



THE ZOOLOGICAL SOCIETY OF LONDON

# Annual Report 1975

The Zoological Society of London was founded in 1826, largely as the result of the energy and initiative of Sir Stamford Raffles, Sir Humphry Davy (President of the Royal Society) and eminent naturalists. It was incorporated by Royal Charter in 1829, its stated purpose being

'the advancement of Zoology and Animal Physiology and the introduction of new and curious subjects of the Animal Kingdom'.

A new Charter was granted to the Society in 1963.

The Society's Gardens in Regent's Park - now known all over the world as the London Zoo - were opened in 1829. A hundred years later the Society acquired and, in 1932 opened, Whipsnade Park, an area of some 500 acres of farm and downland where the rural setting forms a splendid background for animals that are able to roam in large paddocks. Whipsnade Park and the London Zoo are complementary and together house one of the finest and most comprehensive collections of wild animals in the world.

The Society was formed as a scientific society and this remains its prime purpose. Throughout its existence members of its staff, as well as many eminent zoologists and visiting scientists, have studied material derived from the Collection and have made important contributions to our knowledge of taxonomy, comparative anatomy and physiology, human and veterinary medicine, pathology, ecology and animal behaviour. Two Research Institutes and a modern veterinary hospital which is linked with a Pathology Department, all of which were established between the years 1956 and 1965, have greatly extended the scope of research which can be undertaken and sponsored by the Society.

Scientific meetings are held on the second Tuesday in the months February to June and October to December. At these meetings the results of new research are communicated and discussed, and specimens and films of zoological interest are exhibited. Symposia on special subjects are also arranged. The Society owns one of the finest zoological libraries in the world, which has been built up over the 149 years of its existence.

The Society's publications include:

The *Journal of Zoology* (the *Proceedings of the Society*). Three volumes (12 parts) are published annually containing papers which cover all fields of zoology.

The *Transactions* are published at irregular intervals.

The *Symposia* record the papers read at the Symposia.

The *Zoological Record*, a comprehensive bibliography of zoological literature with subject and systematic indices, is available either as a complete volume or separately in 22 parts dealing with the different animal groups.

The *Nomenclator Zoologicus* contains the names of all the genera and subgenera in zoology from the 10th Edition of Linnaeus 1758 to the end of 1965, with a bibliographical reference to the original description of each. The work contains approximately 260,000 entries and is published in 7 volumes.

The *International Zoo Yearbook*, published annually, provides authoritative information on developments in the zoo world.



# Report of the Council

The Council has pleasure in presenting its 147th Annual Report to the Annual General Meeting of the Society to be held on Tuesday 4th May 1976 at 4.00 pm in the Society's Meeting Room at Regent's Park

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THE ZOOLOGICAL SOCIETY OF LONDON

PATRON: HER MAJESTY THE QUEEN

COUNCIL 1975-1976

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The Lord Glenkinglas, PC

Professor Richard J. Harrison, MA, MD, DSc, FRS

The Viscount Head, GCMG, CBE, MC, *Vice-President*

Christopher Marler

The Hon. Ivor Montagu

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J. Eric Smith, CBE, ScD, FRS

The Duke of Wellington, MVO, OBE, MC

C. A. Wright, DSc, PhD, FIBiol

Woodrow L. Wyatt, *Vice-President*



HONORARY FELLOWS

*Date of Election*

- 1971 His Majesty Emperor Hirohito of Japan
- 1951 Professor Dr H. Boschma  
Rijksmuseum van Natuurlijke Historie, Leiden, Holland
- 1955 Dr G. W. Corner  
American Philosophical Society, 104 South Fifth Street,  
Philadelphia 6, Pennsylvania, USA
- 1957 Professor Robert Courier  
L'Institut de France (Académie des Sciences), 23 Quai de Conti,  
Paris 6, France
- 1945 Monsieur Jean Delacour  
Parc Zoologique de Clères, Clères, Rouen, S-M, France
- 1952 Professor Sven Otto Hörstadius  
Zoologiska Institutionen, Uppsala, Sweden
- 1948 Professor A. R. Jorge  
Museu Bocage, Faculdade de Ciências, Lisbon, Portugal
- 1939 The Rt Hon. Sir Robert Gordon Menzies  
2 Haverbrack Avenue, Malvern, Melbourne, 3144, Victoria, Australia
- 1974 Mr Roger Tory Peterson  
Route 4, Box 131 Neck Road, Old Lyme, Connecticut, USA
- 1953 Professor Dr A. H. Schultz  
Anthropologisches Institut der Universität Zurich,  
Sempersteig, Zurich 1, Switzerland
- 1947 Professor G. G. Simpson  
Department of Geology, University of Arizona, Tucson, Arizona 85721, USA
- 1937 Dr E. A. Stensiö  
Naturhistoriska Riksmuseum, Stockholm 50, Sweden



# The Membership

## Council

Sir Michael Perrin, as Vice-President, presided at the Annual General Meeting which was held on 7th May. The following Members of Council retired: The Earl of Bessborough, Mr R. Romilly Fedden, Mr Ronald G. Waterhouse, Dr Raymond Greene and Dr W. Lane-Petter.

