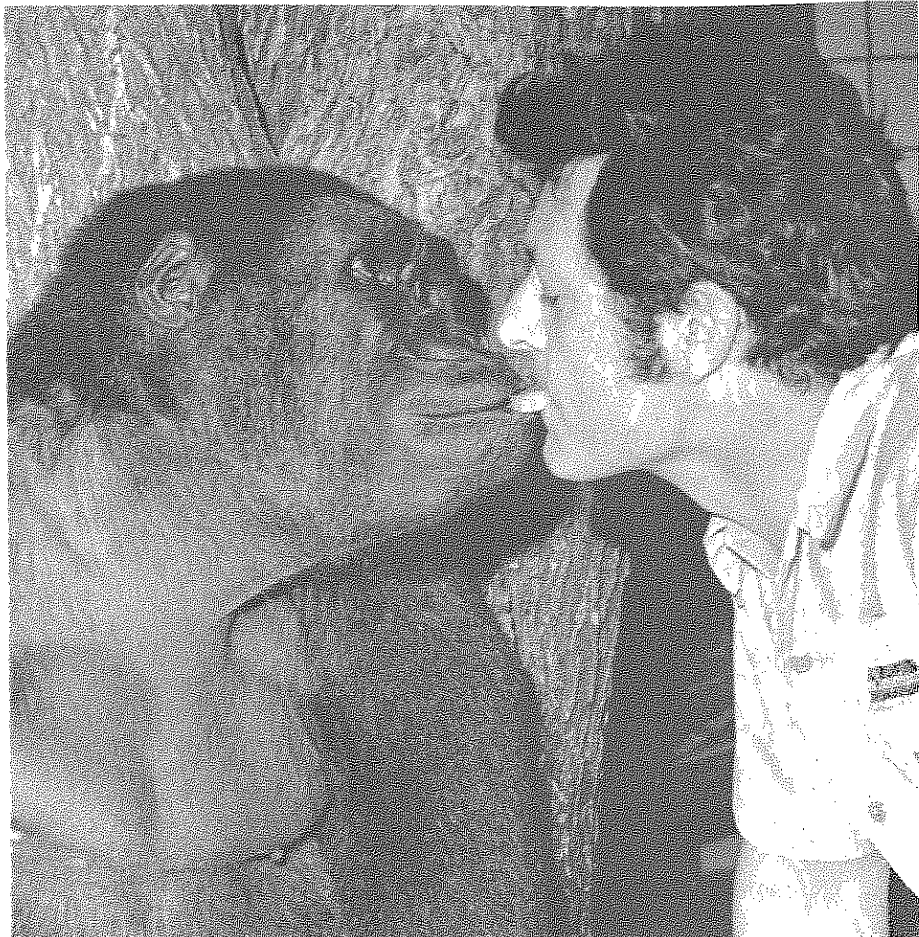




ALIVE

ZOOLOGICAL SOCIETY
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Tino with Primate Supervisor Sam LaMalfa.

Milwaukee Journal Photo



Tino arriving at the zoo.

Milwaukee Sentinel Photo

Tino, Our New Gorilla

By Gilbert K. Boese, Ph.D., Director, Milwaukee County Zoo

In February of 1980, I was walking through the Primate House and was struck by the fact that our zoo, being well-known for lowland gorillas, namely Samson, was housing only two lowland gorilla males, each one living separately and alone in the building. Samson at the time was 32 years of age and Tanga was about 20 years of age. I began talking with Sam LaMalfa, the Area Supervisor of Primates, and both of us expressed concern that, although we were known for the lowland gorilla, we really didn't have much going for us as an organization; at least not one that would be dedicated to conservation and breeding of this endangered species. The conversation ended with the thought that we must get on with a program that would bring more gorillas to Milwaukee County Zoo.

The first step was to find out whether we had breeding potential. It was decided we would test Tanga for fertility but not test Samson due to his age. We arranged for experts to come in from various areas of the United States and conducted a complete physical and fertility test of Tanga. We found he was a fertile male. The test results were so good that it was exciting to all who had participated.

With that information in hand, we generated a letter and sent it to all of the zoos of the United States, stating we had a wild-caught fertile male and we were looking for a female or females to begin a breeding program. Female lowland gorillas are difficult to locate. Since the animals naturally live in large family groups consisting of a single, large silverback male and three to four females along with juveniles and infants, trying to duplicate this ratio places females in great demand. Our letter was successful. The Los Angeles Zoo, in considering their gorilla situation, decided to send Diane, a 17 year old wild-caught female, to our zoo.

Diane's arrival was quite an event and we were hopeful everything would work out. Tanga, our large male, lacked social experience. Diane, a beautiful female, had lived in a social environment and bore and raised youngsters. We felt her experience would be important to the success of mating with Tanga.

The next event which added a very large plus to our gorilla program was the arrival of baby Mandara on April 15, 1982. A marvelous part of the story is that she is a very healthy individual who has received a tremendous

amount of care and attention given by the "Mandara Moms" and the zoo staff. Her acceptance by the public has been a joy to watch.

Things tended to settle down for awhile until September 28, 1982 when I received a cable from G. Van Den Brink, an animal dealer in Holland, listing among the animals he had available, a young male gorilla. That same day I sent a cable stating that we were interested in the gorilla, would need information as soon as possible, and would like to have an option on the animal. (By option we mean that if data provided is to our acceptance, we have the first opportunity to buy the animal).

Thus began a long series of communications trying to establish all of the particulars involved to transact a sale. On October 6, I received a cable that the animal was a male gorilla, wild-caught, between 7 and 8 years old. On October 7, after receiving a letter, I sent a confirming cable exercising the option on the animal stating that I would close the option; however, I wanted the medical history of the animal, the reproductive and behavioral background.

On October 8, I received a phone call from Mr. Van Den Brink and we discussed the animal and the price, which was \$22,500. The next day, I sent another letter asking for more information because Mr. Van Den Brink did not have all the details I wanted at the time of the phone conversation. The animal was in the Osnabruck Zoo in Osnabruck, Germany, a small zoo that was running into problems because they only had one cage for two male gorillas. The gorillas were fighting and, therefore, had to be separated.

Letters were repeatedly sent to Holland requesting the necessary information, but I could not get the information I wanted, nor could I get pictures of the gorilla. We felt that this animal, by virtue of his age difference with Mandara (she was one and he was seven) would be a potential companion and mate to her. By the time she reached 6-7 years and was of reproductive age, he could be a potential mate for her. With Tanga now in his mid-20's, we would be without a breeding male if we didn't act rather quickly.

Finally, in December, after constant correspondence and not being satisfied with the

information in hand, I decided that the only thing to do would be to go to Germany and look over the situation myself. On December 1, I departed for Germany to see the young male gorilla which we found to be called Tino. We knew that Tino was wild-caught and he came from the Cameroons. We knew that his time of entry was 1975, according to the gorilla studbook.

