

AUTUMN 1990

Chester  
**ZOO**  
**Life**

# Chez Nous

A giant panda has been born at Mexico City. The father is Chia Chia who has already fathered the young panda born at Madrid. Chia Chia was one of the pair of pandas given by China to Mr Edward Heath for Britain. I went to Peking in 1974 to bring them back. The female, Ching Ching, did not thrive, and died some years later. Chia Chia contributed by artificial insemination to the attempts to breed at Washington Zoo, (unsuccessful in that no baby pandas were reared) and at Madrid (successful in that one baby resulted).

Now Chia Chia is living at Mexico City Zoo, where they have bred from their original pair more young pandas than any other zoo outside China. With this birth, the original London pair has reproduced itself - but only just. We must hope that Chia Chia can father several more in the remainder of his life.

Nevertheless, of such slender resources and enormous obstacles is the business of protective breeding made. The agreement to send Chia Chia to Mexico involved three zoos - London, Cincinnati and Mexico City - and four governments - China, Britain, U.S.A and Mexico. Fortunately, the diplomatic value of giant pandas now takes second place to their conservation value. In the 1970's they were seen as good things for one Head of State to give to another, with the result that their genetic potential was spread far too thinly.

White rhinoceros, Przewalski horse, Pere David deer, Arabian oryx, European bison, black footed ferret are all species brought back from the edge of extinction from founder populations of less than twenty

animals. Californian condor, if successful, could join them as a success given a bit of luck and a lot of goodwill.

There are still about 500 - 1000 wild giant pandas and perhaps 100 in zoos, mostly in China, but they are not doing well in the wild and not yet safe in zoos.

Fortunately the conservation community is waking up to the need to set up breeding programmes for other species much sooner, before things get so bad. We have joined the scimitar-horned oryx programme. Roan antelope have arrived, and bongo will be coming next year. With luck, we may be back into black rhino breeding and we are setting ourselves up to breed Asian elephants. Our chimpanzees are well established. We have contributed well to the orang utan programme.

The time is approaching when, to keep species ticking over, for example the Siberian tigers, we will have births from time to time which will only make the local headlines and not, as happened with Mexico's baby giant panda, be flashed across the world. It will be more difficult, then, for us to keep the essential importance of zoo breeding in the limelight, but it will be none the less important. Not every species can have the charisma of giant pandas.

You may have noticed that I have only been writing about mammals. In the next issue I want to talk about reptiles, birds and fish, for great things have been happening in these groups at Chester Zoo.

*Richard Brambell*



## MEMBERS' MEETINGS 1990/91

**Saturday 27th October 1990**

NOTE CHANGE OF DATE

2.30pm in the Lecture Hall "Pacific Islands" - Mr Andrew Mitchell.

We are pleased to welcome back Andrew Mitchell who gave us a splendid talk on rainforest ecology two years ago. He is a naturalist and television producer ("The Amateur Naturalist" and "The Living Isles"). He is now a director of Earthwatch Europe. He will be describing his journey through the Pacific Islands.

The Oakfield Restaurant will be closed today for lunch.

**Saturday 17th November 1990**

2.30pm in the Lecture Hall "In Search of Borneo's Robin Hood" - Mr James Barclay.

James Barclay is a writer ("A Stroll through Borneo") who has, more recently, worked on rainforest conservation in South East Asia. His talk will describe the work of Bruno Manser, a Swiss who, at grave personal risk, has helped organise the native forest people to resist the logging and development companies on the island of Borneo.

**Saturday 15th December 1990**

NOTE CHANGE OF DATE

Members Christmas lunch in Oakfield Restaurant at 12 noon; talk by Keith Brown (recently returned from Brazil) - 2.30pm in the Lecture Hall. Ring Maureen (0244 280380 ex 203) to reserve your place for the Christmas lunch. Members are welcome to come to the meeting without taking lunch.

Keith Brown will be known to members as the zoo's Herpetologist for the last 10 years. Despite the apparent dominance of mammals, reptiles and amphibians fill several important ecological niches. Keith's department has had several notable breeding successes recently.

**Saturday 12th January 1991**

2.30pm in the Lecture Hall "Summer in Greenland" - Dr G. Wynne.

**Saturday 16th February 1991**

2.30pm in the Lecture Hall "Tanzania Safari" - Dr Philip Robinson.

## FRONT COVER

Young zebra born on the paddock in early July with his mother.

*Chester Zoo Life is edited by Pat Cade.*

Neighbourly chat about the progress of baby rearing recently took on a new dimension for next door neighbours Paul Morris and Paul Everett. Both are bird keepers and both have been hand rearing unusual chicks in their home close to the zoo grounds.

Paul Morris, with his wife Ann, reared a young Kea chick - a New Zealand Parrot of the Mountains. It is the first time keas have been bred at Chester.

The parents of the chick have proved unreliable at hatching their own eggs in the past, so this time the eggs were removed for incubation hatching. Careful records of weight loss of the eggs were plotted by keepers resulting in two eggs hatching. One of them sadly died at just 4 days, but the other thrived well under the care of Paul and Ann and their two young sons.

Next door, Paul Everett reared three Great Horned Owls. Keepers felt the chicks would have a greater chance of survival if they were hand reared.

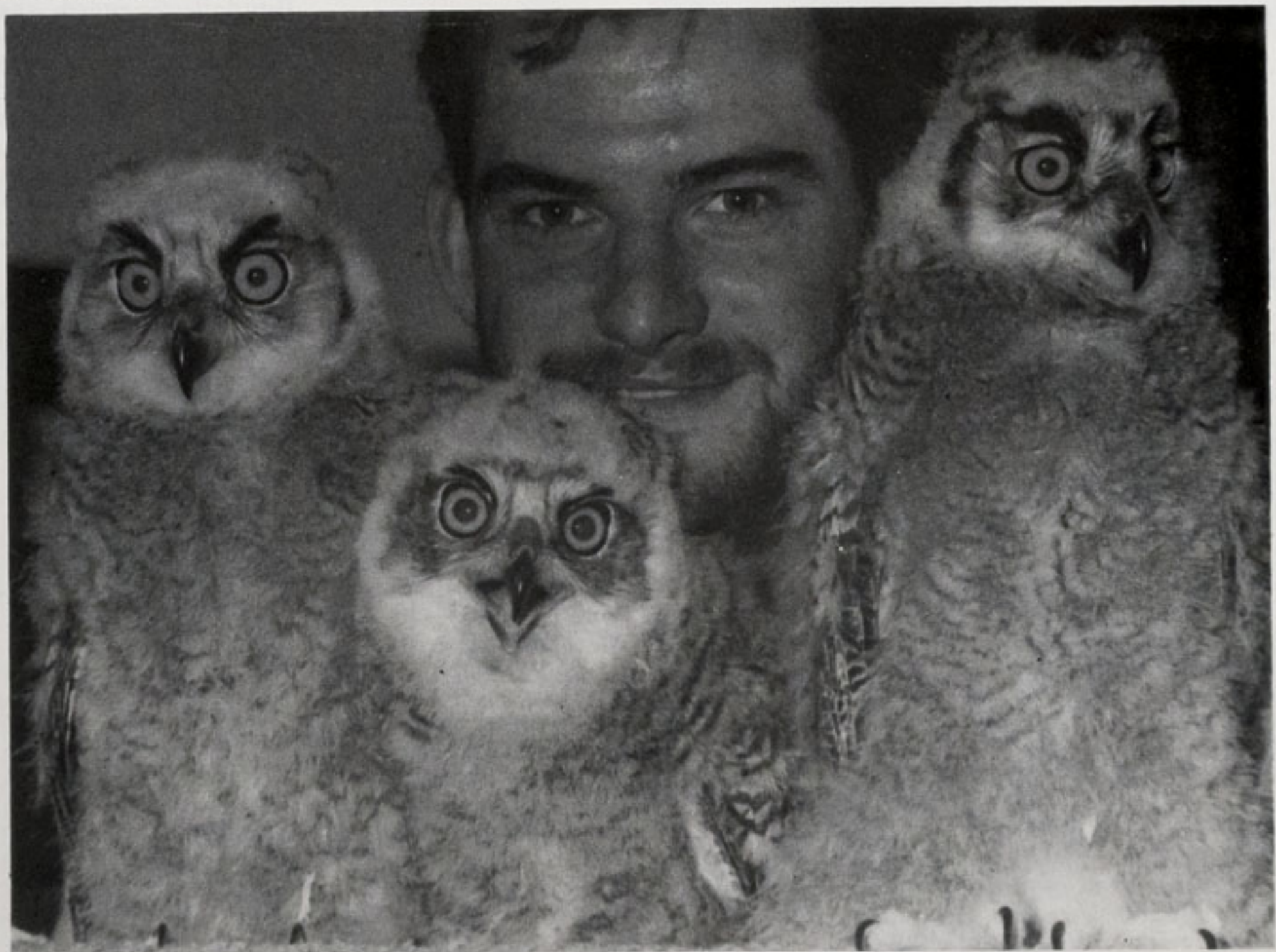
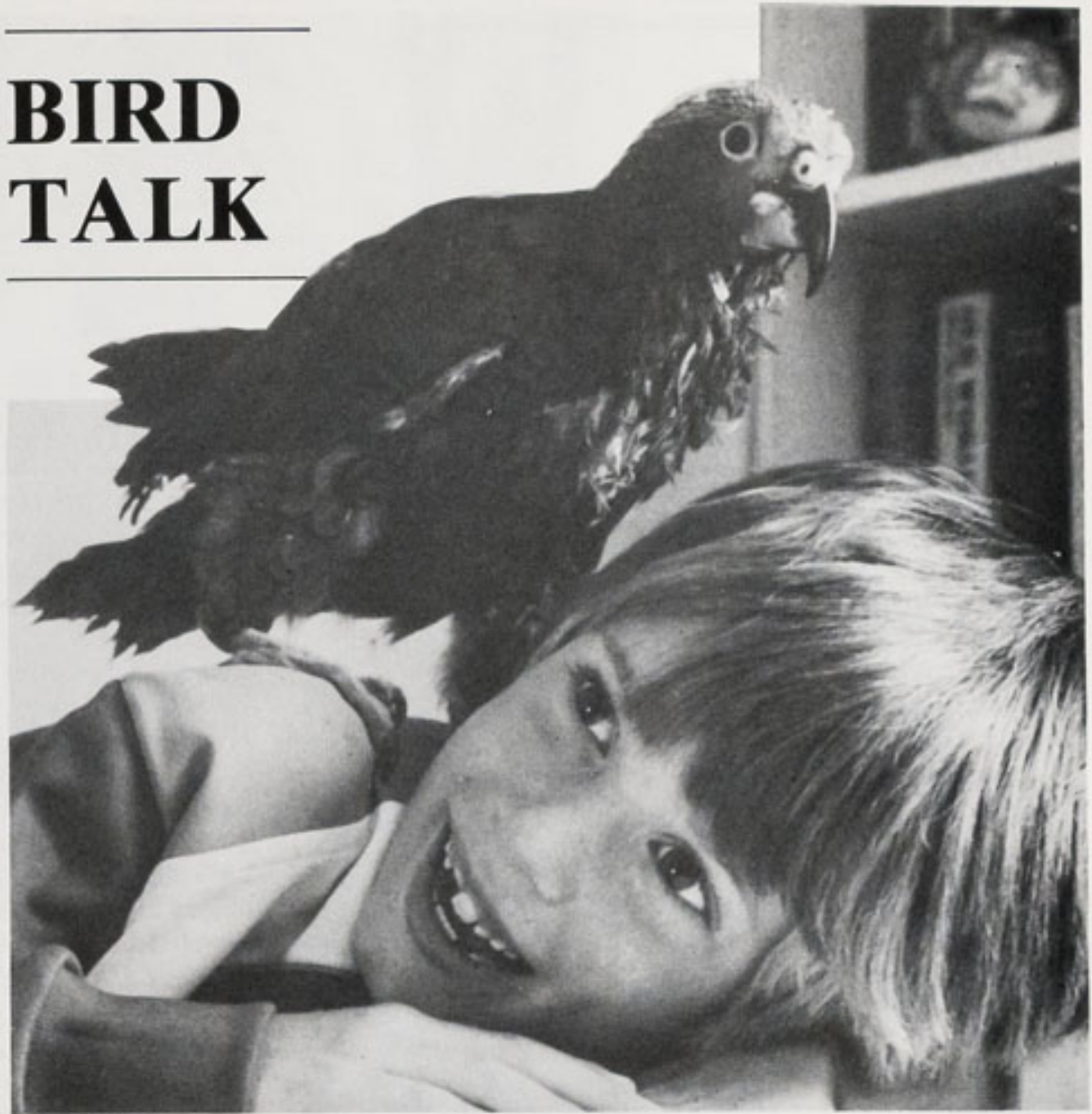
*Right:- Jay Morris is used to sharing his home with exotic birds, but it's the first time he's helped with a kea chick.*

