EDITORIAL

We want to express our appreciation to the people who called or responded by letter to give us their impressions of the first edition of Gorilla Gazette. The following are just some of the comments that have been received.

"The Gorilla Gazette is a huge success! It looks very professional and is (and will be) very useful."

Christine VanGemert
Franklin Park, Boston

"Many thanks for providing me with the inaugural copy of Gorilla Gazette. My congratulations to you and all the others who were responsible for its publication.

I am sure that those responsible for the care, maintenance, and captive propagation will be active participants in preparing articles for future publication. As you know, much needs to be done for the long-term survival of gorillas—both in the wild and in captive environments, and the Gorilla Gazette is an excellent medium for the exchange of important news items on such a magnificent species."

Robert Wagner
Executive Director, AAZPA

"Your first issue is great. Thanks for sending it to me. I thought it was in preliminary stages—didn't realize how far along you all were on it. A great idea."

Carole Noon
Gainesville, FL

"In response to Gorilla Gazette, I like it and I like the idea of it. A newsletter communicating between gorilla keepers is long overdue.

Sam LaMalfa
Milwaukee County Zoo

"First of all, congratulations to all of you on your first issue of the gorilla newsletter. It should prove to be a valuable resource for all of us gorilla keepers."

Marilyn Cole
Toronto MetroZoo

The primary goal of this publication is to provide gorilla keepers a format for communicating with one another. Hopefully, the Gazette will aid in developing a networking system and increase the resource material available for problem solv-}

cont. p. 18
SAN FRANCISCO
GORILLA WORLD UPDATE

BWANA, 30  PATTY, 14  BAWANG, 7
POGO, 30  KUBIE, 12  ZURA, 6

Our current group consists of 2.4 gorillas, most of whom spend most of the day in a large outdoor exhibit almost an acre in size with grass, trees, streams, and waterfalls.

The males include Bwana, our wild-caught 30-year-old patriarch, sire to four offspring who were mother-reared within the group. Bwana himself reared his son Mkubwa (Kubie) after the death of Kubie's mother when he was about two. Bwana is an elegant, mellow male whose leadership and even temperament have greatly contributed to the success of our group.

Bwana's son, Kubie (12), now also an impressive silverback, is being kept separate from the group while we give Bwana the opportunity to breed Bawang (7) (and allow us to ID the sire). Bawang is a young female purchased from Cincinnati at 18 months, who gave birth to a stillborn in June 1987 (presumed sire Kubie). Bawang and Bwana have been observed breeding.

Patty, a 14-year-old female on breeding loan from Lincoln Park; Zura, a 6-year-old female purchased from Columbus; and Pogo, a 30-year-old non-breeder from Africa (where she was raised by missionaries) complete the current group.

Hopes are high for successful breeding of both Bawang and Zura. Prophylactic antibiotics are planned for future pregnancies to thwart the undetected problems responsible for Bawang's recent stillbirth.

Bawang's health and behavior throughout pregnancy, labor, handling and cleaning the stillborn baby were totally appropriate, so we are holding positive thoughts for her next infant being mother reared. The same hopes hold for Zura, who watched this whole birth process from only a couple of feet away.

Our gorillas go outside, usually by 9:00 a.m., after a light breakfast of apples, bananas, and oranges. Outside, they have large branches of Acacia longifolia to play with and feed on during the day. They also have burlap sacks for play and nesting. Tree and rock climbing, plus play in streams, are part of their activities. Tree trunks are protected by being wrapped with black vinyl-coated chain link fencing. Visitors are delighted by interactions at the viewing window.

Large rubber tubs are also provided inside and out. Some sit in them or carry them on their backs like turtles. The gorillas have enjoyed a sample "Boomer Ball," though it now has a large hole in it. More "Boomer Balls" are on order.

Gorillas come into their own rooms in late afternoon for their big meal. They prefer making burlap nests for sleeping, even though cargo nets are also hung in the rooms. Heavy-duty welded wire walls permit all gorillas visual contact with each other. After dinner, Zura and Bawang are given access to each other. Their existing strong social bond is thus further encouraged for future sharing of maternal concerns.

San Francisco is blessed with a year-round mild climate. This permits three positive aspects. 1. The animals can be outside most days of the year. 2. The financial outlay for the exhibit went entirely for the outside exhibit and the inside quarters with no need of any expenditure for inside public viewing.

cont. p. 3
3. *Acacia longifolia* browse is available all year in the park system and delivered fresh daily by the truck driver.

Inside, nine wire-walled rooms in the shape of a horseshoe are arranged around a large central dayroom topped by a huge skylight. The raised floor is slightly warmed by hot water pipes running beneath the floor. Each room has an electric guillotine door access to the dayroom, and the rooms connect to each other by sliding ratchet doors. This provides a lot of flexibility.

**NURSERY REARING OF INFANT GORILLAS**

The Columbus Zoo has raised many gorillas in its nursery since 1956, starting with Colo, the first gorilla born in captivity, and up to JJ, born January 2, 1987.

Although sincere attempts have been made, to date only two gorillas have been mother reared. In recent years, with more emphasis being placed on socialization of nursery-reared gorilla infants, our nursery needed to update many of its procedures.

The procedures outlined here are in effect from day one of handrearing and continue until the gorilla is returned to a group.