When I arrived in Europe, I was taken to the zoo by Herr and Frau Pantermann, very nice people, who hosted dinner the evening of arrival. Marguerite Pantermann spoke very good English and she served as interpreter. After quite a ceremony of meeting all of the staff and talking about different things and exchanging guidebooks, I finally got to see Tino.

What I saw was rather interesting. He appeared a bit scrawny to me and it looked as if his coat was dull. On the positive side, I observed a gentle animal who had a good rapport with keepers. Indeed he was cute and seemed very innovative. His cage was quite small with no furniture in it. The keepers kept going in and out of the cage throughout the day, giving him treats and meals. Tino was on a rather different diet because he had Coeliac's disease. His diet consisted more of a gruel or porridge with cottage cheese, Kaopectate and yogurt which he ate throughout the day.

The longer I watched him, the more I liked him. Keepers would put a small bathtub in his cage, he would take a bath and really clean up. When he got tired, he just spilled the water on to the floor. He didn't throw things about; he wasn't a very wild-type animal. He was very gentle when he played with the keepers. The diet bothered me and I noticed that he had periods of consistent regurgitation. This is not uncommon with some animals in captivity, but it appeared chronic and I was concerned.

I spent most of the day watching the animal. His cage partner, YeYe, was not with him at the time. The story is quite typical. Osnabruck Zoo received two young gorillas about eight years ago, one larger than the other. It was assumed the smaller one was a female and was named Tina. Tina and YeYe, the male, played out in the grass in the zoo and were very popular with the public. As they got larger, it was discovered that Tina was really a Tino. They began to fight, particularly during the winter when both were crowded into a cage less than one-fourth the size of the one Tino is now in. Therefore, one animal had to be on exhibit one day, while the other was kept in the sleeping chamber, and the procedure was reversed the following day.

Reviewing all the information I had on Tino that night, I worried that maybe there was something wrong and perhaps there would be a problem with this animal. I wanted to get some kind of a comparison with YeYe and see if there really was a difference. The next morning I got up quite early and arrived at the zoo gate as soon as it opened

and quickly went to the primate house and there I saw YeYe. YeYe was more robust than Tino; he was bigger and more aggressive, throwing things, and maintaining a harsh stare. Tino always had rather a soft, mellow look about him. Both animals had the same coat quality.

I then left and went to Hannover to see the great ape facility there and meet with some of the staff to talk about gorillas and gorilla acquisitions. I wanted to get my name on their list because we are still searching for females as well.

I came back and had a long talk with the staff and researcher about the Coeliac problem. In the meantime, I also had to consider how we were going to purchase Tino. Mr. Stearn of the Stearn's Foundation, Ltd., had called me about two years before and expressed an interest in the zoo. He planned to develop a series of gifts for the zoo in anticipation that we would develop a red panda exhibit. The red panda exhibit had a number of complications, primarily food production, to assure that they would live. We were having many difficulties putting the red panda project together. I called Mr. Stearn and asked him if he would help us out by transferring the money from a red panda exhibit account to a gorilla purchase.

Mr. Stearn was very receptive to the suggestion and did agree.

Following discussion of the Coeliac disease, diet of the animal and the entire situation regarding the future of our breeding program, we decided to bring Tino to Milwaukee. I believed that once we got him here and started working with him, things would go quite well. In mid-January 1983, we cabled Van Den Brink that we would accept the animal.

Then started the long series of cables and notes throughout March and April trying to come up with a shipping date, the weight, all of the details of getting the import and export permits. Finally, everything was in place. We had agreed with the Osnabruck Zoo that not only would Tino come, but one of his keepers also. It's a practice that we've developed, along with many other zoos, that when a very sensitive animal, as a gorilla, orangutan or chimpanzee, is moved into a strange environment, we prefer that a friend of the animal accompany them and help them settle in. This allows a rapport to develop with our keepers as the "friend" gradually fades out of the picture and our people take on the social role.

Detlef Niebler, the keeper from Osnabruck, came and it was obvious when they arrived on May 11 that Tino was very fond of Niebler. His presence was necessary for Tino's well-being. However, with all the television cameras, press and all of the public happily awaiting the appearance of Tino (they did see us unload the crate, and transfer him into the shift cage), Niebler, through our translator, Doris Gola, stated that it had been a long, tiring journey. They had been en route for almost two days, Niebler felt it would be too much of a shock for the animal to simply

go out on exhibit. We were faced with a decision of having to tell everyone that there would not be an immediate appearance of the gorilla. It was very rewarding to see how both the public and the press shared with us our concern and agreed that our decision not to put Tino on exhibit the first day was a good one.

Tino did make a very fine transition. Initially, he regurgitated but through a number of changes in diet and activity regimes, we now have in our collection a very fine young, blackback male. He is a very handsome and personable animal, and has become very popular with the public. We have changed his diet; he is no longer on his gruel but on vegetables and fruits and a specially made rice cake baked by Mr. Richard Tiedjen of our Commissary.

At this time Tino is going into a second phase of adjustment and socialization. During the day, a Mandara Mom brings Mandara over for a social hour with Tino. At this time, it is done at a couple of feet distance. They are not really touching each other but, of course, the long-term goal is to get them introduced. The next step is the introduction between Tino and Diane. That is underway and progressing to our satisfaction. Sam LaMalfa and Bob Czaplowski go in with Tino on a regular basis.

Thus, it's a continuing program and while we are more or less bringing you an update on our efforts to bring a very fine gorilla program here, we can say we are still working on it. The goal is to have social units. We have just taken an option on a young two-year old captive-born male from Stuttgart to be developed as the peer playmate of Mandara. We are also negotiating to bring another young gorilla, about four months old, to work into our Mandara Mom and gorilla-raising project. When Kuja reaches a year to a year and a half of age, he will be introduced into the social group of Mandara and the Stuttgart male and, of course, Sintang, our young orang.

We have a job to not only care for the animals that are here presently but to work for the future and develop a balanced multi-generational approach.

As we develop our gorilla program, there is going to be one thing that we will need, and that is space. Yes, sometime in the near future, Milwaukee County Zoo will have to start forging ahead to develop a great ape facility, a home where spacious enclosures allow social groupings of these sophisticated, intelligent, sensitive animals to be exhibited in as natural an environment as possible.

Taming of the Shrew

By Warren D. Thomas, DVM
Los Angeles Zoo

The tranquil, social harmony of a family can sometimes be placed in gross imbalance by one recalcitrant individual. This recently happened in an otherwise tranquil family of gorillas consisting of three adult females, Kay, Sandy and Diane, and the male of the household, Chuma.

There is good and bad to say about Chuma. Chuma is a large, handsome male gorilla, awe-inspiring in countenance. Unfortunately, it is all a facade. For all of his majestic appearance, he suffers from a severe lack of backbone. In short, he is intimidated easily by the ladies of his household.