*Below:- Paul Everett with his charges - three beautiful Great Horned Owlets.*

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## BIRD TALK

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## WHO'S A PRETTY BOY?

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Photo Derrick Thompson

Every time HMS Broadsword, Chester's adopted frigate, docks at Birkenhead, some of the crew members come to the zoo to visit the ship's adopted chimpanzees.

During their visit in July, several of the sailors bought inflatable toys in the zoo shop - and then

decided they might look a bit out of place on one of Her Majesty's war ships! So they gave them away to delighted youngsters in the zoo grounds.

Our picture shows Supply Assistant Neville Cook, with a new young friend. Unfortunately, the hat had to be returned!

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## Members' Concessionary Tickets

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All annual members are entitled to purchase up to 20 tickets each year for family and friends at half the normal gate price. These are sold in blocks of five for £10.50 - i.e £2.10 each. Each ticket admits either one adult or two children/OAPs.

These special tickets are not on sale at the gate, and must be purchased in

advance of the visit through Maureen Allsopp in the Membership Office. Please enclose cheque, made payable to Chester Zoo, with your postal application. A stamped addressed envelope would be appreciated.

Junior membership does not include the opportunity to purchase concessionary tickets.

# ZOO REVIEW

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## Clean Rivers

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The next meeting of the Cheshire Conservation Trust will be on the subject of keeping our rivers clean. Speaker will be Mr Eric Barker, Pollution Control Manager of the National Rivers Authority, North West Region. As the protection of our rivers and their surrounding land, and the enhancement of water quality are such vital issues, this should be a lively and interesting meeting. It will be held at the United Reformed Church, Hoole Road, in Chesterton, November 6th at 7.30pm

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## Oakfield Manager



Michèle O'Sullivan, the Oakfield's Restaurant and Catering Manager for the last three years, is now trekking around South America. In her place, we welcome Richard Casson, who joins the zoo from Greenall Whitley.

Richard is married, with a young son and daughter, and has a small menagerie of his own at his home in Broughton!

There was no gentle easing into the new job - in his second week, Richard had to cope with a buffet for 1500 people, when Shell UK held their family day in the zoo.

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## Silver Medal at the Chelsea Show

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Head Gardener Eric Rudman, joined with the Head Gardeners of Arley Hall, Tatton Park and Ness Gardens to provide a Cheshire Woodland Garden for the country's foremost gardening event - the Chelsea Flower Show.

It was the first time such a consortium had entered the show, and everyone was delighted when the judges awarded the entry a Silver Medal. Cheshire County Council financed the venture, and all the plants and manpower were provided from the four gardens.

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## Adopters' Days 1990

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The two dates for this year's annual Adopter Days are Saturday 6th and Friday 12th October.

As usual, keepers will be available to answer your questions, and lots of other activities are planned.

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## POSTER DISPLAY

A new poster showing the lions is now available, in both A4 "hanging card" size, and the larger A3 size. If any members or adopters with business premises would be willing to display these, our party bookings office will be delighted to provide them.

## YOUNG ORNITHOLOGIST



Martin Gilbert, the 16 year old who won the title "Young Ornithologist of the Year" spent a few weeks working with the bird staff this Summer.

The competition was run jointly by the Royal Society for the Protection of Birds, and the magazine "British Birds."

The area Martin chose to study for the competition was Bassenthwaite Marsh and Lake near his Lake District home.

During his time at the zoo, he expanded his knowledge of ornithology by studying some of the exotic birds in the collection, and working on the zoos breeding programmes.

## Fairy Bluebird



It takes a delicate touch to hand-rear a bird as tiny and fragile as a Fairy Bluebird. This unusual Asiatic bird is one of the free-flying species in the tropical house. The parents hatched two chicks, but would only rear one of them, so the second one was hand-reared by keepers.



*These two new arrivals in the Childrens Farm make a noise totally out of proportion to their tiny size!*

*Pictured with keeper Julie McAdam are Pinkie and Perky, two Vietnamese pot-bellied pigs, born in the zoo early in July.*

## MAYA MAKES SEVEN

The arrival of a female Asian elephant at the end of July, brings Chester Zoo's group up to seven - five cows and two bulls.

The new arrival is called Maya, and she is in her early twenties.

Maya belongs to Bristol Zoo, but is on long term breeding loan to Chester. Because there are so few bull Asian elephants in the U.K., the species is now jointly managed by National Federation zoos, in order to give some of the females the opportunity to breed. Over the last couple of years, Kirsty has arrived from Glasgow Zoo and Kumara from Whipsnade.

Now it is up to 13 year old Jubilee and Chang, who is almost nine, to play their part.

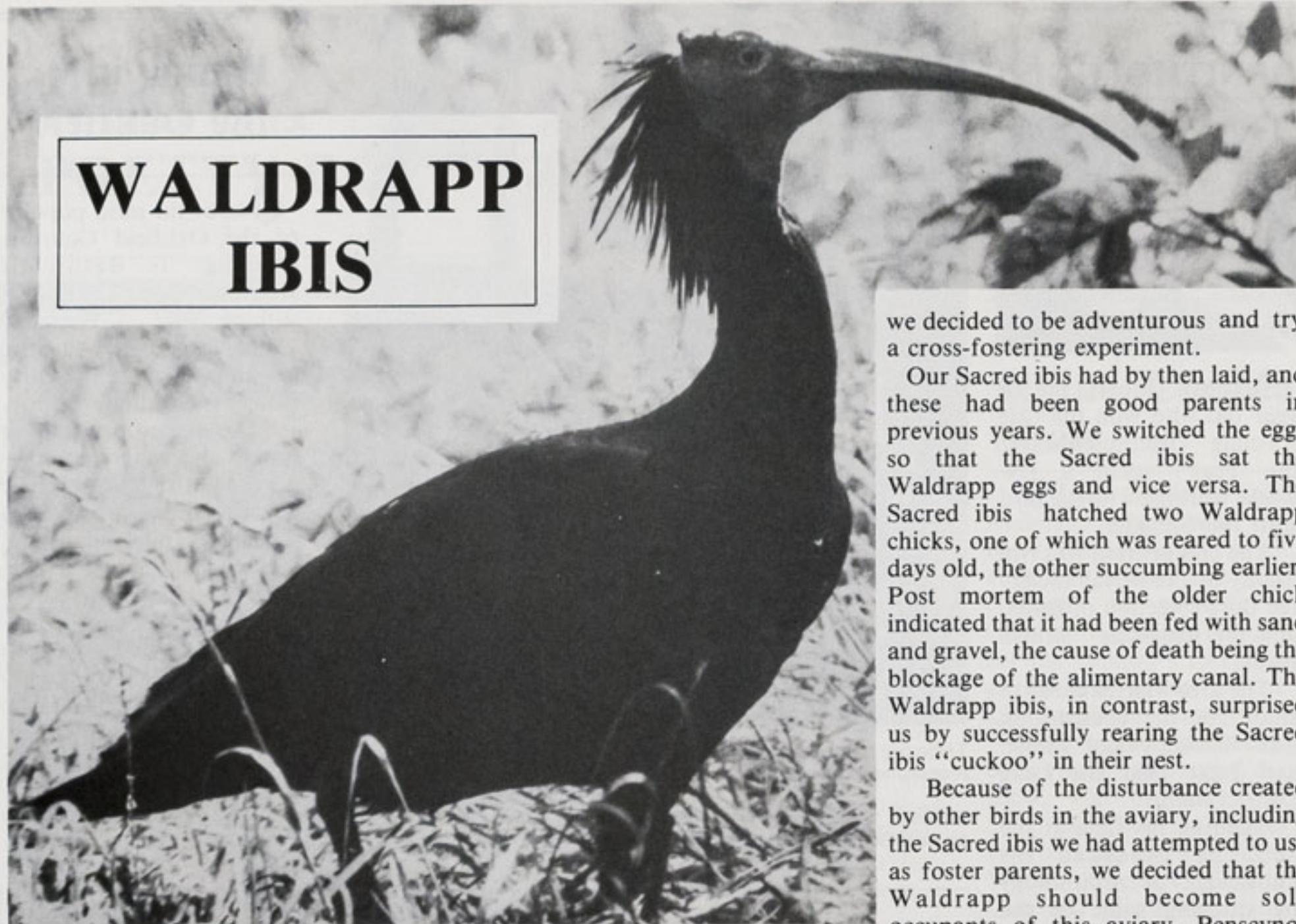


## Dining in the Oakfield

One of the most popular of the Oakfield Gourmet Evenings is Beaujolais Nouveau Night. This year it will be held on Thursday 15th November. Advance booking, through the party office, is essential.