If the infant can maintain its temperature, it is carried ventral/ventral by the keeper, only to be placed down for short periods of time for vitals, food preparation, and record keeping. The infant is encouraged to cling to the keeper at all times. To achieve this, a hole is cut in a small blanket or towel and placed over the keeper's head, creating a "bib" effect and allowing the infant to cling more efficiently. The infant is also encouraged to root for the bottle at each feeding.

for moving and mixing animals and worked well for our introduction of young gorillas into our group.

Certainly our zoo is in agreement with the goals of the SSP Committee of AAZPA in protecting wild gorillas by shutting down the market for gorilla trade wherever possible. Captive breeding success is our goal, so now we wait for a positive pregnancy test.

**CAROL MARTINEZ**
**SAN FRANCISCO ZOO**
Zoo Road & Skyline Blvd.
San Francisco, CA 94132

Raw and cooked vegetables are present at all times. Keepers encourage the infant to eat by vocalizing while self ingesting vegetables. Baby food and cereal have been omitted from the diet, thus trying to imitate parental eating behaviors. Introduction of solid foods was patterned after the progress of our mother-raised gorilla, Fossey, born to Bridgette and Bongo. First vegetables, then fruits, then monkey chow were offered. At about four months of age, browse was introduced.

As the gorilla grows, keepers reprimand by vocalizing or grabbing the infant's leg or arm—another behavior patterned after the discipline applied by our mother gorilla.

The infant is also taken to the Ape House daily for several hours to familiarize him/her with gorilla sights, sounds, and smells. Overall, we felt that patterning all behaviors after a gorilla family would insure a more socially adapted gorilla infant in the hope of introducing him/her back to a group at an age that would be comfortable to both gorilla infant and keeper.

**DUSTY LOMBARDI**
**COLUMBUS ZOO**
Box 400
Powell, OH 43065-0400
AN OVERVIEW FROM MILWAUKEE COUNTY

In response to some of the questions raised in the first issue of Gorilla Gazette, here are some of the things we are doing at Milwaukee County.

As far as toys, furniture, anti-boredom devices, browse, etc.:

Recently we've switched from straw to woodwool. Advantages of the change are that it is less dusty, clings to itself better, affording better bedding and amusement. When wet, it is not as messy or sloppy to clean up. It also has longer life.

Our exhibits contain ropes attached at both ends (hammock style), cargo nets of various sizes (some of our gorillas enjoy, some ignore). Furniture consists of dead trees and tree limbs fastened securely and replacing old steel structure play bars. Toys may range from plastic (heavy gauge) milk cartons, plastic pipe sections, cardboard boxes, burlap sacks, and old rubber tires. We have one gorilla who consumes burlap, hence he does not receive any. Along with browse—willow, maple, and mulberry branches—we offer coconuts. Lately a problem has developed with the shells plugging up the drains.

Our diet for our gorillas consists of Purina Lab (monkey) Chow, raisins, peanuts, sunflower seeds scattered throughout the cage floors, lettuce, celery, carrots, sweet potatoes (boiled), occasional onion, hard-boiled eggs, apples, bananas, oranges, frozen green beans and corn, canned pineapple chunks, juices with vitamins, occasional boiled beef/horse meat, and sometimes milk. Several times a month, we offer melon and unshucked sweet corn. Some of them will eat canned ZuPreem.

Recently, we developed a home entertainment center for our apes. Within a cabinet, we mounted a television set with a VCR, an AM/FM radio, an audio tape recorder. A bar with seven sensors is mounted outside one of the cage windows. From inside the cage, the sensors can be touched or hit to change the TV from VHF to UHF to VCR to radio AM or FM to audio tape recorder to off in any order or sequence.

We preprogram the TV channel or radio station, but the gorillas have the option to make the other choices. The gorillas have changed stations, although we don't know, at least yet, if choice is done deliberately or at random. We do notice them viewing on occasion, sometimes from afar. The future may tell of its success.

On December 3, 1986, Femelle, a female on breeding loan from the National Zoo, had a baby male with the umbilical cord wrapped tightly around his neck, choking the baby. It was quite a loss, needless to say, especially due to the fact that we already lost two other fetuses prematurely to another female, Diane, who has since died. Diane was on a breeding loan from the Los Angeles Zoo.

Our female, Terra, on breeding loan at the Lincoln Park Zoo since 1979, is now pregnant for the third time. Last summer, our Tino, a 13-year-old male, was sent to Hogle Zoo on a breeding loan. A young female, Mandara, firstborn to Terra, was sent to the National Zoo along with a male, Kuja, whom we raised with Mandara for the Brookfield Zoo. The two are on exhibit loan until we build our new Ape House Complex scheduled to open sometime in 1989.

Several months ago, five gorillas were purchased from the Wassenaar
MILWAUKEE COUNTY cont.

Zoo in Holland. As we don't yet have room to house them, they will spend the next two years at the zoo in Ft. Worth, TX.

Presently, we have at the zoo our breeding male, Tango, 28 years old, who is housed with 25-year-old Femelle from the National Zoo. Obsus, our 6½-year-old male, was born at the zoo in Stuttgart, West Germany. Obsus shares a cage with Quito, who came from the Stone Zoo in Boston. Quito was 6 years old on June 1, and is here on exhibit loan.

Plans are underway to build a new, more spacious indoor/outdoor ape complex for our gorillas and pygmy chimps. Called "Valley of the Apes," it is scheduled to open to the public in the summer of 1989.