Chuma reached an accommodation with Sandy who most of the time is more interested in when her next meal is going to be served rather than in what Chuma is doing. He also reached an accommodation with Kay, the most sexually aggressive of the females. Kay never bothered to wait for Chuma to wander by, but actively pursued him whenever she felt the inclination. Since Chuma had no backbone he accommodated her on most occasions. The problems lay with Diane.

Diane is an aggressive, dominating female who obviously likes a powerful, domineering male exuding machismo. Chuma had the appearance but not much more and Diane



Diane.

David L. Denmark Photo

tended to make his life less than tranquil. Diane intimidated him so severely that their relationship deteriorated to the point where Chuma would not or could not breed her.

That in itself is bad enough in a world that needs more gorillas, but our resident shrew, Diane, carried it a step further. The situation got out of hand whenever Chuma did decide to breed one of the other two females because Diane would break it up. Now in any circles, be they animal or human, this cannot be considered proper behavior. We were placed in the dilemma of what to do in order to

restore a harmonious, productive family situation.

It was obvious that Chuma was never going to sort it out, and it was equally obvious that Diane truly held the upper hand and was not likely to relinquish it. In the face of this problem a new element fortuitously made its appearance.

It so happened that the zoo in Milwaukee had a lone male gorilla, also magnificent in appearance and with, we were assured by their director Gil Boese, a substantial backbone and enough machismo for at least two male gorillas. This was the good part. The bad part was that he had been raised with a female in a sibling relationship, had never bred and did not know how to breed.

Discussions between the staff of the Milwaukee Zoo and our own staff made us decide that we had the makings of a remarkable solution all around. By taking Diane out of our existing family we would eliminate the element of discord. By sending her to Milwaukee where she would have to deal one-on-one with the macho of the north, we had a potential male

that could handle her. In return, Diane, being an experienced female, could certainly go a long way in teaching the male how to be functional as well as ornamental.

With little sadness and no tears our resident gorilla family bade her goodbye and we all wished her a lot of luck on her forthcoming adventure in the north. Not long after Diane left, tranquility reigned supreme in the gorilla household and Chuma was back in his role of accommodation to the two remaining females.

Meanwhile, in Milwaukee, Diane was introduced to their male and what we had all hoped for did indeed take place. Diane taught him the wonders of marital bliss and he in turn got her attention. We are now told that they are inseparable — a true, loving pair. The happy ending being that we have peaceful functioning gorillas... and the shrew has indeed been tamed.

This article first appeared in the spring edition of ZOOVIEW, the quarterly magazine of the Greater Los Angeles Zoo Association, and was reprinted with their permission.

she is introduced into Diane's exhibit in a few years. Tino receives visits from LaMalfa and primate keeper Bob Czaplewski. It is social play time until the zoo introduces Tino to its other gorilla acquisitions. Mandara has played with young orangutan, Sintang, indoors and in the new outdoor corn crib. Now, a new baby male gorilla is coming from Memphis. He, Mandara, and Sintang could all grow up playing together in a natural

manner. In November, there is a possibility of another young male arriving from Germany.

Tanga, Diane, Tino, Mandara and Sintang are all on exhibit in the Primate Building which is open daily from 9 a.m. to 4:30 p.m.

Top: Mandara mom playing with Mandara. Bottom: Tanga.

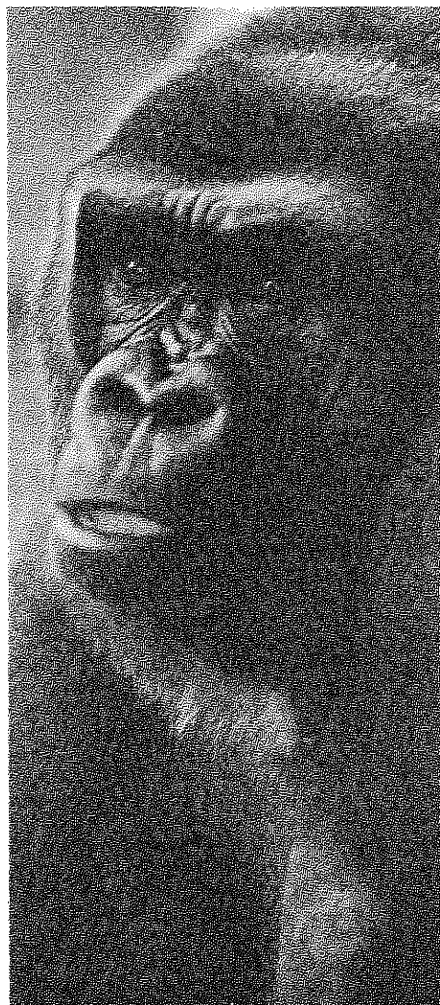
Great Gorilla Gossip

By Debbie O'Connor-Callahan
Public Relations Coordinator

The Milwaukee County Zoo is going ape over gorillas. Tanga's sweetheart from L.A., Diane, is now getting the personal attention of her keepers. Tino has keeper play visits daily. Mandara has a new outdoor corn crib play area and one more baby lowland gorilla on its way in October.

The zoo's primate building has changed quite a bit since the passing of Samson. It now has four stars with a fifth coming from Memphis and possibly a sixth in late fall from Germany. According to zoo director, Dr. Gil Boese, "Gorillas naturally live in large social groups in the wild. Our ultimate goal is to increase our gorilla population to about six to eight adults and to build a new great ape facility with natural indoor and outdoor exhibit areas. Visitors would be able to see male gorillas pounding their chests and running outdoors. Females would look after the young. It would all be very exciting."