The menu opens with a potato and watercress soup served with hot garlic bread; then a savoury pancake - oeufs dans des crepes; main course is pate stuffed chicken with a cream and calvados sauce; sweet course is Paris Brest - a ring of choux pastry filled with vanilla cream and fruit, topped with almonds. Coffee and sweetmeats complete the meal - great value at just £15.50.

## WALDRAPP IBIS



*Adult Waldrapp Ibis*

The Waldrapp, or Bald Ibis is said to be an ugly bird. I can't agree. Certainly it is not pretty, but it is undeniably handsome. Its coal black body shows oily purple and green reflections on the wings; the bare face may be beautiful only to another ibis, but its long red probing bill and punk-like crest can be admired by all.

The most recent news on Waldrapp Ibis in the wild, is that they are rapidly careering down the path to extinction. There are no longer any wild Waldrapps at their only colony in Turkey. However, a number of captive bred birds remain in the area and these may yet safeguard the future of this species in Turkey. Similarly, in Morocco the populations at five colonies are now reported to total only 180 birds.

In contrast, more than 750 Waldrapps are now kept at 50 zoological gardens, and with careful husbandry and genetic management, this is now self-sustaining.

Waldrapp Ibis have been bred regularly in captivity for the last 30 years, and Chester is a late-comer to this project. Basle Zoo in Switzerland were the pioneers of captive breeding Waldrapp, and it was from them we purchased our first two in March 1986.

After quarantine at Birkenhead, these were released into the "Big Flight" aviary in the company of other species of ibis, night herons, egrets and spoonbills. Later that year, they were joined by three Jersey owned birds that Philip Wayre of the Norfolk Wildlife Park had decided to release because of the labour-intensive hand rearing that had by then been adopted by many Waldrapp keepers. A further increase in our colony was made in 1987, with ten birds from Jersey (including several bred at Rabat Zoo in Morocco) and five hand reared birds from Edinburgh Zoo.

Four deaths were recorded that year, with our group totalling sixteen birds at the beginning of 1988. That year, one of the original Basle birds paired with the female from Phillip Wayre's collection. From three eggs, one chick was hatched under the parent, but died within 24 hours. We knew that Waldrapp were poor parents, but had decided they should at least be given a chance to rear their own young.

Two other pairs also nested, but were disturbed by the Sacred ibis, who became dominant over them, and stole nest material or attempted to usurp their nest sites. Despite this the Basle male and Jersey female re-nested, and

we decided to be adventurous and try a cross-fostering experiment.

Our Sacred ibis had by then laid, and these had been good parents in previous years. We switched the eggs so that the Sacred ibis sat the Waldrapp eggs and vice versa. The Sacred ibis hatched two Waldrapp chicks, one of which was reared to five days old, the other succumbing earlier. Post mortem of the older chick indicated that it had been fed with sand and gravel, the cause of death being the blockage of the alimentary canal. The Waldrapp ibis, in contrast, surprised us by successfully rearing the Sacred ibis "cuckoo" in their nest.

Because of the disturbance created by other birds in the aviary, including the Sacred ibis we had attempted to use as foster parents, we decided that the Waldrapp should become sole occupants of this aviary. Pencynor Wildlife Park kindly agreed to take our Sacred ibis, night herons and several gulls that had been the original tenants of the Big Flight. In January 1989 these were collected by Pencynor, where they were introduced into their new aviary, and soon settled down.

In order to manage our Waldrapp colony it is essential that individual birds can be recognised, and that their parentage is fully documented. One problem we had with stock from different collections was the differences and duplications in marking methods. Some birds had metal rings, others coloured celluloid rings, and some from different collections had identical colour combinations, although in different ring styles.

When catching the birds to send to Pencynor, we also took the opportunity to catch up all our Waldrapps and ring them with individual numbered Darvic rings similar to those used on our flamingos. At the same time, we weighed each Waldrapp and measured the length of its bill. Studies at Jersey suggested that sexes could be differentiated on the basis of the males being heavier and having longer bills than females. Our measurements suggested we had six males and ten females. Jersey agreed to

balance our sexes, and we received four additional males from them in early April 1989.

Four pairs of Waldrapp laid eggs in 1989 but only one of these hatched chicks. The Basle male and his partner occupied the same nest box as in the previous year and hatched three chicks. As they had successfully reared the Sacred ibis chick in 1988, we left them to their own devices. Sadly all three chicks died at a few days old. It seemed that the parents may not have fed the chicks - they were seen to beg, but no feeding was observed. By the end of 1989 our score sheet looked poor. We had received a total of 24 birds, lost 5 due to deaths of various causes, hatched 6 chicks, of which none had been reared.

Although we still aimed for a colony of parent-reared ibis, it appeared that we were going to have to more closely manage the birds - at least as an interim measure. We resolved in 1990 that we would try two techniques that other zoos had used successfully. These were hand-rearing and supplementary feeding. Jersey Wildlife Preservation Trust had developed a protocol for the former, and Edinburgh had been very successful with the latter procedure, in which extra feeds are given to chicks left under their natural parents.

We decided to try both techniques, considering hand-rearing to be the "safer" although less desirable option.

Additionally, the knowledge obtained from hand-rearing, particularly with regard to the chicks' behaviour and weight gains, would assist us in calculating how much and how often to supplementary feed those chicks left under their parents.

The Waldrapp's keeper Wayne McLeod was given the responsibility of supplementary feeding, whilst the bulk of the hand-rearing was to fall on Nick Manning.

Telephone calls to Edinburgh Zoo indicated that their birds were in advance of ours in nesting, and while ours were busy sitting eggs, theirs were already being supplementary fed. Wayne dashed up to Edinburgh in order to work with their keepers and returned in time for our chicks' hatching.

At that time five pairs of Waldrapp had laid eggs at Chester and we decided to take one or more eggs from each clutch, leaving their parents with at least one egg. Of the twelve eggs then present, six were taken to the incubator and six left with parents.

The first chick to hatch under its parents on May 16 was found dead, flattened in the nest. On the same day, the first incubator hatched-chick emerged, and this was followed over the next few days by three more parent hatched and three more incubator-hatched chicks.

In June, one pair of Waldrapp that

had failed to hatch chicks in the first round, re-laid. Of the chicks then hatched by this pair, one died shortly after hatching. The other was supplementary fed, but the parents soon got the hang of it, and no supplementary feeds were given after 10 days.

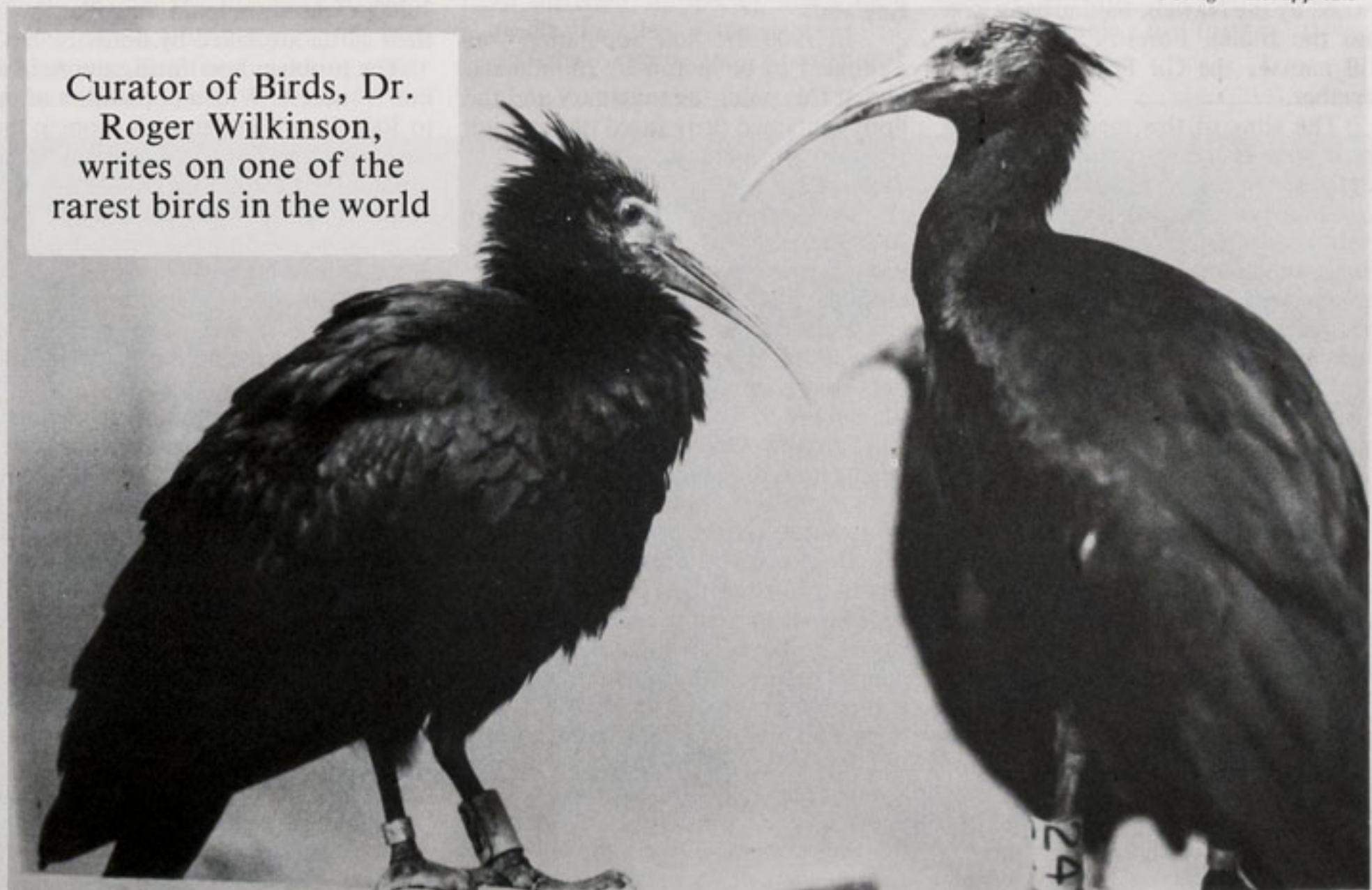
Daily weighing of the chicks showed that once over the initial few days the parents were successfully feeding the chicks, and our feeding was indeed supplementary to that of the parents. The birds under their parents grew just as fast as the hand-reared birds, with at first three daily feeds, then dropping to one or two supplementary feeds, and this was clearly the best rearing method.