Our gorillas have the opportunity to go outdoors much of the year. They usually don't care to go out much below the mid twenties, but seem to enjoy playing in the snow, at least the juveniles. They don't much care for the rain, although we have one individual who, when given a chance, will play in the mist or light drizzle. Quito and Obsus sometimes bring snow indoors to play with it until it melts.

With regard to bringing in wild gorillas, I'm not opposed to the practice if it were ever legalized and capture could be made without the killing of other members of the group. The problem with accepting these so-called orphans from Africa is that we are probably encouraging illegal poaching practices.

When Mandara was 17 days old, she was brought up from Lincoln Park where she was born to our Terra. She was pulled from Terra at 3½ days due to lack of maternal behavior on Terra's part. We did not have enough staff to care for her 'round the clock, so a volunteer program was started for her care, called "Mandara's Moms." We had ten women scheduled for her care. This had to be cleared through our union as volunteers normally do not handle the animals. This was the one and only time our zoo used volunteers to do keeper work. We have a large group of about 500 volunteers who do a great job in many capacities other than animal care.

SAM LaMALFA
MILWAUKEE COUNTY ZOO
10001 W. Bluemound Rd.
Milwaukee, WI 53226

THE KING IS DEAD

King Tut, the Cincinnati Zoo's 38-year-old patriarch gorilla, died on Tuesday, October 6, 1987, following dental surgery. Although his status was good immediately after the surgery, complications caused by his advanced age led to his demise some 28 hours after the procedure.

The operation was the second performed on Tut in a three-month span. It was discovered, during a routine physical exam earlier in the year, that there was a great deal of dental work that needed to be done on the animal to correct existing problems and to try to avoid increasing problems that could rapidly occur if the surgery was not done.

Of course, a certain risk exists with any knockdown procedure, and this risk was compounded by Tut's advanced age. But, to reject the operation surely would have resulted in the animal having extreme difficulty while attempting to eat, probably resulting in a decrease in appetite and an increased probability of severe infection setting in.

cont. p. 6
THE KING cont.
The first operation went well, with some seven teeth being removed. The teeth and gums were found to be in worse shape than previously thought, and in order to keep Tut under anesthesia for no longer than absolutely necessary, the surgery was terminated and rescheduled for completion.

The second surgery went even better than the first. A lighter dose of anesthetic was used, and there was a marked decrease of bleeding of the gums. Only five teeth required extraction, and the entire procedure took only about two hours. Tut responded well to the anesthetic reversal and charged the bars when approached shortly afterwards.

Although Tut was restless during that night, there was no real appearance of a problem until some 24 hours after the surgery. Tut seemed to be becoming weak and lethargic. Several hours later, shortly after 4:00 p.m., King Tut quietly passed away.

King Tut’s body has been sent to the Los Angeles County Museum where he will be part of a lowland gorilla display. Although Tut is no longer with us, his legacy lives. One son and two daughters sired by him reside at the Cincinnati Zoo, while a third daughter lives at the zoo in Boston. Between his son and two eldest daughters, 13 grandchildren have been produced.

We are all deeply saddened by the death of this gentle giant!

MIKE DULANEY
CINCINNATI ZOO
3400 Vine Street
Cincinnati, OH 54220

CORNEAL ULCER TREATMENT

The Stone Zoo’s adult female Gigi was recently treated for a corneal ulcer. It turns out that she had an infected sty on the inside lower eyelid that caused the surface of the eyeball to become irritated and eventually to ulcerate.

Before immobilizing Gigi, a veterinary ophthalmologist recommended that we treat the ulcer conservatively and use Gentocin ophthalmic drops hourly and Atropine drops three times per day. We purchased perfume atomizers, loaded one with Gentocin and one with Atropine, and tried delivering the medicine that way.

The advantage of using a perfume atomizer was that it was easily concealed in a person’s hand, allowing for surprise squirting. The disadvantage was that the spray was too fine and it often did not hit the eyeball and would sometimes get in the keeper's eye.

We then drew the medicine up into a 1 cc syringe and squirted it in that way. We were more successful hitting the eyeball using the syringe. Of course, the extra treats Gigi received when she got squirted helped to get her to the bars! One time she came running to the bars holding a piece of celery over her affected eye.

The ulcer did not improve and she was immobilized to remove the sty and cauterize the ulcer. We continued hourly eye medication using a syringe until the ulcer was healed.

CHRISTINE VanGEMERT
STONE ZOO
149 Pond Street
Stoneham, MA 02190
BEDDING MATERIALS:
A primary need for captive gorillas

Gorillas have evolved in and are adapted to the very lush tropical forests of central Africa. Being primarily terrestrial, they walk, sit, and lie down on a cushion of decaying vegetation covered with a thick layer of herbs and vines. In the early evening, they gather vegetation around themselves, constructing a comfortable nest in which to spend the night. They also take the time to make day nests for naps. Knowing this, it is difficult for zoos to reconcile keeping them on bare concrete.

Experience has shown that providing captive gorillas with bedding material is important to their psychological and physical well-being. It gives them comfort, a feeling of security, and opportunity for activity, allowing them to carry out the natural behavior of nest building. Heavy bedding also reduces risk of injury to neonates.

Sadly, some adult gorillas who have never been exposed to bedding have been suspicious and even appeared frightened at first. Given a little time, they will learn to enjoy the comfort.