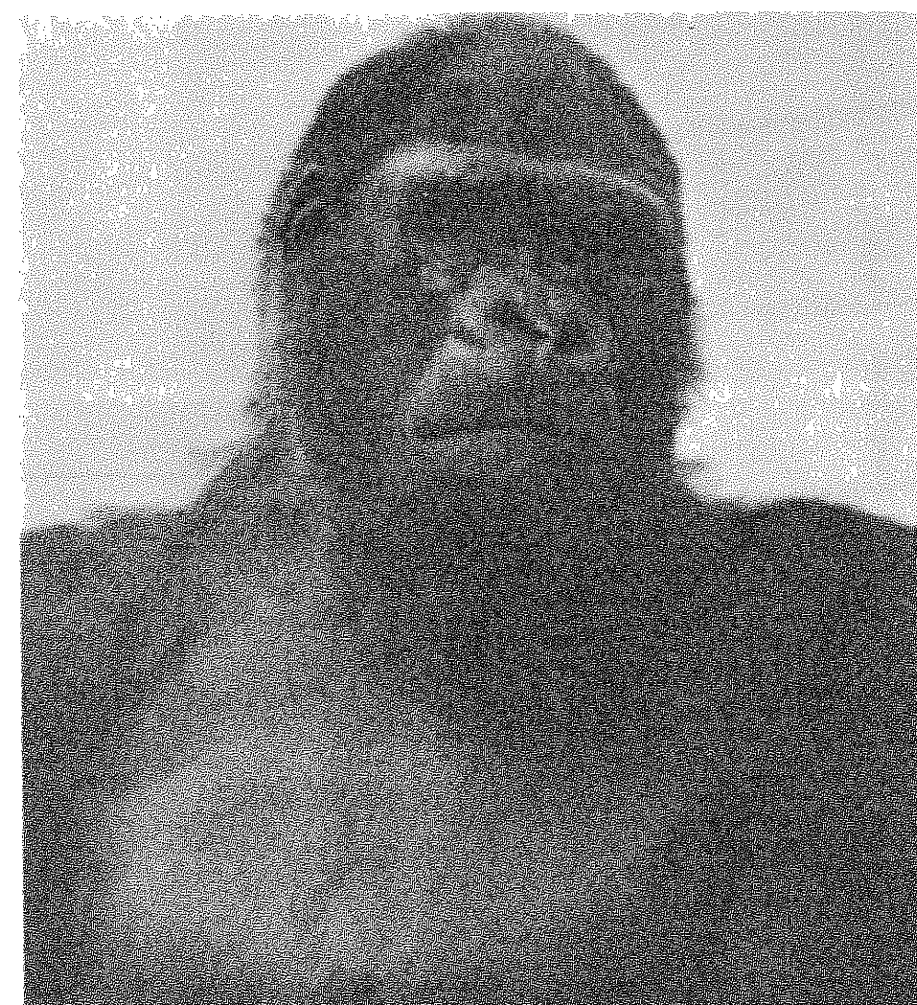
All the zoo's gorilla environment decisions are now based on this long range goal. Sam LaMalfa, Area Supervisor of Primates, has been going into Diane's exhibit with her for about two months. In the event Diane produces offspring, LaMalfa could help her care for them until other adult female gorillas are acquired and take over that role. LaMalfa would also be the protector for Mandara when



Diane.



David L. Denmark Photo



The Pheasantry Exhibit Opens

The Memorial Day Weekend marked the opening of a new exhibit at the Milwaukee County Zoo. The Pheasantry Exhibit was made possible by a gift from Mr. Joseph Wong.

Nestled among natural plantings and small goldfish ponds are 23 exotic Asian birds in four separate enclosures. A wooden path lays the way for visitors in this quiet outdoor setting.

The collection, which was brought together from various American zoos and bird farms, includes three breeding pairs and ten male pheasants. The pairs are Temminck's Tragopan, White-Eared Pheasant, and Himalayan Impeyan. The males providing

the kaleidoscope of plumage are four Golden Pheasants, four Lady Amherst Pheasants and two Reeve's Pheasants. In the trees above the pheasants, are four Oriental Turtle Doves, two Blue Magpie and one Mynah Bird.

The Pheasantry Exhibit was designed by Milwaukee County Zoo Staff with assistance from Kahler, Slater, Torphey and Scott of Milwaukee.

Editor's Note: The Zoological Society was saddened to learn of the recent death of Mr. Joe Wong. The Milwaukee County Zoo and the Zoological Society are extremely grateful to Mr. Wong for his continued support and genuine interest and we will miss our good friend.

David L. Denmark Photo



Mr. Joe Wong and Dr. Boese at the Pheasantry opening.



Milwaukee Journal Photo



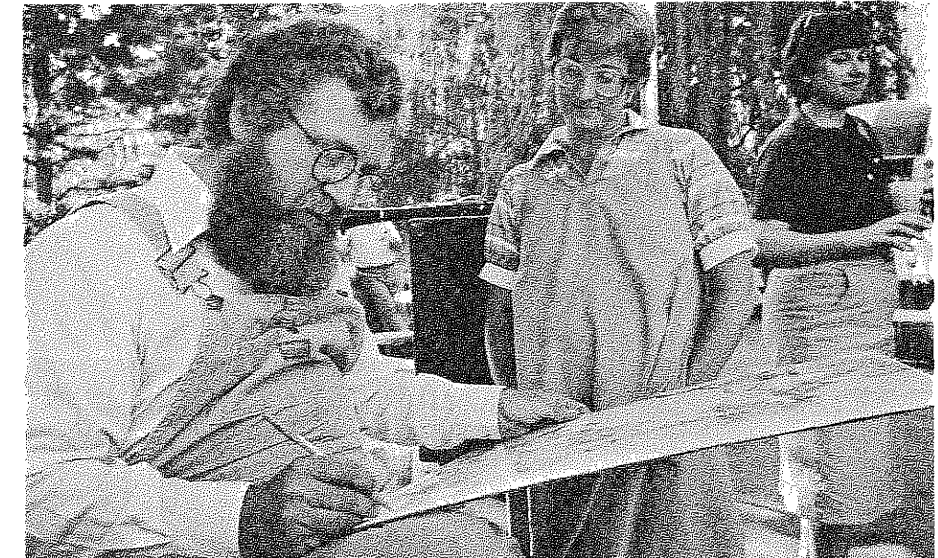
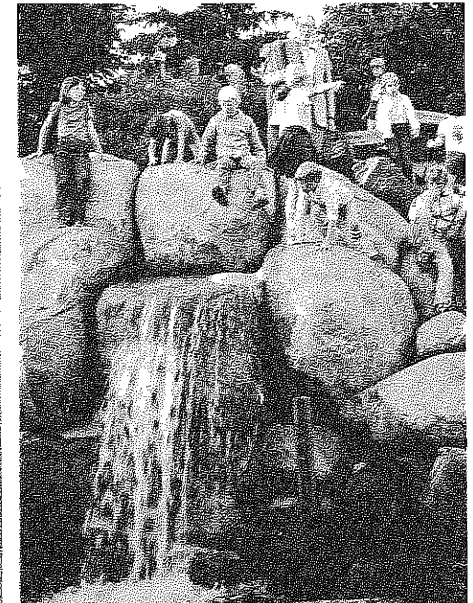
David L. Denmark Photo

Photos by David L. Denmark

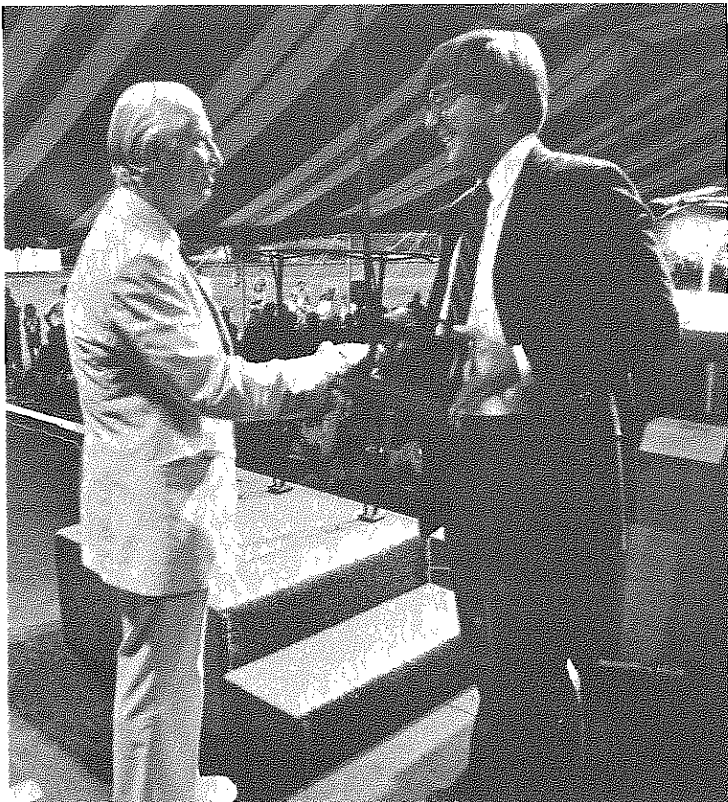


The Friends of Mime leading a parade at the Zoological Society Annual Picnic.