Both hand-reared and supplementary fed chicks were given a diet based on tinned cat food which was fed through a syringe. The hand-reared birds were extremely demanding in time and effort, and initially required seven feeds a day with the last feed at 10pm.

Hopefully the experience gained by both the Waldrapps and our keepers should take us further along the road to our desire for a self-sustaining colony capable of rearing their young without our assistance. This year's hard work by our keepers has certainly paid off, with the seven Waldrapp reared this year putting us for the first time in credit on this species' balance sheet.

*Young Waldrapp Ibis*

Curator of Birds, Dr. Roger Wilkinson, writes on one of the rarest birds in the world



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# THE ASIATIC LION

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*Nick Ellerton, Curator of Mammals reports on an international meeting to discuss the future of the Asiatic lion*

In January this year I attended a meeting at Sakkarbaug Zoo in Junagadh in India. The meeting concentrated not only on the role of Indian zoos and their captive breeding programmes for endangered Indian fauna but also on the Asiatic lion (*panthera leo persica*).

Sakkarbaug Zoo was established in 1863 by the Nawab of Junagadh with the sole aim of managing the local wildlife, especially the Asiatic lion. The last remaining population of this lion was now restricted to the nearby Gir Forest or private hunting reserve owned by the Nawab. Sakkarbaug Zoo and the Indian Forestry Department still manage the Gir Forest sanctuary together.

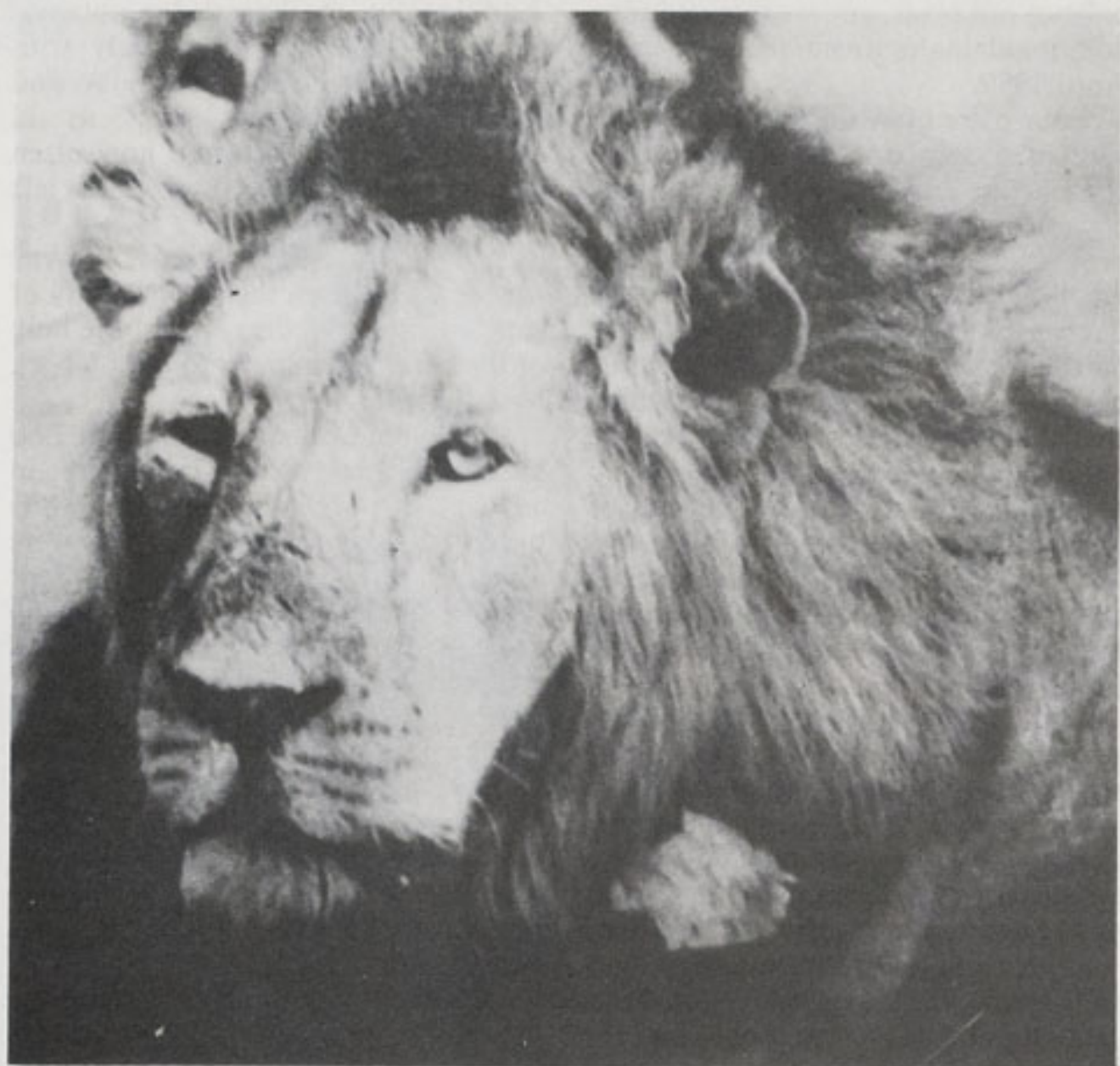
The aims of this meeting were to establish a more formal international captive breeding programme for the Asiatic lion and to highlight the problems presently facing the Gir Forest sanctuary. "Operation Tiger", though very successful, has dwarfed the Asiatic lion in terms of public awareness.

It was hoped that through an international meeting, the status of this critically endangered species could be raised.

The Asiatic lions in Gir are the last remaining population of *Panthera leo persica*. Historically, the range of this lion spread from N.W India through to S. Europe. The last lions in Iran were reported in 1942, and this population is believed to have become extinct in 1945.

Gir Sanctuary covers an area of 1412 sq.km., with the majority of the area covered in dry, deciduous forest. Rainfall is seasonal with temperatures ranging from 35° to 120° in the dry season - a very harsh environment.

The sanctuary is surrounded by



nearly 100 small villages and also a number of small towns. Much of the surrounding countryside is intensively farmed. Indeed, flying over Gujrat was often like flying over Southern England!

In 1900 the lion population was estimated to be as low as 20 animals, and at this point the sanctuary and the lions contained there faced the growing pressure of increased grazing within the area by cattle.

That any wild life survived under such pressure was due not only to the park rangers but the religion of the majority of surrounding villages. They are vegetarian and have a high regard for wildlife. It was not direct poaching, but over grazing, that was destroying the habitat.

Prior to 1968 over 100,000 cattle lived within the sanctuary and made up 70% of the lions' food source - leading to obvious conflict.

Due to cattle predation, villagers would poison the lions and the population started to crash. In 1968 the Forestry Department took steps to control cattle within sanctuary and pay compensation for cattle losses.

A wall 4 feet high was built around the "core" area of the park, an area of some 500 sq.km. Cattle were prohibited from entering this area, yet the wall was designed to allow wildlife easy movement, in or out of the area.

Villagers also had to obtain a permit to graze cattle within the outer area. Presently, only 13 - 15,000 cattle graze the park and only 35% of the lions' food source is domestic cattle. Up to 3,000 rupees are paid to villagers if their cattle are killed by lions.

The problem now facing the Asiatic lion is success. With a population of up to 300, there is not enough room in the park and the lions are attempting to expand their range. This inevitably will cause conflict, with the danger that local people will turn against the lion. Already a number of lions have been poisoned and there is concern that this will increase. Prides require 35 - 110 sq.km and bachelor males up to 100 sq.km.

This conflict is understandable. Indeed, during the meeting at the zoo, two young male lions visited the zoo in search, no doubt, of the captive females. Every night the watchmen had to remain inside! These animals were travelling 25 km every night and walking through several villages to visit the zoo. Several human fatalities have already occurred in outlying villages. Sakkarbaug Zoo and the Forestry Department, recognising this problem, constructed an enclosure of 150 hectares with a 12 foot fence surrounding it. It was decided that nuisance animals should be caught up and placed in this area for either use in

the captive management plan, or as part of an educational programme. Many visitors to Gir fail to see a lion due to forest cover. It is not like an East African game park. A captive group in a large enclosure would help to ensure that the disappointed visitor was not too disappointed.

Unfortunately, the wild-caught animals escape as quickly as they are caught. I noted this with interest as the zoo bred lions placed in the enclosure remained! Also contained within this area are a number of Axis deer and nilgai. As yet, none of these have been caught by the zoo-born lions.

From this brief insight into Gir's problems, two immediate issues have to be resolved. a) Placement of lions that are expanding their range, in order to minimise conflict with local people: b) Scientific control of the population within Gir - a dense population in a small area is vulnerable to disease.