To accommodate the gorillas’ needs at Woodland Park Zoo, their indoor rooms are bedded heavily with grass hay, both on the floors and on the metal-framed vinyl-coated mesh hampocks. In summer, the sheltered area in the outdoor habitat is bedded lightly, but enough for nest building, and in winter we use the deep bedding system.

Gorilla nest building varies from a simple cup in the hay to elaborate construction incorporating elm and bamboo branches. Considerable time is also spent sorting and eating selected pieces. The younger animals, especially, jump, roll in the hay, and throw it at each other and in the air out of exuberance. Grass hay has been chosen because it is edible, soft, and pliable for nest building, as well as absorbent.

When Woodland Park started using bedding ten years ago, the gorillas seemed much more content and their cage at the old ape house took on a much more pleasant look. At the time, there was some concern over the added workload and possible sanitation problems. These concerns were eliminated as we developed a simple and efficient daily cleaning method.

Clean hay is separated with a pitchfork and piled in a corner of the floor or on the beds. The soiled hay is squeegeed into piles and shoveled up. The next step is to hose, scrub if needed, and hose again. After the floors are squeegeed dry, the remaining hay is spread and new hay is added. Flakes are separated to cover the hard surfaces and any moldy hay is discarded. The hay is completely replaced about once a week and cages are disinfected. The average daily cleaning time for six gorillas is two hours.

Bedding material available 24 hours, along with quality nutrition, adequate space, and stable social groups should be considered an unquestioned part of gorilla management. Since the abundant vegetation of the tropical rain forest is so intrinsic to the very specific lifestyle of the gorilla, care must be taken to recreate that habitat in captivity as closely as possible. Nesting material is one of the very important aspects of gorilla keeping that will promote health, breeding success, and retention of natural behavior. Hopefully, the SSP Master Plan will include in its husbandry manual a guideline strongly urging zoos to provide captive gorillas with bedding and discourage keeping them on bare, hard surfaces.

VIOLET SUNDE
WOODLAND PARK ZOO
5500 Phinney Ave. North
Seattle, WA 98103-5897
BRIDGETTE: 1960-1987

The death of any captive gorilla is significant, not only to the community in which it resided but also to the very small community of gorillas throughout North America.

The Columbus and Henry Doorly Zoos shared such a significant loss on October 7, 1987, when Bridgette, a 27-year-old female, died in Columbus. Owned by the Henry Doorly Zoo, Bridgette arrived on breeding loan in Columbus in January 1981.

The dam of four in Omaha (one surviving: Murphy at Omaha), she also bore four offspring in Columbus: male twins Mosuba and Macombo II, the first full-term twins in the Western Hemisphere in 1983 (one owned by Omaha, one by Columbus); male Motuba in 1985 (owned by and housed at Henry Doorly); and Fossey in 1986, the Columbus Zoo's first mother-reared infant.

The first signs of illness were apparent only ten days prior to death. Always known as a devoted eater, Bridgette began showing loss of appetite. This trend continued despite the offering of special food items and a variety of warm and cold drinks. At the end of a week, it appeared that Bridgette was suffering from constipation. On October 5, she was taken to The Ohio State University School of Veterinary Medicine, where x-rays disclosed several large fecal balls in the transverse colon. She was treated with soap and water and fleet enemas and stool softeners. Although she recovered from the anesthetic and passed two stools, Bridgette's general condition continued to decline, and she died quietly at about noon on Wednesday the 7th.

The necropsy disclosed a ruptured diverticulum that caused peritonitis and eventually involved other organs. This condition was not apparent on the x-rays. At the request of the Henry Doorly Zoo, her remains were returned to Omaha.

At the time of her death, Bridgette was still nursing 14-month-old Fossey, but had been weaning him. During the last few days of her illness, she continued to have contact with the infant, but he was closed off in an adjacent enclosure with his father a few hours before her death.

Bridgette was special for a number of reasons, the most important among them being the youngsters she bore. At Columbus, she provided the perfect role model in the zoo's long-desired goal of achieving mother rearing. She was a model mate to Oscar and Bongo, bearing offspring by both, and making Bongo the oldest reproducing male in captivity. Finally, she was herself a unique and model gorilla. Despite her many years of captivity, her gorilla integrity remained intact. Although she maintained a trusting and cooperative relationship with her keepers, she never lost her sense of gorilla self—she worked with us but she didn’t need us. And what she taught us will strengthen our program for years to come.

Infant Fossey has remained with his father, Bongo, since Bridgette’s death. Bongo is a gentle and playful father, and the adjustment and progress of the two have exceeded our wildest expectations. Detailed observations on the pair are being maintained, with the hope of adding a female to the family in the future.

GREAT APES STAFF
COLUMBUS ZOO
Box 400
Powell, OH 43065-0400
PROCEDURES AT THE GORILLA FOUNDATION

Although we are not a zoo and do not have to deal with the public as most keepers must, we do have many of the same "gorilla problems." It will be nice to hear suggestions from others and keep up to date on the various projects going on. Likewise, we will be happy to contribute what information we have, and have started by summarizing our answers to your "Help Wanted" column.

Bedding: In the outside playyard (currently 26' x 26'), our gorillas use oat hay to build their day nests. Inside, during the night, Michael (male) uses sheets of thick leather, a rubber tub, and two tires for his nest. Koko (female) uses old clothes, sheets, rugs, and a motorcycle tire for her night nest.