Summer at the Zoo



Musician and artist Don Nedobeck signing copies of his "Zoo's Blues in B Flat" at the Annual Picnic.



Marin Perkins receiving EMD EGG award from Zoological Society President Richard A. Gallun.



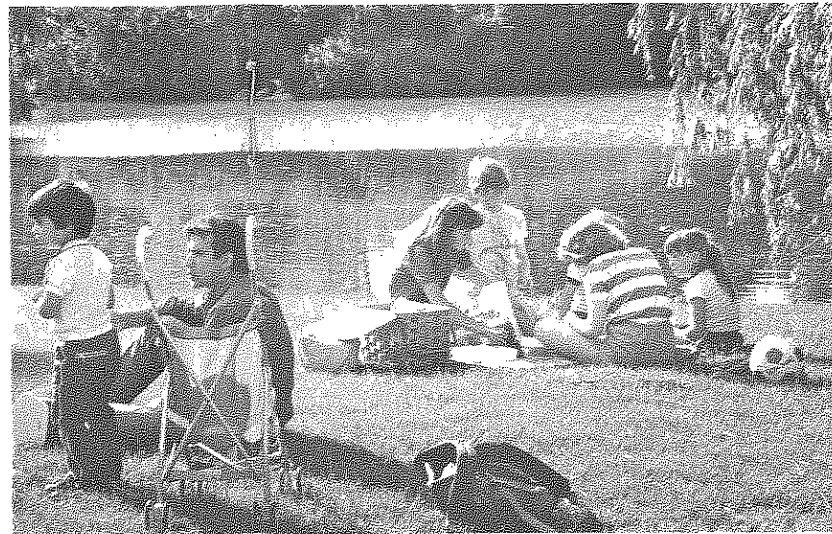
Zoogoers enjoying one of the popular summer symphony evenings at the zoo.



The Friends of Mime perform.



Zoo veterinarian Bruce Beehier at parents picnic.



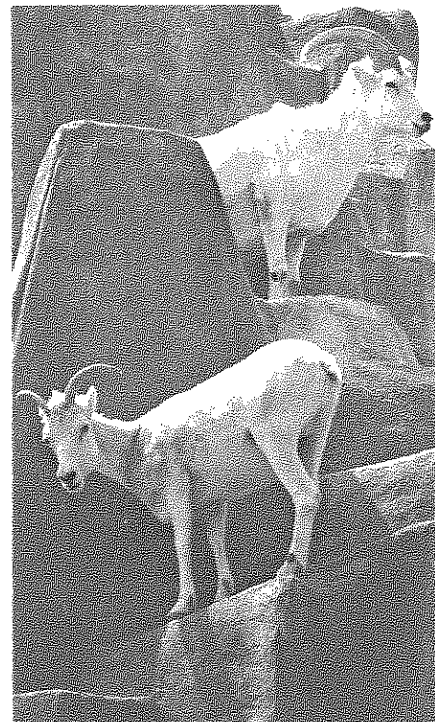
A tranquil setting for a picnic.



A night with Henry Mancini.



David L. Denemark Photo



David L. Denemark Photo

Close Encounters of the Wrong Kind

By Gay Reinartz
Milwaukee County Zoo Registrar

Until recently, zoo stock has been regarded and bred much like domestic livestock. That is, inbreeding, or the mating of closely related individuals, and has been either consciously practiced as a means of "stock improvement", or, in many cases, has been "allowed" to happen simply because the number of breeding animals was low. Inbreeding also results when a prolific breeder contributes a disproportionately large number of offspring. A larger proportion of the breeding population becomes related through this one productive individual.

Since the 1800's, however, livestock breeders have noticed that if breeding continued over several generations, the stock would often experience a general loss of vigor. This loss of vigor, called inbreeding depression, ranges from such conditions as reduced fertility, higher infant mortality, greater incidence of disease, etc. to gross genetic abnormalities and death. The results can be dramatic or may appear as subtle changes often difficult to detect. Why should consanguineous matings result in weaker offspring; what genetic factors cause this decline?

The genes of higher animals occur in pairs. Of a given pair, one gene comes from the individual's father while the other gene comes from its mother. The genes of the pair may be alike, in which case the individual is said to be homozygous (ho • mo • zi • gus) for those genes. Otherwise, the pair members may be different; the individual then is said to be heterozygous (he • te • ro • zi • gus). In the case of the heterozygous individual, often only one of the genes of the pair is ex-

pressed while the other is hidden recessive. Hypothetically, a pig may be heterozygous for tail shape; that is, one gene may code for a curly tail, and the other, for a straight tail. If we find that the pig has a curly tail, it means that the curly gene is dominant over the straight one. The straight tail gene is not expressed. Just by looking at the pig, we would never know he carried a recessive gene for straight tail. Only when a pig has two genes for straightness will the pig exhibit a straight tail. Therefore, the phenomenon of dominance coupled with the heterozygous condition provides a way for rare, harmful genes (caused by mutation) to remain in the gene pool and go undetected in heterozygous animals. For example, it is estimated that the average animal carries three to five lethal genes. Genetically induced deaths result from these lethals only when the lethal occurs in the homozygous state. It is reasonable to expect that other species have lethal genes in their gene pool and many more genes that when homozygous may not cause genetic death, but nonetheless they lower the fitness of the animal in some way.

How does inbreeding enter into this process? To answer this question, let's examine a pedigree from our kudu family tree (Figure 1).