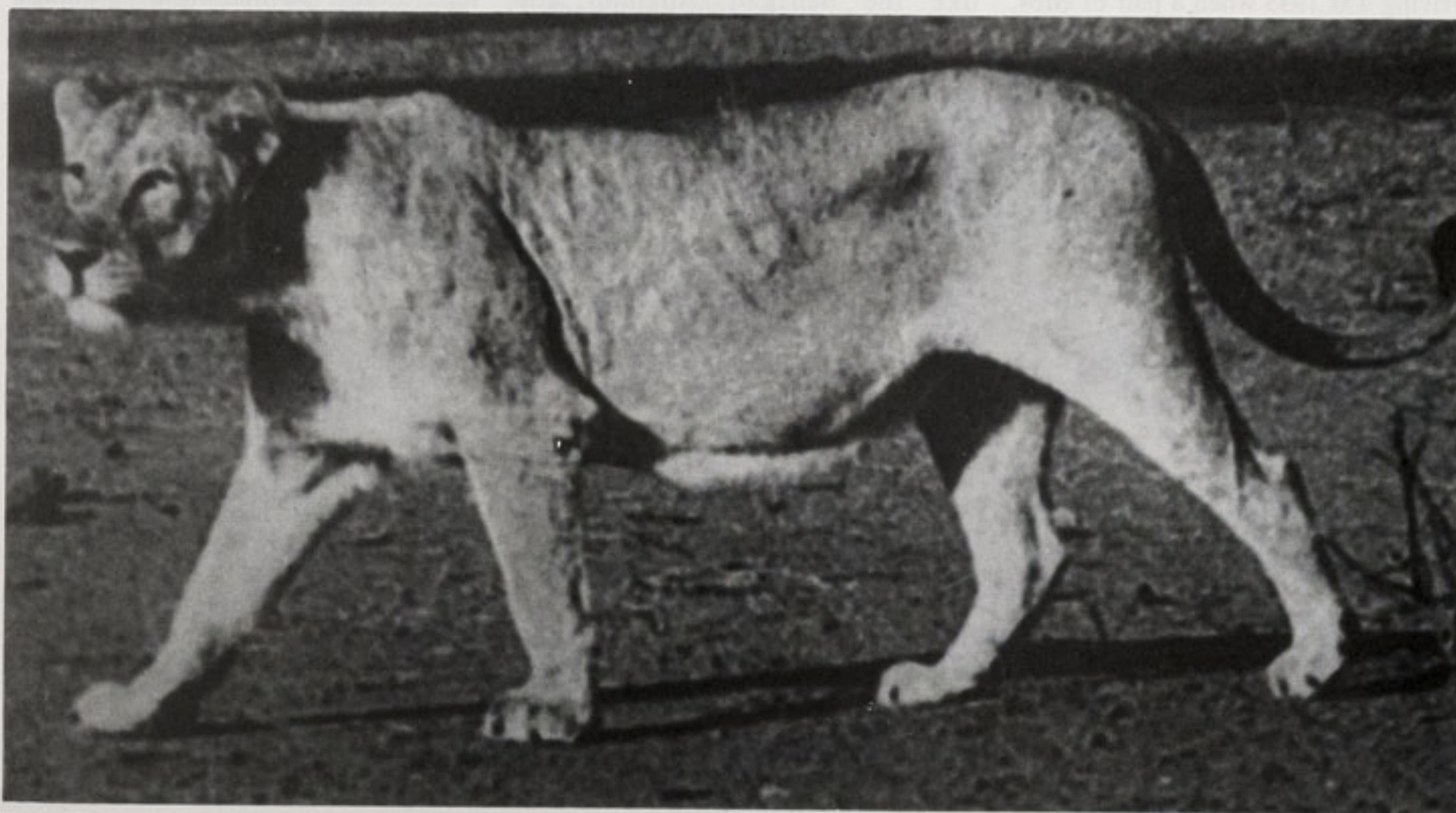
Wild lions would be ideal subjects for translocation as they have well developed survival skills. An alternate reserve would be a solution. However, an area of sufficient size with an adequate prey population is not at present available.

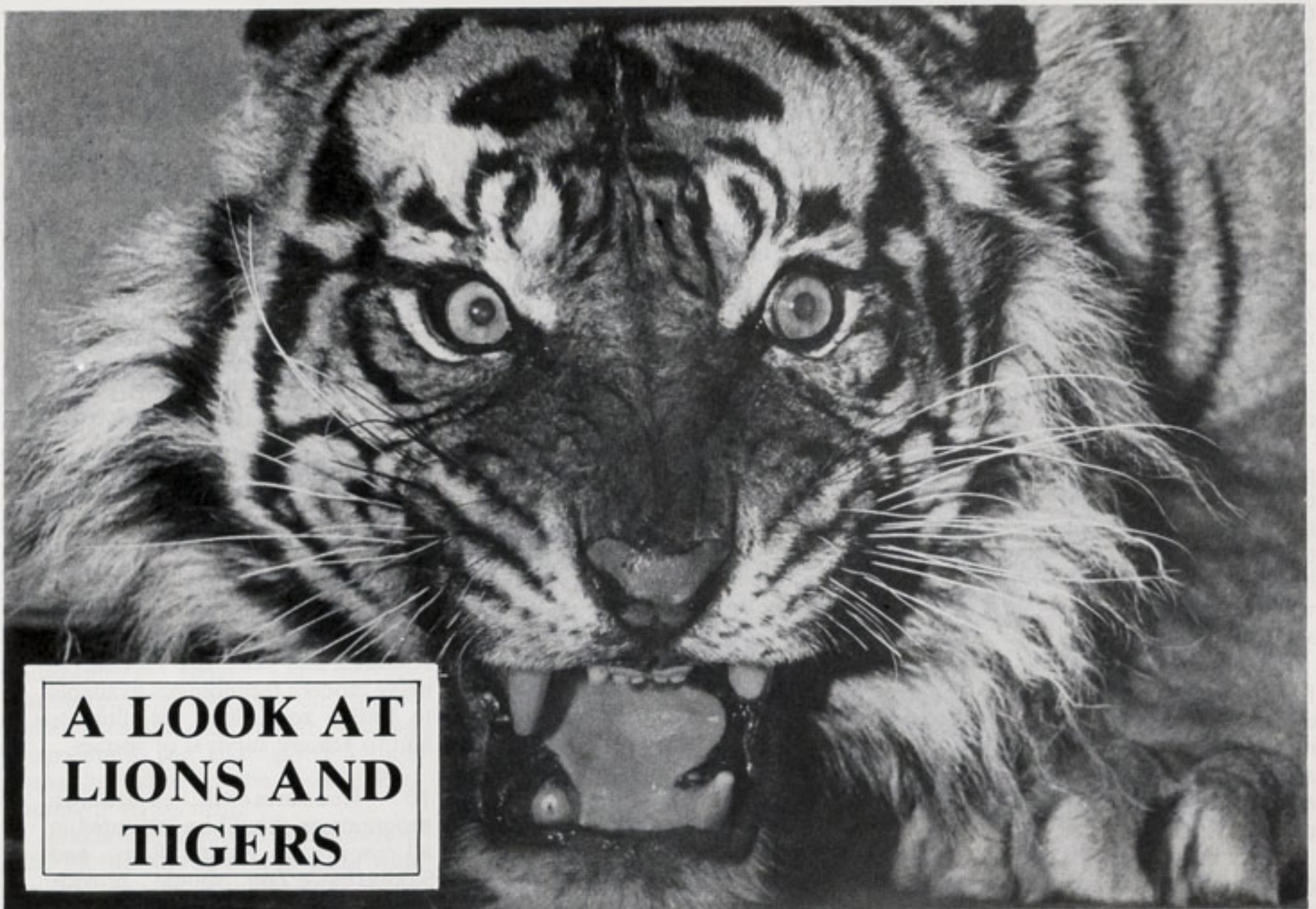
Much hard work and dedication has gone in to conserving the Gir forest and these unique lions. Population growth has produced problems, both in the wild and in a captive situation at Sakkarbaug Zoo.

At present, the North of England Zoological Society is negotiating with Sakkarbaug Zoo for the loan of a pair of pure Asiatic lions.

## SUMMARY OF RESOLUTIONS ADOPTED AT THE CONFERENCE

1. Recognising that the Gir National Park and Sanctuary is the only existing habitat for the Asiatic lion, the conference resolves that all round international and national financial, technical and operational support should be available for support of this majestic species.
2. A Population Viability Analysis and Species Survival Plan should be prepared for the Asiatic lion.
3. The efforts of zoos for the great success of captive breeding programmes is appreciated, and is to be encouraged and supported.
4. The captive population of the Gir lion should be expanded to provide full protection of the genetic variation of the species, and support of the wild species.
5. All lions in the captive breeding programmes should be managed by a propagation committee, and the lions should remain the property of India.
6. Concern is felt on the intermixing of different subspecies which may result in the disappearance of different subspecies. Recommend that interbreeding should be prevented and insure that international stud books of different sub species be maintained.
7. Recommend that additional sanctuaries and reserves should be located within India and the historic range of the lion for re-introduction.
8. Recommend urgent need for establishing a permanent Research Centre in Gir.
9. Recommend there should be active international co-operation in the field of genetics between India scientists and scientists abroad, to make modern technologies available to Indian zoos, with the ultimate aim to achieve survival of species.
10. Recommend education programmes should be instituted in all zoos with Asiatic lions, and Sakkarbaug Zoo should provide training for all persons involved in the programme.
11. Recommend that national and international financial resources be made available to further this important work.





## A LOOK AT LIONS AND TIGERS

Photo - Evening Leader

Although not having the distinction of being the first animals at Chester both lions and tigers figured in the early pre-war days of the zoo. The earliest record I can find of lions arriving was 1935 when a pair of cubs, Jubilee and Okeni were presented by John Holt and Co. John Holt was a shipowner and he donated a number of animals whilst the zoo was growing.

The first tigers came a few years later in 1938 when a pair were received from Rotterdam Zoo or Blijdorp as the zoo is known in Holland. Chester still enjoys close relations with Rotterdam and have recently been pleased to accept their offer two pairs of the rare Black-footed cat, now here for their statutory quarantine period before coming into the collection.

The lion, *Panthera leo*, is the best known of all the world's wild cats and its relationship with man well documented over the centuries. The range has diminished in living memory and now covers Africa south of the Sahara and the Gir Forest in northwest India. Some of the subspecies have long disappeared, the Cape lion last century and such as the Barbary lion and the Persian lion about seventy years ago. The Indian population has

risen to about two hundred following protection measures and now seems to remain reasonably constant. Of the African subspecies the most common is undoubtedly the Masai, though others like the Senegal, Angolan and Transvaal are very much endangered.

The lion is the only cat to live in family groups or prides. The grouping typically consists of two or three males, ten or more females and their young, though prides of any number can be seen. These social units remain stable for years, though the young males tend to be driven out when reaching maturity at between two and three years old. The young males will live together and eventually meet a pride where the existing males can be driven off thereby establishing a new pride. It is not unusual for these males to kill the cubs fathered by their predecessors.

Cubs are born throughout the year and a litter of 1 - 6, usually somewhere in between, after a gestation of 108 - 110 days. The lioness will leave the pride to give birth in a secluded area and the cubs are immediately accepted when she returns some weeks later. Cubs will suckle from any female within the group with cubs and she will care for these cubs as she would her

own. They are suckled for up to six months but after the first three an increasing amount of meat is provided from adult kills. At around four months old they start to accompany their mother on hunting trips though remain very much in the background until the actual kill is made.

Lions normally will hunt during the day but have learnt it is safer to do so at night where they themselves may be hunted by man. The females do most of the hunting, often in unison with others in the pride, by stalking the prey and getting as close as possible before making the final rapid chase. It has also been noted that lionesses will drive the intended prey towards others lying in wait. The kill is usually swift and efficient, generally strangulation by biting the throat or suffocation by biting the nose. The quicker the kill the less chance there is of injury to the lion and as this is more likely when tackling large game such as buffalo or giraffe, the favourite prey animals of the lion are zebra, wildebeest and gazelle. The kill is shared by all pride members and an adult can eat as much as 18 Kgs (40lbs) at one meal. Having fed they will retire to a shady area to digest their meal happily sleeping and resting for

twenty hours or more in the day.

