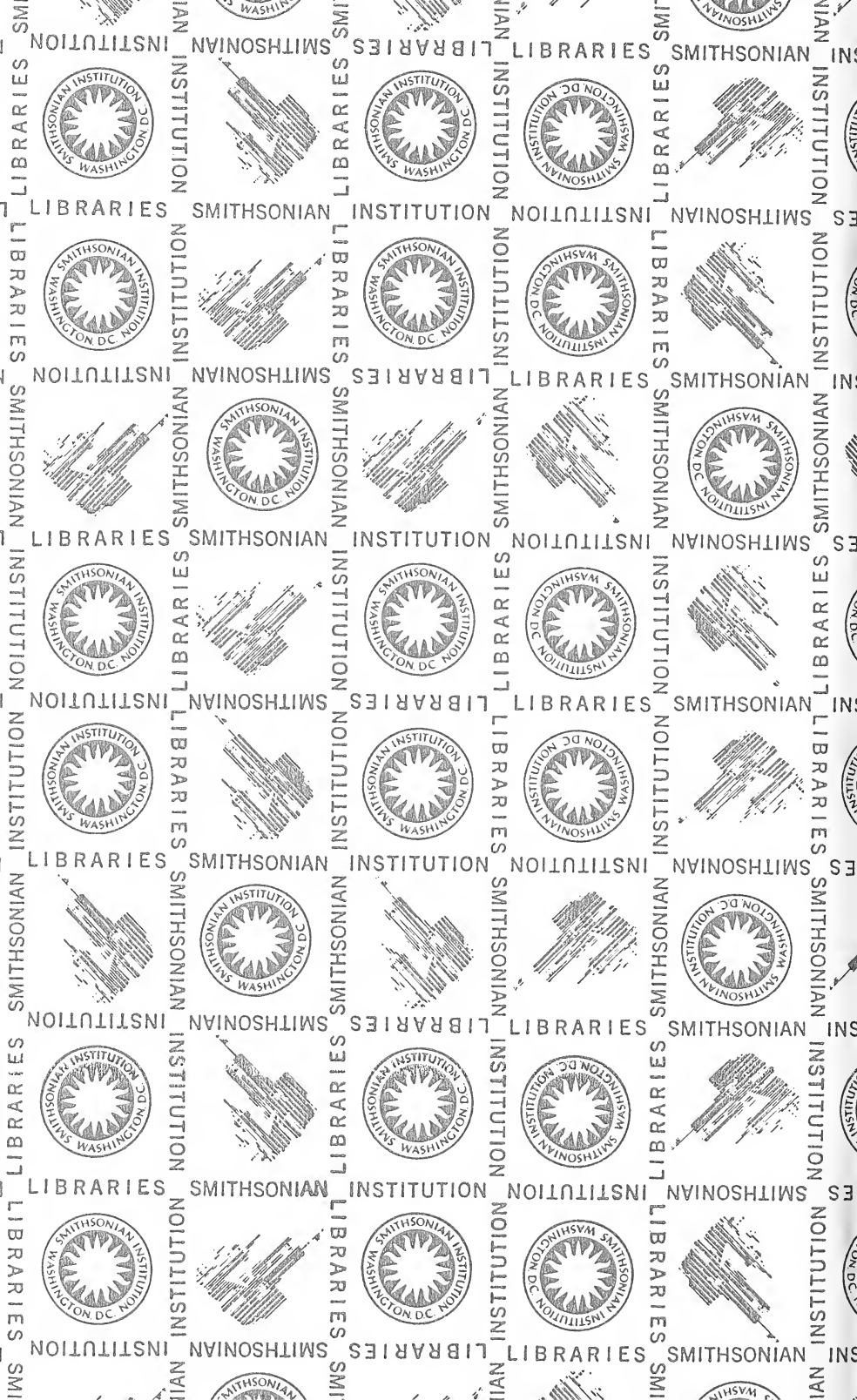


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