Richard and Barbara were two unrelated founders of the kudu herd at Milwaukee County Zoo. Their first born was Christy. Christy received half of her genes from her mother and half from her father. Then Christy was bred back to her father to produce Jennifer. Jennifer was inbred. Again, she received half of her genes from Christy and half from Richard. In this case, however, Christy was already related to Richard by one

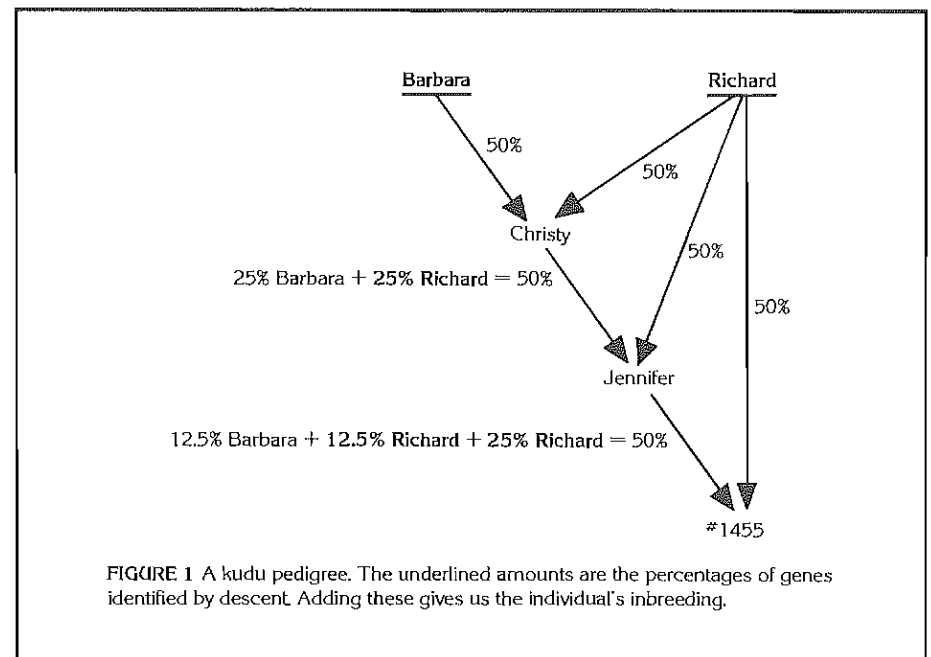
half. Therefore, Jennifer received from Christy an additional portion of Richard's genes. Tracing the pedigree in this way, we conclude that Jennifer's genetic makeup is composed of 25% of Barbara's genes, 25% of Richard's genes received directly.

Intuitively we see the possibility that Richard's separate contributions could overlap so that identical genes are passed on by different routes. The inbred individual, therefore, receives two identical copies of a given gene and thus becomes homozygous for that gene. The proportion of identical genes passed

on from the parents is the quantity or the degree of inbreeding. In Jennifer's case, there was a 25% overlap in identical genes from Richard; in other words, 25% of her genes are homozygous above and beyond the norm. If Richard had carried only one lethal gene which had been passed directly to Jennifer, she would have had a 25% chance of receiving another copy through her mother and dying from a genetically caused death. Inbreeding, therefore, results in individuals having a greater proportion of homozygous genes. The risk of unmasking a harmful or lethal gene increases as inbreeding increases. For example, Jennifer mated with Richard to give birth to an underdeveloped male (Figure 1). The infant died two months after birth. Although we cannot know with certainty, this death could have been related to the infant's high level of inbreeding—37.5%.

Studies on the effects of inbreeding on species other than livestock are relatively few. In humans, for example, the negative effect of inbreeding on infant survival is detectable at inbreeding levels as low as 0.46%! On the other hand, lemurs show no decline in infant survival even with inbreeding levels as great as 32.5%; however, lemurs do experience a slight drop in fertility. Birds appear to be a mixed bag; the Great Tit in Great Britain suffers a higher nestling mortality upon low levels of inbreeding (0.35%), but in The Netherlands, the same species actually experiences a better survival among nestlings and fledgling after inbreeding. Livestock show classical symptoms of inbreeding depression after only one generation of inbreeding: cows give significantly less milk, the litter size in pigs drops and the young are much smaller, etc.

An important point is illustrated here. The harmful effects of inbreeding are different for different species and often difficult to detect. Perhaps some species have fewer harmful mutations. Whatever the reasons for the different responses to inbreeding, one thing is sure; genes are lost from the population



during the inbreeding process. As inbreeding continues over generations, the individuals in a population become highly related to each other. Theoretically, the number of genes homozygous by descent in the individuals approaches 100%. The genetic variability, or the number of different genes found within the population, diminishes because everyone becomes genetically alike. For example, the pedigree in Figure 1 demonstrates the subsequent loss in the proportion of Barbara's genes in each generation, from 50% in generation one to 12.5% in generation 3. The loss of genetic variability reduces the population's potential for adapting to new environmental stresses. Hence, inbreeding and loss of genetic variability are two inextricably linked processes that occur in small populations.

If wild animals respond to inbreeding in the same way many domestic species do, the long-term consequences could be catastrophic for zoos if inbreeding goes unchecked. We know that inbreeding and loss of genetic variability are the genetic consequences of small population size. Therefore, a special concern arises for the preservation of those species existing as small captive populations. Many zoos today are committed to these remnant species. Their success depends upon the knowledge of how captivity changes the genetic structure and thus the evolutionary potential of these animals. Through careful management, it is possible to minimize inbreeding and delay the process of gene loss.

Among the zoo workers trying to gain perspective in genetic conservation and attempting to correct problems related to inbreeding are staff members of the Milwaukee County Zoo. In January, 1983, our zoo initiated a program to analyze the genealogies of two of its ungulate species, Dall sheep and greater kudu. Both herds have originated from only a few individuals and have existed for four generations. Inbreeding was believed to be intense. An investigation was needed in order to determine exactly how inbred the animals were, how the remaining animals were related to each other, and how future matings could be arranged so that inbreeding could be minimized.

At the start of the study, pedigrees for each species were constructed from the animal records maintained by Assistant Zoo Director, Robert Bullermann. As we have seen in our example, calculating the degree of inbreeding and the genetic relatedness between animals is a laborious task even for a few animals. The kudu and Dall sheep herds together total 96 animals! The job required a computer. The pedigrees were coded and fed into the machine. A computer program, designed by the author, assembled and analyzed the pedigrees, calculated the inbreeding coefficients of each animal and compiled tables which enable zookeepers to select the least related animals for mating.

Interpretation of these computations brought into focus several historical events and management procedures, common to most zoos, that served to intensify inbreeding. The first of these is "founder size".

The number of founders of progenitors of a colony (and their sex ratio) ultimately determines the rate of inbreeding over generations. The fewer founders there are, the more intense inbreeding is. For example, the greater kudu herd originated in 1965 from 3 founders, two females and only one male. Forty-one animals descended from this group. It follows that all the first generation offspring were related because they had a common father. By the second generation, 94% of the kudu were inbred, and by the third generation, 100%. On the average, the third generation offspring had 22% of their genes homozygous by descent. The Dall sheep, on the other hand, originated around 1971 from three females and two males. Due to the larger founder size, the rate of inbreeding was somewhat slower: only 32% of the second generation offspring were inbred. Like the kudu, the third generation was 100% inbred, but the degree was less.

Even if founder size is increased to six animals, inbreeding could be postponed only up to the fourth generation (about 10 years for the Dall sheep). For zoos which have a limited amount of housing, increasing the founder size for breeding groups presents a dilemma.