The impressive mane on the lion is an attribute as well known in the animal world as elephant tusks or rhinoceros horns and serves as defence in fights with other males against teeth and claw. The mane varies in colour from black to a tawny yellow. The most extensive and darkest coloured manes belonged to two extinct African races, the Barbary and the Cape lions.

The tiger, *Panthera tigris*, has a range from India through southeast Asia, China and into Russia. It is accepted that eight subspecies existed of which two are now extinct and the remainder endangered though the Indian tigers have increased in numbers in recent years.

Unlike the lion, tigers are generally solitary animals maintaining loose territories, the sizes of which vary, dependent on the game species, ie: food available. The male's territories may overlap three or more females. The boundaries are marked by various means such as a scratch mark on trees, defecation or spraying with urine, all of which serve as a warning or an invitation to other tigers. When tigers are seen together it is usually male and female in the breeding season or a mother and family not yet fully independent.

Tigers breed throughout the year but more seasonally at the northern end of the range. One to six cubs normally two to four are born after 108 - 112 days gestation and are suckled for up to six months, eating meat from about eight weeks old, an age where they leave the den to follow the tigress. They will stay with the mother for two to three years before becoming fully independent, the mother rarely breeding again in this period. Having such an extensive range, tigers are well able to cope with the extremes of heat and cold, the northerly species capable of producing a layer of subcutaneous fat which acts as insulation.

The tiger is probably not quite the hunter as often described, many of its chases ending in failure. Using the same method of attack as the lion it creeps as close to the prey as possible before making the final pounce and seldom chases more than 200 metres if it misses at the first attempt. Any flesh will be eaten, from cattle down to fish and frogs. Where tiger territories join

agricultural enterprises domestic cattle are regular victims. Having made a kill the tiger is capable of dragging large bodies hundreds of yards into cover and after eating its fill will put branches over the remainder to hide it from other predators.

#### History At The Zoo

Soon to follow the lion cubs, Jubilee and Okeni, were three female cubs from Bristol and the male, Patrick from Dublin. Patrick in his later years was a favourite subject of photographer Eric Kirkland and was featured in the recent book of his pictures published by the zoo. This pride produced many cubs which were sold to help zoo funds at that time. Unfortunately early records are practically non-existent so we do not know just how many were bred.

The first lion house was opened in 1937 by Lord Leverhulme, and the intention of adding the outside enclosure at a later stage had to be postponed due to the intervention of war and it was finally completed in 1947. The building of the enclosure was greatly helped by a contribution from Miss A L Bulley and the ingenious use of road blocks due to a scarcity of building materials at that time. The outside enclosure was opened officially by Norman Ellison, a BBC radio celebrity at the time.

Since 1956 when more complete records have been kept there have been sixty lion cubs born and the zoo received quite an amount of publicity when two were exported to Kumasi in Ghana during 1961.

The present house was built and the enclosure redeveloped in 1984 and was

appropriately opened by the third Lord Leverhulme.

Tigers have always been one of the visitors' favourites and have been constantly on view since 1938. Although I have heard tales of numerous cubs being born earlier, the first record we have in writing was 1961 following another exchange with Rotterdam when we received a pair of young animals.

Various subspecies have been kept at Chester and photographs show most of the earlier ones to have been Indian. Sumatran tigers were briefly held on loan and the Siberian tigers came in 1976 when siblings were purchased from Howletts Zoo in Kent. Following the death of the female, another on loan from Edinburgh produced twins in 1989. A total of 23 cubs have been bred at Chester since 1961.

The original tiger dens were demolished and their enclosure doubled in size during the winter of 1985/6 and formally opened in the spring of 1986.

**Footnote:** Many strange noises come out of the zoo grounds and are immediately recognisable as elephant, zebra, sealion, crane or peacock but the most impressive is the lion roar when their territory is being proclaimed. On a calm night it is said it can be heard five miles away, probably the loudest in the animal kingdom. By comparison the tiger roar is a few decibels less but still can be heard at a distance of two miles.

*By Peter Wait  
Senior Curator*

Photo - Eric Kirkland



# INTO AFRICA

*Zoo Member Mrs Muriel Constable loves entering competitions - with very rewarding results! Her latest and biggest prize was a safari holiday in Kenya, won in a magazine competition. Muriel is also a keen and amateur photographer, so her trip provided some wonderful picture opportunities including this shot of elephants. These are extracts from the diary she kept of the holiday:*

It was an eight hour flight from Heathrow to Nairobi. It was early morning when we arrived and people were walking everywhere. On the drive to our hotel, the bouganvillea, hibiscus and flowering trees along the Uhuru Highway gave us a colourful welcome to the city.

In the afternoon, my husband Denis's cousins took us to their house in one of the suburbs, and we spent a happy time with them and other relatives - a warm and marvellous way to start our holiday.

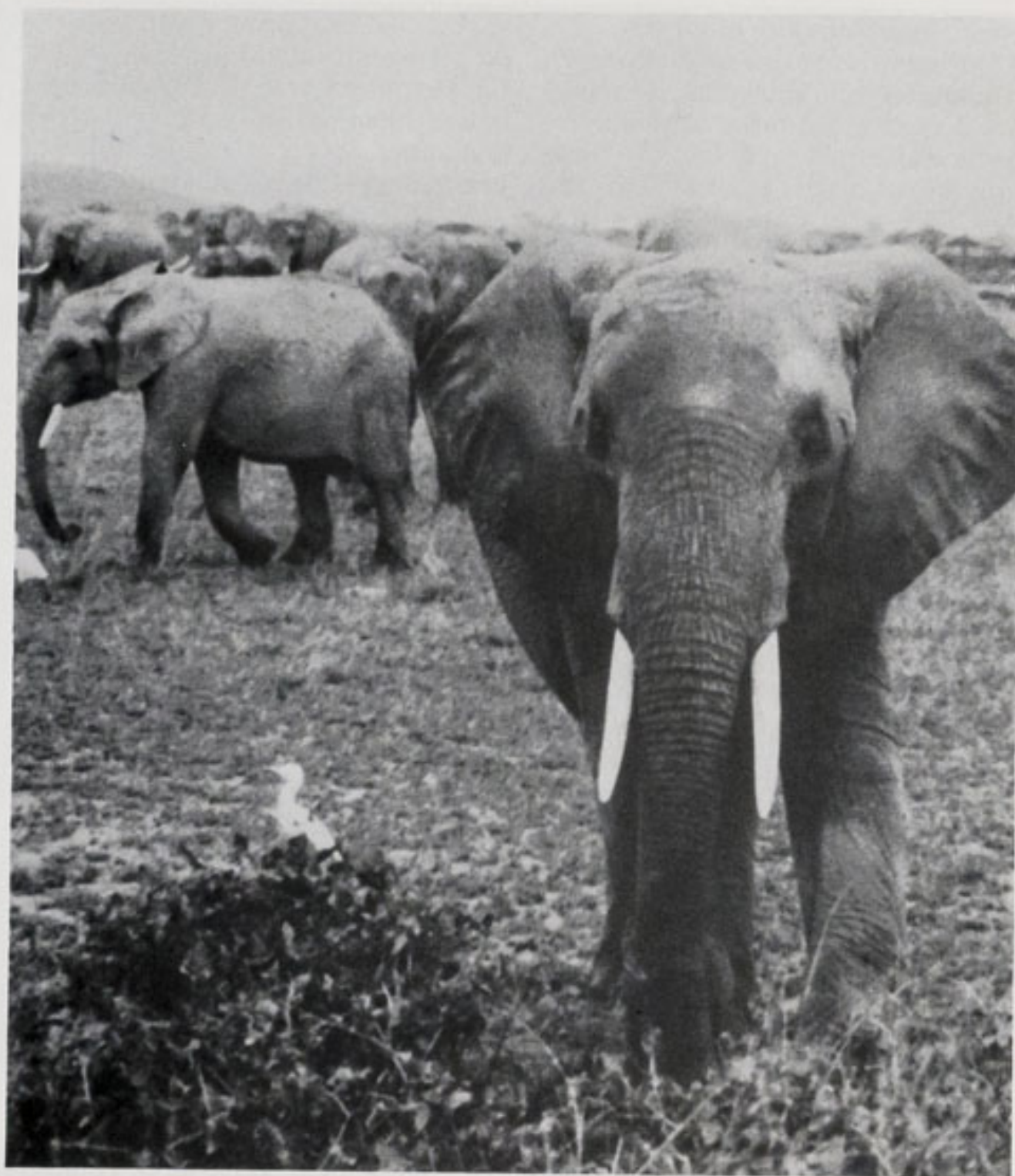
Very early next morning, we left for the Amboseli National Park, taking the Mombasa Road for Namanga. Leaving Namanga, was another world, where we saw giraffe feeding on the acacias. How do they cope with those vicious looking thorns?

At the National Park, the landscape changed dramatically. We drove across the semi-desert bottom of a dried-up lake, yet wildebeest, gazelles, buffalo and crowned and Blacksmith's plovers were there.

The afternoon drive gave us something we'll never forget. Our first elephant was sighted, then a second and a third. These were lone creatures. Then we saw a herd, some 200 strong. They consisted of tinies, toddlers, teenagers and mature elephants. They flowed towards us, then round us and on like a river.

Next morning, we were out again before breakfast, watching many different creatures, including Grants and Thompsons gazelles, ostriches and gnu, and another, smaller herd of elephants, plus a cheetah.

It was a long drive to Lake Naivasha, a freshwater lake with hippos and an amazing variety of bird life. We saw white throated cormorants, pelicans, African spoonbills, marabou, yellow-



billed and white storks - and so much more.

Our next journey was to the Masai Mara National Reserve - a very bumpy ride. On the way we saw many wild animals - zebra, gazelles, giraffe, ostriches and Kori bustard, as well as the Masai herds of cattle, goats, sheep and donkeys! It was here we saw lions.

Another early start for a 200 mile drive to Nairobi. As we drove through the Reserve, we saw a group of hyenas, the three females busy with mutual grooming. After a night in Nairobi, we flew to Mombasa for a week of luxury! We enjoyed early morning sunrises with amazing cloud formations after overnight thunderstorms and rain. We watched golden palm weavers, Indian House crows - who joined people for breakfast - amethyst and emerald sunbirds and tiny manikins.

Highlights - a visit into the Shimba Hills. The great joy here was the sight of a herd of the rare Sable antelope. This is the only place in Kenya where these beautiful animals can be seen. We saw a couple of "red" elephant, a lone buffalo and warthog too.