Outdoor Temperature: Our main criteria for letting the gorillas outdoors is 55°F and sunny. However, in Northern California, perched on a coastal hill, sunny days are not always a given. If it is cloudy and even somewhat foggy or misty, the gorillas are allowed out as long as the temperature is above 58°F and winds are calm. Regardless of the temperature in the winter, when it rains, we keep the gorillas in—until we design a cover for the playyard.

Boredom: The close association between each gorilla and his or her worker is the most important way we deal with boredom. From 9:30 a.m. to 7:00 p.m., someone is always with each gorilla. Using American Sign Language, both gorillas have some control over their environment by requesting such things as browse or specific types of food or drink, having the drapes closed, playing chase and tug-of-war games, looking at books, and going inside or outside, weather permitting.

Aside from that, we give them "nut log" diversions (blocks of hard apricot wood with drilled holes filled with peanut butter, sunflower seeds, and cereals). They spend hours fishing for every last bit of the crunchy treats. They also have a variety of rags, sheets, and toys. Michael tends to get carried away and eat the small rubber squeak toys that Koko plays with, so he has Schedule 80 PVC pipes that are more or less "gorilla proof," and spends much time putting them together and taking them apart. He also has a small color television to watch.

Recently, we've started using air popped popcorn as a special treat and a way to relieve boredom. A room filled with 8 lbs. of popped, plain, unsalted popcorn lasts for days and the popcorn is not only eaten but piled into a nest, put down toilets, used as a pillow, poured through PVC pipes, tossed in the air and thoroughly enjoyed. Please note that this works for us mainly because Koko and Michael are trained to use cement toilets. Otherwise, this could lead to quite a mess!

Diet: The gorillas are fed seven small meals a day. Each meal is weighed. Breakfast of oatmeal or brown rice with wheat germ and a multi-vitamin in addition to three or four varieties of fruits, typically weighs 2 lbs for Koko and 3 lbs for Michael. Koko's lunch and 2:00 snack weigh 1/2 and 1 lb, respectively, whereas Michael's weigh 2¼ and 1 1/4 lbs. respectively. The 3:00 meal is microwaved for 5 minutes and weighs 1/2 lb. for Koko and 1 lb. for Michael. Koko's dinner and night meals weigh 1 1/8 and 1 1/2 lbs., while Michael's weigh 1 1/2 and 3 lbs. respectively.

Our produce is donated by three local groceries and, twice a week, we receive what they don't want, including lettuces (butter leaf, red leaf, iceberg, romaine), parsley, 

cont. p. 10
GORILLA FOUNDATION cont.
kale, cabbages, potatoes, apples, bananas, papaya, oranges, pears, melons, carrots, celery, tomatoes, peppers, onions, beets, artichokes, asparagus, cucumber, squashes, etc. In short, Koko and Michael eat just about anything except radishes and mushrooms—and only because they don’t like them.

Variety is a key factor in our food preparation. With lettuce as the base, we try to put as many different foods in each meal without going over the weights. Typically, lunch consists of assorted vegetables and fruits plus a 1/2 lb. of lean meat—beef, fish, or chicken for added protein—for Michael and 1/4 lb. for Koko. The 2:00 snack includes 2 vegetables, squash being one, and a fruit. A half peanut butter and fruit sandwich adds a little excitement to this meal.

What the gorillas won’t readily eat raw, such as artichokes, turnips, beets, asparagus, or summer squash, they will eat cooked, hence the 3:00 meal is microwaved.

Variety is the guideline for preparing both dinner and night dishes. To aid in keeping their teeth clean, the night dish includes whole crunchy foods—celery, carrots, potatoes, apples, etc. Michael also gets a whole peanut butter and fruit sandwich in his night dish. Besides the meals, they also get carrots or apples as incentives to move from room to room for the cleaning procedure.

As we don’t have the facilities to provide the gorillas with water free choice, they get an 8–12 oz. glass of diluted fruit juice or water with each meal. Koko, with her 8 oz. drinks, averages about 36 oz. of liquid daily, while Michael averages about 48 oz. During the night, Michael tends to urinate on the floor, so he typically gets his 12 oz. drinks only with his first four meals. He does eat more browse during the day than Koko, so gets the remainder of his requirements from the lettuce. There is also a small pond in the playyard, and occasionally, when playing in the water, the gorillas will drink from it.

Browse: The gorillas enjoy apple branches, thick and thin stemmed bamboo, green acacia, and occasionally plum and persimmon leaves—all of which grow around the property. For Michael, we also use lettuce, parsley, beans, or celery.

Wild Gorilla Importation: This is a very difficult subject and one without clear-cut answers. The importation of wild-caught gorillas should be permissible if a gorilla is confiscated and there is no rehabilitation center available that will ensure that the animal be reintroduced into the wild or if a confiscated gorilla is unable to be reintroduced into the wild. The placement of the gorilla in a zoo or non-medical, behavioral facility should take place with no exchange of money (or equivalent) involved.

In theory, the lack of monetary and political incentives would protect wild gorillas from poachers. However, fair distribution of these animals becomes a problem. As zoos attempt to establish viable captive populations and inbreeding occurs, unrelated wild-caught individuals become extremely valuable for their genetic diversity. Therefore, an unbiased agency would be needed to decide where to place any wild-caught individuals who should become available.