In an attempt to overcome severe inbreeding when it was suspected, zoos in the past often imported another breeding sire. New sires were introduced to the kudu and Dall sheep herds. Breeding a new sire to female descendants of the original stock immediately eliminates inbreeding at that time. But only for one generation. Inbreeding resumes in the next generation at even a greater rate than before. The first generation offspring of the new sire are now not only all related through him, but they are also related through their mothers who were all related. Therefore, introducing only one new sire is no long-term solution to inbreeding; unrelated females as well as males are needed.

The remedy lies in securing more wild stock or exchanging genetic material with other zoos either through breeding loans, purchases or trades. Unfortunately, the former option is closed for many species. Exchange between zoos will work only if the genetic relationships among zoo animals worldwide is researched. This project requires a tremendous effort. Who pays for it?

Until political and practical problems are resolved, guidelines for worldwide genetic conservation of more than a few species is kudu-generations away. For the time being, zoos must analyze the genetic history of their own breeding groups and critically examine and revise their breeding strategies with an eye on the future. Our zoo has taken these first steps. We have a handle on our mistakes and an idea of where to go from here. Breeding wild animals has never been a simple task, but by considering yet another facet, that is the genetic relationship between animals, the task becomes even more formidable and engaging.

Editor's note: Funding for this research was provided through the generosity of Mr. Frederick L. Ott, Zoological Society Board of Directors Honorary Member.

The Ducklings and the Big Chipmunk

An I-Can-Read Story for Children
By Wilma B. Boese

Many small chipmunks live in the woods at the Zoo park. Maybe you have seen them. They have red-brown fur with stripes on their backs. They hold their tails straight up as they run.

Chipmunks gather bits of food near the garbage cans in the Zoo park. By evening the cans hold much food that is left over from lunches, popcorn, warm ice cream, parts of sandwiches, potato chips, and corn chips, chocolate candy melted in wrappers, warm pop, and other foods. Chipmunks go into the garbage cans after the visitors leave the Zoo. They and other wild animals eat the leftover food. Sometimes I see a popcorn box hopping about in a garbage can. A Chipmunk, or perhaps a squirrel, is inside the box eating the leftovers.

At the Zoo there is a large rock lined hole in the camel yard. Inside the hole there are trees and shrubs and a small pool of water.

Last spring, I watched a mother mallard duck and her seven ducklings who lived in the hole. Chipmunks lived there too. The chipmunks scurried up and down the rock walls and in and out of the hole. Mother mallard duck flew in and out of the hole to find water, food, and to bathe. The yellow and brown fluffy ducklings could not fly and had very little food to eat in the hole.

Animal keeper, Bob Hoffman, threw cracked corn and grain into the hole for the ducklings to eat. Chipmunks scurried around the floor of the hole gathering the cracked corn and stuffing it into their cheek pouches.

One afternoon I saw the seven ducklings march, one behind the other, around the sandy floor of the hole. They cheeped and cheeped as they went along. A big chipmunk ran through the line of ducklings. He kicked them with his back legs and butted them with his head. Spinning around he came back again at them, and once more he kicked and butted the ducklings. The ducklings were knocked and rolled about.

I was surprised to see the chipmunk do this to the ducklings. They cheeped loudly and ran from this big chipmunk. Mother mallard duck was not near the hole and she did not hear her babies call.



David L. Denmark Photo

The next day keeper Bob Hoffman found a dead duckling in the hole. He said to me, "Now there are five ducklings. One duckling is dead and another duckling cannot be found."

I told Bob about the big chipmunk. He was surprised to hear the story.

Did the big chipmunk hurt the ducklings? I don't think the big chipmunk wanted to share the cracked corn with the ducklings. But I am not sure about this! What do you think? I will watch chipmunks more closely now. I want to know more about them.

You watch for chipmunks at the Zoo on your next visit here this fall. Listen for their "chip, chip, chip" sounds. Look for them as they scamper up the trees. Look for them as they scurry along the roads that wind through the woods in the Zoo. Maybe you can find one eating near a garbage can. Or see a chipmunk disappear down a hole in the ground. That's home for a chipmunk, and the place he'll sleep when the long cold winter comes to Wisconsin.

Vocabulary:

chipmunk — a small striped, squirrel-like animal found in America

camel yard — a large grassy place where camels live

animal keeper — a person that feeds, waters, and cares for zoo animals

cheek pouch — a pocket inside the mouth of a chipmunk for storing food

scamper, and scurry — to run quickly, hurry



Milwaukee Journal Photo

Quarterly Animal Report

By Robert Bullemann
Assistant Zoo Director

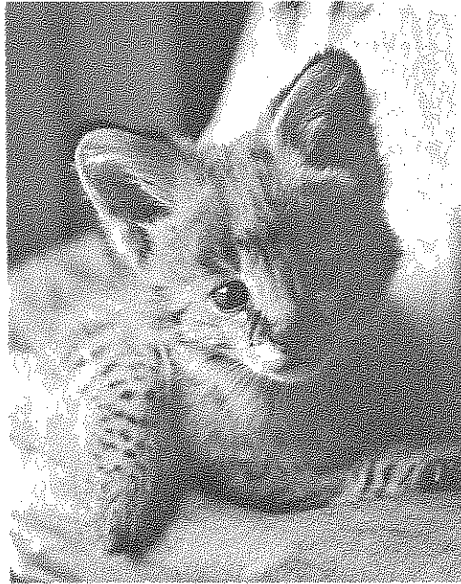
Early and mid-summer months produce numerous activities in the animal collection. This past spring, several Dall Sheep were born. Unfortunately, we lost all but one female. Cause of death was due to lung problems. A male Impala, born at Winter Quarters, got its foot caught in its stall hardware. The animal was taken to our animal hospital and hand reared. He continues to do very well and was recently surplused to an animal dealer.

With the Children's Zoo in operation many animals arrive for the season, such as White-tail Deer, Fox Pups, Bobcat Kittens, baby Opossums, and Parrots. The first baby Moose in many years was born on June 12, 1983.

A number of animals that arrived in late May and early June were put on exhibit after a quarantine period. Included were Waterbuck, Chapman's Zebra, Hartebeest, and new Greater Kudu. Several Monkeys were received including a female black and white Colobus, a female Potto (which later turned out to be a male).

In mid-June, two female Impalas were shipped to the Baton Rouge Zoo. One was sold and the other traded to bring a new bloodline into our Impala herd. A female light colored Black Bear, sometimes referred to as the Cinnamon Bear, was shipped here from Bear County U.S.A. in South Dakota. She will be introduced to our other two North American Black Bears, one of them being our honey colored male. A female Serval Cat was born in late June.