A taxi ride took us to the Bamburi

Quarry Nature Trail. In 1971 this was a worked out quarry, an eyesore. Casuarina trees were planted and milipedes introduced. Now it is a place of beauty and great interest, with a collection of Kenyan animals - pelicans, crowned cranes, Beisa oryx, zebra, Defassa waterbuck and a serval that can be viewed from the trail.

Another unexpected treat was a visit to an S.O.S. Children's Village. As I subscribe to this international concern for destitute children, a visit was a "must". We were very impressed with all we saw - it felt indeed a happy and well-run place.

Our last indulgence was a visit to the coral reef in a glass bottomed boat - we even saw an octopus!

During our stay, we had experienced a number of very spectacular and noisy thunderstorms. Mombasa said farewell to us with just one more, which came as we waited at the airport for the plane to Nairobi, where we caught our plane back to London.

After a tiring journey, we reached home at 07.15 the next morning. Our Kenya holiday was a delight - we want to go back!



**F.E.D.S.  
MEET  
DOCENTS**

On a warm July Sunday, our volunteers (Friends of the Education Division Services, or FEDS) were hosts to a party of Docents - the American term for volunteers - from Columbus Zoo, Ohio.

Their visit to us was part of a very full programme, including visits to other zoos - Edinburgh, London, Howlett's, plus the Lions of Longleat, the Farne Islands, St. Paul's, the Tower, Stonehenge, Salisbury, Windsor, Holyrood House and York! Chester was given prominence, with a full day in the city, and a full day in our zoo.

Small groups teamed up and our visitors were taken round the zoo, including visiting our Feds in the Brass Rubbing and Let's Make centres, performing puppet shows, and using display material in the Tropical House, by the ostriches and by the elephants.

There was much swapping of information, practices and ideas which carried on through the hot-pot supper in the Oakfield.

We were really delighted by the interest and enthusiasm of the Docents, who adopted a lemur before they left, and made a most generous and unexpected donation. They also left us a pile of interesting material about their zoo.

It really was a wonderful day, and we felt that we had made firm, long lasting links and friendship.

**Brenda Norgain**



**I'm a gnu!**  
This young wildebeest, pictured at just a few hours old, was born in the zoo in July.

# JUN NEWS



## DAY WITH A KEEPER

On a hot Saturday in July, lots of older Juniors turned up in their wellies to put in a full day's work helping the keepers. They learnt a lot about the hard work involved, but they had a lot of fun too!

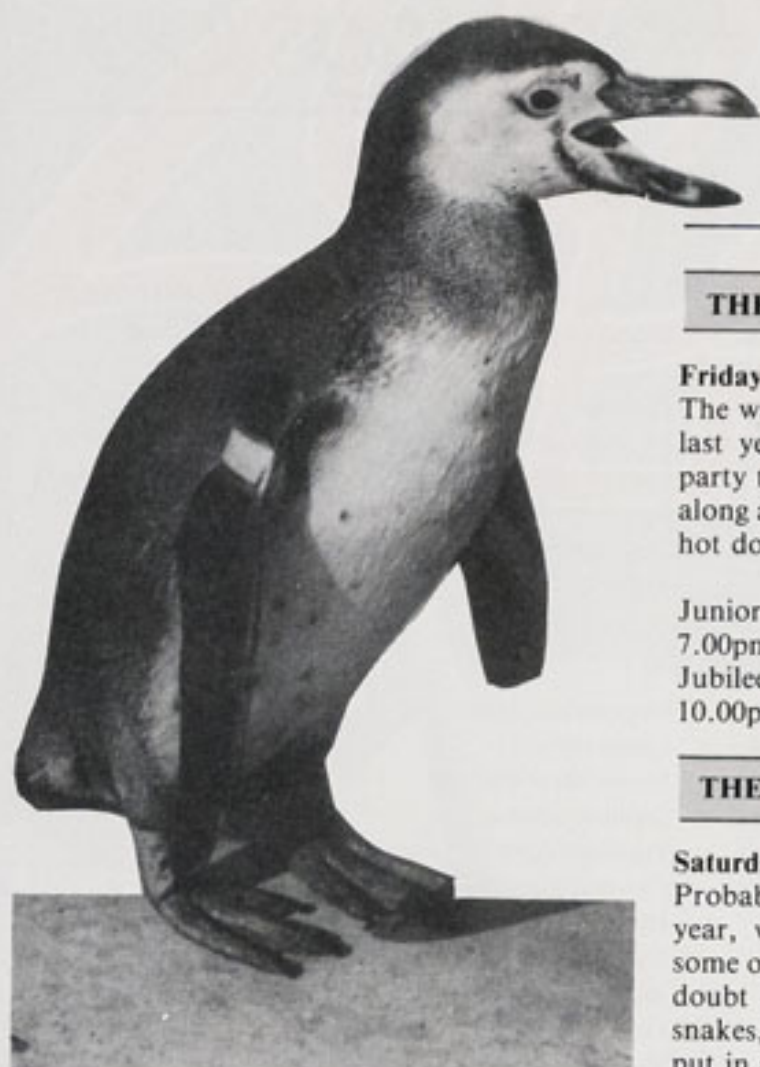
Above: 14 year old Jeanette Prichard gives the chimp beds an airing.

Above right: Amy Lingard and Bethan Hoskins, with a four week old llama.

Right: Joanne Mattocks, with the zoo keepers' barrow, cleans the kangaroo paddock.

Left: David Bell checks the fruit supply for the children's farm.





#### LLYN BRENIG LAKE - NORTH WALES

**Saturday 15th September 1990**

This will be a superb opportunity to visit this huge lake, which is one of those which regulates the Cheshire water supply. We will walk across the dam and around the reservoir into the forested area, and then visit the nature reserve to view the 'feeder streams'. Bring a picnic.

We will leave the zoo staff car park at 10.00am returning to the zoo around 4.30pm. Over eights welcome, but it is a fairly long walk!

#### FOSSIL HUNTING - NORTH WALES

**Saturday 27th October 1990**

At the moment this is rather a 'vague' trip as we cannot be sure exactly where we are going. We have written to several likely places and await confirmation. Details will be available nearer the time. We plan to make a day of it though, so picnic lunches will be required.

We will leave the zoo staff car park at 10.00am returning to the zoo around 3.30pm. Over tens are welcome to come along.

#### TWYXCROSS ZOO - WARWICKSHIRE

**Saturday 17th November 1990**

This seems like a long way to go, but I am sure it will be worth it! The coach journey will take about 2½ hours to get us to Twycross which is a fascinating collection specialising in primates. It really is an opportunity not to be missed by those who do not mind the travelling.

It will be an early start from the staff car park at 8.30am returning to the zoo around 6.00pm. Bring a picnic lunch with you. Over tens welcome.

## Junior Members' Field Trips and Meetings for 1990/1991

### THE CHRISTMAS PARTY

**Friday 14th December 1990**

There was a huge success in the Jubilee at the zoo last year, so we will be having our disco and party there again. Everyone is welcome to come along and enjoy the music and games, and have a hot dog/hamburger supper.

Juniors should arrive at the staff entrance at 7.00pm and parents may walk you over to the Jubilee. Collection should be arranged for 10.00pm

### THE CONTACT SESSION

**Saturday 19th January 1991**

Probably one of our most popular events of the year, when Juniors are invited along to meet some of our friendlier inhabitants of the zoo. No doubt our huge Rhinoceros iguana, tarantulas, snakes, wallabies, ducks, and many others will put in an appearance to say hello.

We will meet outside the Oakfield 2.00pm and youngsters may drift away from the Lecture Hall after 3.00pm. Everyone should be back at the Oakfield for 4.15pm. Over eights are welcome.

### DINOSAUR DAY

**23rd February 1991**

We have arranged this event at the request of many Juniors who want to know more about Dinosaurs. We hope to have the eminent 'Dinosaur Expert' Dr Beverly Halstead along to give you all the gory details about this fascinating and ever-popular subject! We will be running a competition for 'The Best Dinosaur' on the day, and this can be a model, a stuffed toy, a painting or picture, or anything you can think of. You do not have to enter the competition to come along for the afternoon's talk, it is just for those feeling in a creative mood. Over tens are welcome.

We will meet outside the Oakfield at 2.15pm and walk down to the Lecture Hall, meeting back at the Oakfield at 4.00pm

### TRACKS AND SIGNS

**23rd March 1991**

By popular demand, this event is back in the programme again this year. We will be spending the day searching the enclosures for suitable spoor from which to take plaster casts. This tends to be a wet and muddy day in March, so please wear wellies and suitable clothing.

We will meet outside the Oakfield at 11.00am and the day will end at 4.00pm. Remember to bring a packed lunch. Over eights welcome.

### BRIDGEMERE WILDLIFE PARK

**Saturday 27th April 1991**

The newly owned Bridgemere Wildlife park near Nantwich is becoming well known for their birds of prey flying displays and children's visits, so we thought we would go to have a look!

We will leave the staff car park at 10.00am, returning to the zoo around 4.30pm. You will need a picnic lunch, and over eights are welcome to come.

### HILBRE ISLAND

**Saturday 18th or Sunday 19th**

**May 1991**

The tide timetable will govern the exact day and time we visit Hilbre, but we plan to leave fairly early in the morning, walk over to the island, stay there while the tide comes in, and then walk back to the mainland.

Details of leaving times will be issued nearer the time. Over tens only.

### THE CHESTNUT CENTRE

**22nd June 1991**

This time we will be heading off to Derbyshire to visit this charming nature reserve where you will be able to see a few native animals such as foxes and otters, and have an opportunity to learn about some of the nature of our own country.

We will leave the staff car park at 10.00am returning at 5.00pm. You will need a picnic lunch. Over eights will be welcome.

### DAY HELPING A KEEPER

**20th July 1991**

One of the events so many of you look forward to, when you are invited to spend the day working alongside one of the keepers. As the work involved is quite strenuous, we have to limit this event to the over twelves only. You will need a packed lunch, and you must wear wellies or strong old shoes.

We will meet outside the Oakfield at 10.30am, and the day will finish for the Juniors at 4.00pm

### PLEASE NOTE

Bookings must be made for all events. Please ring Penny at the Zoo not more than two weeks before any event if you would like to attend. Places are allocated on a first-come/first-served basis, and may be limited.

For those trips which involve either a bus trip, or the provision of food or materials, a charge will have to be made in order for us to cover basic costs, but we do try to keep this as low as possible and it will vary according to what is provided.

The list is provisional, and in exceptional circumstances, we may have to alter the dates and times of some of the trips. You will not be informed of such changes individually, so you must keep an eye on the magazine when it comes out each quarter to check that you are up-to-date with Junior Members' News.