Our Specialty: We are currently engaged in the longest ongoing interspecies communication project with two lowland gorillas, Koko and Michael. Our ultimate goal is to establish a semi-free-living population of gorillas for behavioral study and preservation in the face of extensive destruction of their natural habitat.
GORILLA FOUNDATION cont.

Volunteers: We have about 15 volunteers who participate on a daily or weekly basis, eight of whom are gorilla workers. Unlike our office volunteers, our gorilla workers must make at least one year’s commitment and must also know American Sign Language. Prior to meeting the gorilla they’ll work with, the new volunteer spends a few weeks working in the office, becoming familiar with the rules, regulations, and procedures. They are then slowly habituated to either Koko or Michael by sitting with an experienced, familiar worker and that particular gorilla for short periods of time. The introductory periods last longer as the gorilla becomes more familiar and comfortable with the new worker. During these preliminary meetings, the new volunteer learns how to keep the diary, fill in the checklist, and work with the gorilla. As soon as both the volunteer and the gorilla are comfortable, the new worker is assigned a four-hour shift, one day a week.

As with the gorilla workers, office volunteers also spend some time familiarizing themselves with the procedures and regulations. They then assist in a variety of jobs—ranging data, stamping envelopes, assembling the membership packets, correcting addresses, filing, etc. In short, they help with anything in progress.

Good luck with the newsletter.

FRANCINE PATTERSON, Ph.D.
LISA ESPEY
THE GORILLA FOUNDATION
Box 620-530
Woodside, CA 94062

VITAL STATISTICS

Births

Columbus: 1.0 to Pongi (on breeding loan from Birmingham Zoo) and Oscar, 10-8-87. Being mother reared. Has been named Colbridge (for Columbus and Bridgette), but goes by Colbi, which also represents Columbus and Birmingham.

St. Louis: 1.0 to Kivu (on breeding loan from Lincoln Park) and Fred (St. Louis) or Jojo (Lincoln Park) (paternity to be determined by test) on 10-17-87. Being nursery reared.

Deaths

Cincinnati: King Tut (1.0), age 38, from complications following dental surgery, on 10-6-87. Sire of four, grandsire of 13.

Columbus: Bridgette (0.1), age 27, on breeding loan from Henry Doorly Zoo, on 10-7-87, from ruptured diverticulum causing peritonitis. Dam of eight.

KNUCKLE NEWSNOTE

In order to conserve on the costs of paper, copying, and postage, we are, for the most part, sending only one copy of Gorilla Gazette to each institution. Please circulate the newsletter to interested persons or feel free to make copies for distribution at your institution.
 DIAGNOSING AND TREATING RECTAL IMPACTION

The Pittsburgh Zoo currently owns 1.1 gorillas. The male, Sultan, a wild-caught animal of 19 years, has been experiencing several bouts of severe constipation. Three of these incidents have resulted in the manual removal of a rectal impaction. Sultan has had a history of constipation problems throughout his life. The problem has become more severe in the last 10 months.

The last episode required anesthesia for five hours, while our staff veterinarian and 12 physicians performed various diagnostic tests. The battery of tests included anorectal manometry, plain and barium radiographs of the gastrointestinal tract, and rectal biopsies.

The tests and data revealed more questions than answers. The first diagnosis was for a disease called "Hirschsprung's Disease." This is a congenital malformation of the colon discovered by the lack of normal ganglion cells in the colon. The rectal biopsies and the rectal pressures tended to rule out this possibility.

The rectal biopsies aroused the chance of another disease called "Colonic Neuronal Dysplasia." This is a very rare condition expressed by finding ganglion cells in the rectal laminae propria.

The most frustrating aspect of these episodes is that we have no frame of reference. We can only compare gorilla anatomy to human anatomy. What is normal for gorillas may seem highly unusual for people.

Dr. Bob Wagner and I are searching for anyone who has run upper and lower barium-induced radiographs and histopathology of a gorilla's lower intestine and rectum. In the meantime, we are treating Sultan with a lactulose-based laxative and a stool lubricant. We have also increased his intake of fruit items and given him large quantities of prunes.

If anyone has a suggestion, please contact:

DEBBIE McGUIRE or BOB WAGNER, DVM
412-665-3657 412-665-3649
412-665-3772
PITTSBURGH ZOO
P.O. Box 5250
Pittsburgh, PA 15206

MEETING THE GENTLE GIANTS

Do you remember your first day working with gorillas? ...The first time a silverback initiated play with you? ...Your first gorilla birth?

These memories are especially vivid for me, having worked with these "gentle giants" since May of this year. At first, I thought I would never even tell the animals apart. After the first few days, however, their differences in behaviors as well as appearances made this easy even from a distance.

The other keepers warned me about 30-year-old Colo, whose accuracy in spitting is famous around the zoo. Colo is also well known for acting innocent and then grabbing the unsuspecting person. Happily for me, she chose to "sit out" the process of breaking me in. cont. p. 13
MEETING GENTLE GIANTS cont.
Instead, Colo's 16-year-old daughter Toni filled that position. Any time Toni heard me coming, she'd be waiting—barking and trying to grab me. Giving her treats was not the key to her heart, as she became even more aggressive toward being fed. After seeing her being so quiet with others, I was determined to win her acceptance.

To start with, when Toni charged me, I invited her to follow me around her corner cage. When we got to the front, I'd spend time talking to her—telling her what a good girl she was. Through patience and perseverance, I was finally accepted by Toni even more than I had thought possible. Although the other gorillas never gave me any real problems, I knew I would never be able to let down my guard.