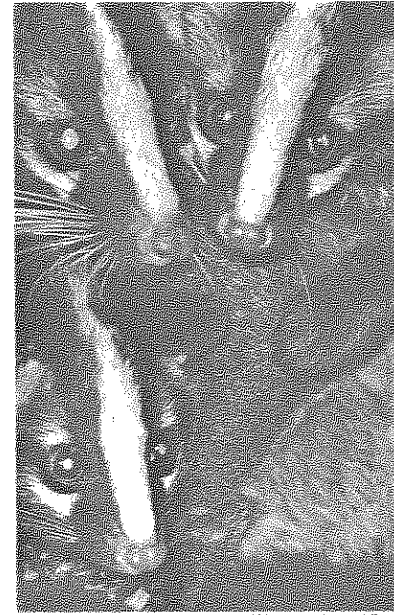
An American Elk born on July 4th was appropriately named "Independence". The following day, July 5th, we accepted a gift of a miniature Donkey from Sandi Moomey, former Zoo Pride President, for our Children's Zoo.



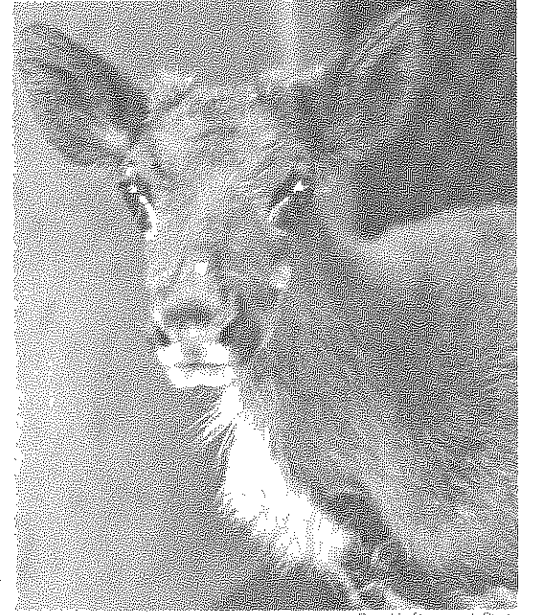
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Expanded Travel Program for 1984

The Zoological Society of Milwaukee County is pleased to announce an expanded travel program for 1984.

Next year we will be offering three new tours to such exciting places as Indonesia, China and a mini-tour of a zoo in the United States.

Mr. James Kuehn, Secretary of the Zoological Society and Dr. Gil Boese, Zoo Director, will conduct a Safari to the game reserves of Sumatra, Java, and Bali in Indonesia, March 24 to April 12, 1984. This special tour, limited to 15 persons, will spend several days in Singapore with an optional stopover in Hong Kong. The highlight of the tour will be the famous Komodo Dragon on Komodo Island in the Java Sea.

Early September 1984, will bring an opportunity for Zoological Society travelers to enjoy a 21-day Asian Experience. This trip, led by Milwaukee County Zoo staff, will begin in Tokyo with visits to Monkey Hill, and the famous Marine Palace and Ueno Park, Japan's largest zoo. Other highlights include Peking, the political, cultural and economic center of China, Zian, Shanghai, the Hangzhou Zoo, Guilin, a cruise down the River Li and a visit to Ocean Park in Hong Kong, one of the most advanced oceanaria in the world.

Our weekend tour of a zoo during the fall of 1984 is still in the planning stages but promises to be an exciting and popular event for zoo buffs. Look for an update in future issues of ALIVE.

These trips, planned to accommodate a limited number of travelers, are open only to Zoological Society of Milwaukee County members and their families. For more detailed information, please call the Zoological Society office at 258-2333.

WARTHOG SOCIETY

The Beaver Lake home of Mary Jane and Ned Grede was the scene Saturday, August 13, 1983 of the first Annual Meeting of the Warthog Society, an organization made up of those who accompanied Dr. Gil Boese on the 1982 and 1983 Wildlife Safaris to Africa.

The 1982 group founded the society and named it after the animals they intended to donate to the zoo. When importation and quarantine proved too difficult, three waterbucks were donated instead, but the name remained.

The members of the 1983 Safari were initiated into the Society on August 13 by the Grand Master and his wife, Charles and Ann McNeer.



David L. Denmark Photos

ZOO PRIDE

Teen Volunteers

By Mike Huwateck

If you were between the ages of 13 and 17, were very versatile and willing to accept any assignment, you could have been a Zoo Pride Teen Volunteer for the past two years.

Seventy-seven teens have participated and performed a variety of duties, six days a week, ranging from assisting in the Discovery Center, working in the West Information Booth, presenting the dialogue for the Elephant Management Program, drawing huge crowds to their puppet show and creature teachings on the Children's Zoo stage.

Special Events such as the Animal Adoption Kick-off, Teddy Bear Days, the Zoological Society Picnics, Wild-life Day at State Fair, Halloween, Turkey Days and Caroling Day have also been graced by their enthusiasm and smiling faces.

In 1982, 1,968 hours were donated and in 1983 they will see that surpassed. Many of the teens use these hours toward scouting awards, job experience and the exposure in public relations is invaluable.

Zoo Pride has been pleased to open this opportunity to the young people of our community and have found working with them a delightful experience. We hope many of our teens will carry a new dimension into their lives with regard to people, the animal kingdom and volunteerism.

EDUCATION

CONGRATULATIONS

Mary Krause Thiry, Zoo Education Department Director, was recently promoted to the position of Associate Professor by the University of Wisconsin-Extension.

Mary is employed by both the Milwaukee County Zoo and the Extension and is also a 4-H Youth Agent. Under her direction, the Zoo Education Department served 18,222 individuals in 1983, demonstrating her commitment to the importance of Zoo education to the future of wildlife.

Congratulations Mary Thiry!

LUNCH WITH SANTA

Children from 4 to 7 years of age can join in the fun on December 17th from 10:00-1:00. Phone registration starts at 8:30 on November 28th. Call early — this is a very popular program. The cost is \$5.00 per child, \$3.00 per child for Society members. To register, call 771-3040, extension 155.



Mary Krause Thiry

AT THE ZOO

October 10-15 — Salute to the Museum, come see our "living" dinosaurs, scavenger hunts, keeper talks and more in the Reptile and Aquarium Building.

October 15-16 — Harvest Zoo-Bilee, celebrate fall.

October 15 — Group Leader Open House, sponsored by the Zoo Education Department.

October 29 — Halloween Celebration, scavenger hunt and costume contest. Free admission for those coming in full costume.

October 17 — Zoo Election, choose your favorite animal, watch the newspapers for ballots. Results will be announced on November 7.

November 10 — Newspaper Day at the Zoo, school children from 6th through 12th grade will interview Zoo personnel and publish a special edition of their school newspapers. Contact the Zoo Education Department, 771-3040, for more information.

November 20 — Turkey Celebration . . . call the Zoo Education Department for more information.

December . . . Holiday Program . . . many holiday surprises await zoo visitors during December. An animal ornament making event, lunch with Santa, caroling and new zoo . . . prizes.

Winter . . . Cross-Country Skiing . . . Once the snow falls, the zoo will open its cross-country skiing paths. The zoo is a beautiful place in the winter and cross-country skiing is a great way to see the grounds!

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