

The three-year-old male concolor gibbon is still on display with his parents and their new baby, born in August. This species of gibbon is unusual in that it is often possible to display a family group containing offspring of different ages within the relatively confined space of a zoo enclosure.

A brolga (*Grus rubicunda*) chick hatched in August is the latest of a long line of offspring produced by the parents, who have bred regularly for about 20 years, and arrived at the zoo from Healesville Sanctuary in 1966.

The new meerkat enclosure is proving very successful. Four babies were born on 28th August, just weeks after the adults went on display. The whole group forage for mealworms, which are spread around the enclosure several times a day. After they began to use an electric cable connected to the heating equipment as an escape route over the retaining wall, an electrified wire with a suitably low voltage was installed to restrain them: as a successful minimal restraint with minimal detrimental effect on the appearance of the enclosure, this method may have a future application in the design of other small animal exhibits.

Mulhouse Zoo, France

1990 was an eventful year for Mulhouse in many ways, but it will be especially remembered as the year of the Prince Alfred's deer (*Cervus alfredi*). As reported in *I.Z.N.* No. 223, pp. 51-2, Mulhouse and the Philippine government are co-operating in a captive-breeding programme for this severely endangered species. Seven deer arrived at the zoo in May 1990; unfortunately one female died of peritonitis in October, but the other six are healthy and there seems a good chance of a birth in 1991. Other arrivals during 1990 were four buffy-headed tufted capuchins (*Cebus apella*

xanthosternos), a highly endangered subspecies.

The zoo's first white-throated guenon (*Cercopithecus erythrogaster*) was born; the establishment of a breeding group of this species at Mulhouse is the first phase of a conservation programme for the most endangered West African guenons. In all, 50 species of mammal and more than 30 species of bird bred at the zoo during the year. Most of these were animals which have bred regularly at Mulhouse, but among the more noteworthy were 15 species and subspecies of apes and monkeys, including three gibbons, seven species and subspecies of lemurs, among them red-bellied lemur (*Lemur rubriventer*), mongoose lemur (*L. mongoz*) and Sclater's lemur (*L. macaco flavifrons*), a third Malayan tapir, two Amur leopards and three snow leopards, bush dogs, Mackenzie Valley wolves (*Canis lupus occidentalis*), addax, Cretan wild goat (*Capra aegagrus cretica*), Caribbean and greater flamingos, four species of crane, numerous ibises and spoonbills and several macaws. A Mulhouse-bred European black vulture (*Aegypius monachus*) was released in the Balearic Islands as part of a programme to replenish the local population of this species.

Recent scientific research at Mulhouse Zoo has included a chromosome study of concolor gibbons in collaboration with Dr Couturier of the Curie Institute in Paris, and a visit from Sri Miththapala, a Sri Lankan working for a doctorate at the University of Florida, who took blood samples from our Amur leopards for a study of genetic and morphological variations.

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White rhinos at Münster Zoo.

Münster Zoo (Allwetterzoo), Germany

In October 1990 the seventh baby white rhinoceros was born at Münster Zoo. For the first time, the mother was not the proven breeding cow Natala; it was also the first time that a female rhino born in the zoo has produced a healthy offspring. The mother, Emily, was born here in 1985. Until now Münster was noted in zoological circles for the fact that only a single breeding pair had produced young here: but now a daughter of this pair, Emily, has proved that the bull, Josef, has mated with another female as well. He had had an opportunity before this to produce offspring from a different cow: from 1982 to 1984 Kuababa, a female from West Berlin Zoo, was on loan at Münster. The bull mated regularly with her as well, but unfortunately without the hoped-for result.

Emily has cared for her first calf without any difficulty. This is certainly connected with the fact that she was

able to observe her mother's rearing of the calf born after her. She is even steadier to manage than Natala, and tolerates human handling of her calf. Her baby is another female and has been named Emmi.

In order to avoid inbreeding problems from the outset, Emmi will be transferred to another zoo after about two years. Until then visitors to Münster Zoo will have the opportunity to watch five white rhinos together in a single enclosure. At present this enclosure is being enlarged by about 50% to give the rhino herd enough room to move about.

In contrast with earlier rhino births in Münster, the mother and baby were not on display inside the pachyderm house. In the last two years a stable annexe has been completed for the now six-strong rhino group, with additional night and winter boxes which are not on view to visitors. Here the mother and her baby can spend the first weeks of its life with much less disturbance.

Moreover, the new boxes have another big advantage — there is no risk of falling into the dry ditches which can be so dangerous for inexperienced rhino calves.

Münster Zoo will continue in the future to concentrate on keeping and breeding white rhinos. It is still the only zoo in Germany in which rhinos of this species have reared young regularly for a number of years. Berlin and Zurich are the leading collections for the black rhinoceros, and Stuttgart and Basel for the Indian species. Such breeding establishments have undertaken an immensely important task in ensuring the survival of these majestic animals. All three types of rhino have been brought to the brink of extinction by poaching as a result of superstitious beliefs about the powers of rhino horn.

Dr G. Ruempler

Oakland Zoo, California, U.S.A.