**Penny Rudd (Mrs)**

Junior Members' Club Leader

# Arrivals Births and Hatchings

## 1st MAY - 31st JULY 1990

### BIRDS

Common Rhea	<i>Rhea americana</i>	4	Hatched 1 D.N.S.
Humboldt's Penguin	<i>Spheniscus humboldti</i>	3	Hatched
Chilean Tinamou	<i>Nothoprocta perdicaria</i>	14	Hatched 5 D.N.S.
White Stork	<i>Ciconia ciconia</i>	3	Hatched 1 D.N.S.
Waldrapp Ibis	<i>Geronticus eremita</i>	10	Hatched 2 D.N.S.
Fulvous Tree Duck	<i>Dendrocygna bicolor</i>	3	Hatched 1 D.N.S.
Ruddy-headed Goose	<i>Chloephaga rubidiceps</i>	4	Hatched
Common Shelduck	<i>Tadorna tadorna</i>	17	Hatched
Marbled Teal	<i>Anas angustirostris</i>	6	Hatched
Tufted Duck	<i>Aythya fuligula</i>	6	Hatched
Red-crested Pochard	<i>Netta rufina</i>	8	Hatched 2 D.N.S.
Maned Goose	<i>Chenonetta jubata</i>	8	Hatched
Mandarin Duck	<i>Aix galericulata</i>	36	Hatched 4 D.N.S.
Carolina Duck	<i>Aix sponsa</i>	18	Hatched 5 D.N.S.
White-winged			
Wood Duck	<i>Cairina scutulata</i>	8	Hatched
Andean Condor	<i>Vultur gryphus</i>	1	Hatched
Variable Chachalaca	<i>Ortalis motmot</i>	1	Hatched
Satyr Tragopan	<i>Tragopan satyra</i>	2	Hatched
Himalayan Monal	<i>Lophophorus impeyanus</i>	18	Hatched 2 D.N.S.
Brown Eared Pheasant	<i>Crossoptilon mantchouricum</i>	14	Hatched 1 D.N.S.
Golden Pheasant	<i>Chrysolophus pictus</i>	9	Hatched 1 D.N.S.
Grey Peacock Pheasant	<i>Polyplectron bicalcaratum</i>	1	Hatched
Palawan Peacock			
Pheasant	<i>Polyplectron emphanum</i>	0.1	On loan
Sarus Crane	<i>Grus antigone</i>	2	Hatched
West African			
Crowned Crane	<i>Balearica pavonina pavonina</i>	1.1	On loan
Gough Island Moorhen	<i>Gallinula comeri</i>	1.1	On loan
Blacksmith's Plover	<i>Vanellus armatus</i>	5	Hatched 2 D.N.S.
Crowned Plover	<i>Vanellus coronatus</i>	7	Hatched 3 D.N.S.
Pink Pigeon	<i>Nesoenas mayeri</i>	3	On loan
		1	Hatched
Diamond Dove	<i>Geopelia cuneata</i>	5	Hatched 1 D.N.S.
Mountain Witch Dove	<i>Geotrygon versicolor</i>	1	Hatched
Yellow-backed			
Chattering Lory	<i>Lorius garrulus flavopalliatius</i>	2	Hatched
Musschenbroek's			
Lorikeet	<i>Neopsittacus musschenbroekii</i>	2	Hatched
Leadbeaters Cockatoo	<i>Cacatua leadbeateri</i>	2	Hatched
Blue-eyed Cockatoo	<i>Cacatua ophthalmica</i>	2	Hatched
Red-sided Eclectus			
Parrot	<i>Eclectus roratus polychlorus</i>	1	Hatched
Splendid Parrakeet	<i>Neophema splendida</i>	3	Hatched
Greater Vasa Parrot	<i>Coracopsis vasa</i>	2	Hatched
Derbyan Parrakeet	<i>Psittacula derbiana</i>	3	Hatched 1 D.N.S.
Blue and Yellow Macaw	<i>Ara ararauna</i>	2	Hatched
Scarlet Macaw	<i>Ara macao</i>	1.0	On loan
Lesser Patagonian			
Conure	<i>Cyanoliseus patagonus</i>	3	Hatched 1 D.N.S.
Slender-billed Parrakeet	<i>Enicognathus leptorhynchus</i>	4	Hatched
Yellow-faced Parrotlet	<i>Forpus xanthops</i>	4	Hatched 2 D.N.S.
Hawk-headed Parrot	<i>Deroptyus accipitrinus</i>	1	Hatched D.N.S.
Barn Owl	<i>Tyto alba</i>	10	Hatched 2 D.N.S.
European Eagle Owl	<i>Bubo bubo</i>	3	Hatched
Great Horned Owl	<i>Bubo virginianus</i>	1	Hatched
Spectacled Owl	<i>Pulsatrix perspicillata</i>	1	Hatched
Snowy Owl	<i>Nyctea scandiaca</i>	7	Hatched 3 D.N.S.
White-faced Scops Owl	<i>Otus leucotis</i>	1.0	On loan
Kookaburra	<i>Dacelo novaeguineae</i>	4	Hatched 1 D.N.S.
Blue-crowned Motmot	<i>Momotus momota</i>	1	On loan
African Grey Hornbill	<i>Tockus nasutus</i>	1	Hatched D.N.S.
Channel-billed Toucan	<i>Ramphastos vitellinus</i>	2	Hatched
Fairy Bluebird	<i>Irena puella</i>	5	Hatched 4 D.N.S.
White-rumped Shama	<i>Copsychus malabaricus</i>	3	Hatched 2 D.N.S.
Plumbeous Redstart	<i>Rhyacornis fuliginosus</i>	4	Hatched 3 D.N.S.
Orange-headed Ground			
Thrush	<i>Zoothera citrina</i>	3	Hatched D.N.S.

Mexican House Finch	<i>Carpodacus mexicanus</i>	10	Hatched D.N.S.
Java Sparrow	<i>Padda oryzivora</i>	6	Purchased
White-headed Buffalo			
Weaver	<i>Dinemellia dinimelli</i>	1	Hatched D.N.S.
Golden Palm Weaver	<i>Ploceus bojeri</i>	2	Hatched 1 D.N.S.
Emerald Starling	<i>Lamprocolius iris</i>	1	Hatched D.N.S.
Superb Spree Starling	<i>Spree superbus</i>	1	Hatched
Royal Starling	<i>Cosmopsarus regius</i>	5	Hatched D.N.S.
Coledo Mynah	<i>Sarcops calvus</i>	2	Hatched

### MAMMALS

Rodrigues Fruit Bat	<i>Pteropus rodricensis</i>	0.0.3	Birth
Ring-tailed Lemur	<i>Lemur catta</i>	0.0.1	Birth
White-fronted Lemur	<i>Lemur fulvus albifrons</i>	0.0.1	Birth
White-lipped Tamarin	<i>Saguinus labiatus</i>	0.1	On Loan
Chimpanzee	<i>Pan troglodytes</i>	1.0	On loan
Prairie Marmot	<i>Cynomys ludovicianus</i>	0.0.24	Birth
Porcupine	<i>Hystrix cristata</i>	0.0.3	Birth
Capybara	<i>Hydrochoerus hydrochaeris</i>	0.0.4	Birth
Coypu	<i>Myocastor coypus</i>	0.0.12	Birth 2 D.N.S.
Bat-eared Fox	<i>Otocyon megalotis</i>	1.2	Purchased
Coati	<i>Nasua nasua</i>	0.0.5	Birth
Black-footed Cat	<i>Felis nigripes</i>	2.2	On loan
Geoffroy's Cat	<i>Felis geoffroyi</i>	0.0.3	Birth
Ocelot	<i>Felis pardalis</i>	1.0	On loan
Serval	<i>Felis serval</i>	0.0.2	Birth
Asian Elephant	<i>Elaphus maximus</i>	0.1	On loan
Przewalski's Horse	<i>Equus przewalskii</i>	0.1	Birth
		1.2	On loan
Onager	<i>Equus hemionus onager</i>	0.1	Birth D.N.S.
Zebra	<i>Equus burchelli boehmi</i>	0.1	Birth
Llama	<i>Lama glama</i>	0.1	Birth
Axis Deer	<i>Cervus axis</i>	1.0	Birth
Pere David's Deer	<i>Elaphurus davidianus</i>	0.1	Birth
Reindeer	<i>Rangifer tarandus</i>	1.4	Birth
Eland	<i>Taurotragus oryx</i>	2.3	Birth
Nilgai	<i>Boselaphus tragocamelus</i>	0.2	Birth 1 D.N.S.
White Bearded Gnu	<i>Connochaetes taurinus</i>	0.1.2	Birth
Roan Antelope	<i>Hippotragus equinus</i>	1.2	Purchased
Red Lechwe	<i>Kobus leche kafuensis</i>	3.2	Birth
Blackbuck	<i>Antelope cervicapra</i>	0.1.3	Birth
Congo Buffalo	<i>Syncerus caffer nanus</i>	0.2	On loan
Ankole Cattle	<i>Bos taurus</i>	1.1	Birth
		1.0	On loan
Bison	<i>Bison bison</i>	0.1.1	Birth

### REPTILES

Carolina Box Turtle	<i>Terrapene carolina</i>	2	Hatched
Leopard Gecko	<i>Eublepharis macularius</i>	20	Hatched
Black Spiny-tail Iguana	<i>Ctenosaura similis</i>	1	Hatched
Malayan Sail-fin Lizard	<i>Hydrosaurus amboinensis</i>	3	Hatched
Crocodile Lizard	<i>Shinisaurus crocodilurus</i>	3.1	On loan
Long-tailed Tree Lizard	<i>Uranoscodon superciliosa</i>	3	On loan
Bearded Dragon	<i>Acanthodracro barbatus</i>	1	On loan
Prehensile-tailed Skink	<i>Corucia zebrata</i>	1.2	Purchased
		0.1	On loan
Brown Basilisk	<i>Basiliscus basiliscus</i>	9	Hatched
Sunbeam Snake	<i>Xenopeltis unicolor</i>	12	Hatched
Burmese Python	<i>Python molurus bivittatus</i>	1	Presented
Red Eyed Tree Frog	<i>Agalychnis callidryas</i>		Further Breedings
Climbing Toad	<i>Pedostildes hosei</i>	2	Purchased

### AQUARIUM

The following species have been bred; Xenopus frog - *Xenopus laevis*, Whiptailed Catfish - *Sturisoma aureum*, Pseudocrenibrus species, Chinese Highhead Oranda - *Cu. asius auratus* and Pike Live Bearer - *Belonesox belizanus*