One successful method our Ape House staff uses to monitor the gorillas' daily is a regimen of vitamins, herbal teas, and natural recipes. Aside from any internal benefit, this serves the purpose of enabling keepers to get close to the animals, eliminating undue stress on them when an emergency arises. This practice also allowed me, as a new keeper, to establish fairly close relationships within a procedure that was already familiar to the gorillas.

Each new day of working with these gorillas is one of gaining insight into their behaviors as I watch their feeding, their play, their dominance displays, or their mothering skills. I am also gaining insight into myself—developing patience and confidence needed to work with these intelligent animals.

And each day I wait...when will Colo decide to spit at me?!

ADELE ABSI
COLUMBUS ZOO
Box 400
Powell, OH 43065

THE GORILLA PRIMER: A guide for new employees

Most of us remember our first experience with gorillas. Some of my early recollections involve Tuffi, the silverback, throwing his "personalized ammunition" with all the accuracy of a Valenzuela fastball, and Caroline spitting in a perfect arc upon my name tag.

The years have passed, and the five gorillas and myself have developed a trusting relationship (i.e., they now do these things to others). But from that first day, the fascination and challenge seen in working with gorillas have never changed, in that the answer to one question usually gives rise to another question. In order to progress continually in gorilla husbandry, it is important to recognize the factors that shape or define their existence, and to use this knowledge in a constructive and creative fashion to satisfy the gorillas' physical and psychological needs.

The Calgary Zoo has had a four-year apprenticeship program for a number of years in which the central elements of animal husbandry are presented and combined with a four-month training period in each of the zoo's ten sections. In order to familiarize the new apprentice to the ape section, relevant aspects of gorilla husbandry are discussed in detail by the keeper. These factors are seen in Table 1.
and have been arbitrarily divided into: 1. quality of habitat; 2. dietary factors; 3. individual factors; 4. sexual factors; and 5. health management.

As experienced gorilla keepers already understand these factors, and each attaches a personal interpretation, details of the categories are not necessary. However, a brief description for each factor (in terms of the Calgary Zoo's experience) is supplied to provide at least a cursory explanation. Hopefully, new trainees will better understand the interactions and inter-relation of the species to its environment; the end result should be quality of life that reflects the gorillas' majesty.

Special thanks to: Tuffi (27), Caroline (25), Kambula (11), Kakinga (9), and Tabitha (7)

(Table 1 follows.)

ROB SUTHERLAND
CALGARY ZOO
P.O. Box 3036, Station B
Calgary, Alberta, Canada T2M 4R8

| TABLE 1 |
| COMPONENTS OF GORILLA HUSBANDRY |

<table>
<thead>
<tr>
<th>ENVIRONMENTAL FACTORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. geographical region</td>
</tr>
<tr>
<td>2. sunlight</td>
</tr>
<tr>
<td>3. air quality</td>
</tr>
<tr>
<td>4. humidity</td>
</tr>
<tr>
<td>5. temperature</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SOCIAL VARIABLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. physical contact with humans and other animals</td>
</tr>
<tr>
<td>2. visual contact with humans and other animals</td>
</tr>
<tr>
<td>3. exercise/work</td>
</tr>
<tr>
<td>4. social opportunities</td>
</tr>
<tr>
<td>5. keeper schedule</td>
</tr>
<tr>
<td>6. feeding regularity</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ENCLOSURE VARIABLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. size</td>
</tr>
<tr>
<td>2. cover/refuge/escape</td>
</tr>
<tr>
<td>3. climbing structures</td>
</tr>
<tr>
<td>4. sitting places</td>
</tr>
<tr>
<td>5. browse</td>
</tr>
<tr>
<td>6. cleanliness</td>
</tr>
<tr>
<td>7. variety of objects/food</td>
</tr>
</tbody>
</table>

Discuss the physical and psychological benefits of optimum environmental conditions to gorillas; compare wild situation to captive setting and techniques used in zoos to more closely approximate natural state.

Discuss how keeper (and others) play a role to provide more interest/activity for gorillas as well as social consequences of physical/visual contact. Include dietary and social techniques used by keeper to maximize behaviour; outline important aspects of scheduled keeper routine and feeding routine with regards to balancing normal habitual behaviour of gorilla with need of daily variation for psychological benefit.

Discuss importance of enclosure design to physical/psychological/social needs of gorillas; compare zoo design to wild situation and social adjustments of gorillas to their particular situation (i.e., hitting mesh, unique nesting materials, etc.)
**GORILLA PRIMER cont.**

**DIETARY NEEDS**
1. unique spp. needs
2. unique individual needs
3. natural considerations
4. individual ape/weight

**FOOD PRESENTATION**
1. frequency of feeding
2. food treatment
3. volume
4. distribution and size
5. food variety
6. feeding routine
7. food preferences

**SOCIAL FACTORS**
1. dominance factors
2. separation factors
3. positive reinforcement
4. activity/play foods

**SEXUAL FACTORS**
1. individual preference (compatibility)
2. age/weight
3. troop size/composition
4. fertility factors

**INDIVIDUAL FACTORS**
1. unique physical character
2. hormonal status
3. age
4. weight
5. disease history
6. genetic predisposition