September 1990 saw the completion of the zoo's Master Plan, the product of over 18 months of work, which addresses everything from the animal collection to picnic grounds and educational facilities. The Plan is comprehensive and should provide a solid direction for growth, for community service, and for financial stability. Two very important guiding principles have been kept in mind. The first was that Oakland should remain a moderate-sized zoo and only grow to a size appropriate to serve the needs of the community: and the second, that the zoo develop a special emphasis on California's own, native wildlife species.

The latter aim inspired the planned 'California 1820' exhibit, a concept unique in the zoological community. It will focus on native animals which occurred at a specific time, with the central theme being California's natural heritage — what we have lost, why we lost it, and how we can preserve what is left. Five ecological

areas of the state will be highlighted: grassland, oak woodland, riparian, canyon and chaparral (scrubland). The time is 1820, prior to the Gold Rush and the rapid influx of people which would change California's natural environment forever. The extent of the damage was revealed in a 1987 report which estimated that since the early 1800s, 89% of California's riparian woodland, 80% of coastal wetlands, 94% of interior wetlands and 99% of valley grasslands have been lost. Currently, 220 species of animals and 600 of plants may be threatened with severe reduction or extinction in the state. Ten native species of mammals and birds are extinct or extirpated (extinct in California but surviving elsewhere). Among species in the latter category which will be on exhibit in 'California 1820' are grizzly bear, wolf, bison, white-tailed deer and jaguar. (The latter once ranged as far north as the Monterey area; the last one in California was killed outside Palm Springs in 1865.) Other species to be seen will include otter, bobcat, cougar, beaver, tule elk (*Cervus elaphus nannodes*), pronghorn antelope, wolverine, long-eared bat, wood duck, pintail, sandhill crane and golden eagle.

Roar: Voice of the Oakland Zoo
(Winter 1990)

Paris Zoological Park, France

In 1989 the managers of the Park decided to make the renovation of the giraffe and okapi gallery a matter of priority for the years 1989 and 1990. The decision had to be taken as enlarged herds — ten giraffes and five okapis — and the numbers of animals bred — 90 giraffes and 29 okapis by the end of 1990 — made the Park's collection of giraffids a particularly valuable one. The educational role of zoos was taken into account right from the conception of the project: consequently, the plans involved not merely the usual renovation work such

as electricity, plumbing and painting, but also the aesthetic and educational highlighting of the collection.

The former roofs of the buildings were made of concrete slabs incorporating glass blocks. With time, the latter had become badly worn and no longer let in the sunlight. The slabs have been replaced, extremely successfully, by an aluminium structure supporting a transparent roof made of triple-wall 16 mm polycarbonate sheeting, which fills the building with natural light.

The unsightly railings facing the public have been replaced by glazed units of 'Multistadip' (a clear laminated glass, 25 mm thick and bullet-proof) set in anodised natural-coloured aluminium frames. Metal tubing is fitted to the top of the frames to hold them steady against pressure from any direction and give maximum resistance, for example against blows from hoofs, or when the giraffes lean over towards visitors to beg for food.

The most spectacular part of the project is a fresco with an area of 175 square metres for the giraffes and 100 square metres for the okapis, the work of a young painter, Patrick Michel. These decorative features, painted with vinyl acrylic paints, have been coated with a colourless synthetic resin resistant to ultraviolet light. A strengthening of fibreglass fabric was applied to the most vulnerable areas.

The first aim of the frescoes is to give

visitors a general impression of the animals' biotopes. On the fresco in the giraffe building, the high horizon line gives an impression of space and depth. For the okapis, we tried to make the visitor feel as if he was coming into a thick forest, quite different from the African savanna. Therefore the walls of the animal boxes as well as those of the public corridor were painted on the theme of the central African rainforest. Here, the visitor feels immersed in the 'enveloping forest'. Moreover, the biotopes are fully represented, so that visitors can see the different associations of animals and plants. On the fresco in the giraffe exhibit, for example, lions, roan antelopes, vultures and ostriches can be seen on the horizon.

Lastly, the technical elements such as troughs and racks have been cleverly hidden in the setting. In the giraffes' box, for example, the racks containing the animals' fodder are concealed in the foliage of the acacias painted on the wall: therefore the visitor really has the impression that the giraffe is eating the leaves and branches of the tree.

These improvements have enabled the animals to be displayed to their best advantage and to the complete satisfaction of the visiting public: and the buildings themselves, being constructed in artificial rockwork, do justice to their setting in the Park.

Yves Girault and Christian Le Bouar

Behavioral Research Workshop

Metropolitan Toronto Zoo will host the 6th annual workshop on 'Applying Behavioral Research to Zoo Animal Management' from 8th to 15th June 1991. This program is designed to give participants the skills and knowledge necessary to conduct and participate in behavioral studies and to apply the information gained to the real problems of day-to-day animal management. The 8-day training workshop is especially directed at animal care staff, and will be held at the Scarborough College campus of the University of Toronto, as well as at the zoo, where participants will develop and conduct projects in mammalian, avian or reptilian behavior.

For further information, contact Marilyn Cole, 1991 Behavioral Workshop Committee Chairman, Metro Toronto Zoo, P.O. Box 280, West Hill, Ontario, Canada M1E 4R5.