**Explanation**
- **DIETARY NEEDS**: Explain unique aspects of gorilla dentition and digestive system and relate to zoo diet; compare and contrast zoo diet to wild state; discuss importance of age, weight, and health to formulating a diet that recognizes individuals as well as troop.
- **FOOD PRESENTATION**: Discuss positive behavioural/social/natural benefits of variation of diet and frequency of feeding; give types of food treatment to increase digestion and acceptability (e.g., parboiling); show positive benefits to high fiber diet; stress importance of occupational foods.
- **SOCIAL FACTORS**: Discuss role dominance plays in keeper routine, food distribution and preferences; explain positive and negative aspects of separation during feeding; show the role that feeding can play in positive reinforcement techniques; list and describe foods and techniques that have activity or play function.
- **SEXUAL FACTORS**: Discuss concept of compatibility between male/female with regards to preference, relative ages and dominance and outline role of environmental/social change in increased breeding activity. Discuss potential problems in fertility in males and females, and possible solutions. Discuss role weight and age play in breeding activity and conception.
- **INDIVIDUAL FACTORS**: Discuss each individual in terms of its uniqueness within the troop (e.g., size, weight, age, etc.) and explain the effect variations in hormone levels and disease history have upon each individual.
Discuss variation in gorilla's behaviour in terms of the components of intellect; explain how behaviour can be maximized (e.g., remote foods, tool use, hidden foods) through understanding the gorillas' intellectual qualities.

Stress importance that parental factors have on social status of any individual such as social status of parents within troop, the birth order of the individual. Using each individual within the troop, discuss relative importance of rearing history (wild caught, hand raised, mother raised, group raised).

Explain that each individual is unique in terms of its individual activity and therefore, its social involvement. Discuss potential changes in social structure upon separation of one or more individuals and compare to wild situation. Note importance of the length of social relationships, and explain how to recognize stress in individuals.

Discuss role that troop size and composition play in determining a stable social environment; show that preferences towards one or more individuals to other(s) is common; explain role that experience of peers has in controlling social environment.

Provide all information pertaining to methods of recognizing any variation from physical/mental well-being of gorilla (e.g., stool quality, urine samples, activity levels, diet consumption, etc.) Discuss methods of medical treatment and ways to ensure proper treatment via mediums (e.g., drug/juice mixtures, etc.). Discuss role of communication.
FROM THE GORILLA KITCHEN

Skin and Hair Coat Remedies

**Orange Potage**
(for dry skin and hair coat lacking luster)

6 large sweet potatoes  
3 large white potatoes  
6 large carrots  
1/4 c corn or wheat germ oil

Add water to cover vegetables and boil until vegetables are soft. Blend in blender, adding water until mixture is liquid enough to drink but not too watery.

8 oz. lx daily.

**Liver Surprise**
(for dry skin and dry sore spots)

4 T butter  
2 handfuls green beans  
1 lb. spinach  
1 lb. endive  
6 sticks celery  
4 raw eggs

Blend raw and add...

1 c cooked rice  
6 oz. broiled liver  
1/4 c wheat germ oil

Blend with raw vegetable mixture, adding water until mixture is liquid enough to drink but not too watery.

8 oz. lx daily.

**Vitamin B and Protein Supplements**

**Gorilla Cake**
(to encourage intake of B vitamins and protein)

3 c flour  
3 t baking powder  
4 T brewers yeast  
grated rind from 2 oranges

1 egg  
1 c banana (mashed)  
1/4 c liquid protein  
1/4 c wheat germ oil  
1/2 c milk

Blend wet ingredients—add dry ingredients, stirring lightly. Fold in 1 c raisins.

Bake in two 8 1/2 x 4 1/2 greased loaf pans for 50 min. at 350°.

Cut bread in 1-inch slices and feed once per day.

**Protein Drink**
(general protein food supplement)

**Basic Recipe** for one animal:

1 banana (or favorite fruit)*  
1 T protein powder (or liquid protein)  
1/2 T brewers yeast  
2 T wheat germ oil  
6 oz. liquid (water, juice, etc.)

*banana or other fruit taken out of regular diet—not extra.

For weight gain add:

1 raw egg  
2 T peanut butter  
1/4 c raisins  
1/2 c yogurt

For weight maintenance, may need to reduce banana or fruit from basic recipe to 1/2.

For additional protein source, add 1/2 packet unflavored gelatin.

© 1986 Columbus Zoological Gardens
EDITORIAL cont.

ing. The information that will be exchanged may possibly provide a key to solving an individual problem or the catalyst to formulating a new approach to gorilla husbandry, and we find that concept exciting!

Once again, thank you for all your support and enthusiasm.

CHARLENE JENDRY         ADELE ABSI
BETH ARMSTRONG          DIANNA FRISCH
COLUMBUS ZOO
Box 400
Powell, OH  43065-0400

The Gorilla Gazette is published quarterly by the Great Apes staff of the Columbus Zoo, 9990 Riverside Drive, Box 400, Powell, OH 43065-0400.  (614) 766-3426 or 766-3400

Thanks to all of you for making this second edition of the Gazette such a full one! That's exactly what we want. Just keep those cards, and letters, and articles coming. The deadline for the next issue is January 18. Let us hear from YOU.

GORILLA GAZETTE EDITORIAL BOARD

Head Keeper, Dianna Frisch
Lead Keeper, Charlene Jendry
Keeper, Beth Armstrong
Keeper, Adel Absi
General Curator and Curator of Mammals, Don Winstel
Editor, Julie Estadt
Media Productions, Nancy Staley