The Fellows elected to fill these vacancies were: Mr Aubrey Buxton, Lord Glenkinglas and Mr Christopher Marler (Ordinary Fellows); The Hon. Ivor Montagu and Dr C. A. Wright (Scientific Fellows).

Resolutions proposing increases in the subscriptions payable by Ordinary Fellows, Scientific Fellows and Associates were approved unanimously. The consequential amendments to the Regulations are given in Appendix 1.

Sir Michael presented the following awards for contributions to zoology:

**The Stamford Raffles Award** (awarded to an amateur zoologist for distinguished contributions to zoology) to *Mr A. E. Ellis* in recognition of his contributions to the study of molluscs. The award was a piece of silver designed by Mr Gerald Benney.

**The Scientific Medal** (awarded to persons under 40 years of age for distinguished work in zoology) to *Professor P. F. Baker*, now at King's College, University of London, for his work on ionic transport across cell membranes; and to *Dr H. Kruuk*, now at the Institute of Terrestrial Ecology, Banchory, Scotland, for his work on the behaviour and ecology of gulls and carnivores.

**The Thomas Henry Huxley Award** (for original work submitted as a doctoral thesis) to *Dr I. G. Priede*, University of Stirling, for his thesis 'The physiology of circulation during swimming activity in rainbow trout'. The award was a print by Miss Elisabeth Frink.

**The Silver Medal** (awarded for contributions to the understanding and appreciation of zoology) to *Mr Eric Hosking*, for his distinguished work as an animal photographer and his services to conservation and to public education in zoology.

**The Zoological Society of London Frink Medal for British Zoologists** (awarded to zoologists for significant and original contributions to zoology in its wider implications) to *Professor J. Z. Young, FRS*, The Wellcome Institute for the History of Medicine, London.

## Roll of Members

At the end of the year there were 2,797 Fellows and 3,142 Associates.

## Obituary

The Council records with deep regret the death of Sir Julian Huxley, who died on 15th February. Sir Julian had been a Fellow of the Society for 50 years and was the Society's Secretary from 1935 to 1942. Volume 176 of the Society's *Journal* was dedicated to his memory, an Obituary being included in Part I, which was published in May.

The Council also records with much regret the deaths of Professor J. Berlioz, who was elected an Honorary Fellow in 1952, Professor Jean G. Baer, who was elected an Honorary Fellow in 1974, and of Dr W. C. Osman Hill, a Fellow for 49 years and Prosector from 1950 to 1962.



# Finance

In common with most scientific and charitable institutions, the very rapid escalation of costs due to the continuing high rate of inflation has had a serious effect on the Society's finances. During the year ordinary expenditure rose by £247,000 (14 per cent) to £1,990,000, chiefly because of increases in salaries and wages, which account for nearly two-thirds of all operating costs. The salaries and wages of all sections of the staff are broadly aligned to a relevant public service, and nationally negotiated pay increases in these services are applied to the Society's staff. In spite of the reduction in the number of staff in many departments at the beginning of the year, the total bill for salaries and wages increased by 18 per cent over the 1974 figure.

Public admission charges were increased during the year to keep pace with rising costs and, as stated earlier, it was also necessary to increase Members' subscriptions with effect from January 1976.

Attendances, both at Regent's Park and Whipsnade, were somewhat lower than in 1974, and the result for the year showed a deficit on Revenue Account of £92,300.

In view of the prospect of continuing high inflation in 1976, the Council decided that further economy measures were essential, particularly at Whipsnade. The necessary reduction in the number of staff was largely achieved by 'natural wastage', by the transfer of staff to London, and only a very few people had to be made redundant.

Capital expenditure during the year was £623,000, which was largely met from the capital grant made by the Government to cover the period 1970 to 1975, most of which has now been spent. The main items related to the new quarters for lions, tigers and other big cat species, which were started in August 1974, and the building of the new Education Centre.

## Donations

The Council gratefully acknowledges a number of gifts, including £1,000 from the Ford Motor Company Ltd; £500 from Mr and Mrs M. L. Ilsley, in memory of their daughter; a legacy of £500 from the late Mrs N. G. Allen, and many grants in support of research projects in the Research Institutes. The Council is particularly grateful to the Wolfson Foundation, which made a most generous grant of £156,000 to be paid over the next four years, in support of the running costs of the Nuffield Institute of Comparative Medicine; and to the Wellcome Trust, which, in addition to three-year research grants, also generously made a grant of £25,000 for 1976 in support of the running costs of the Institute. The total expenditure of the Institutes is £291,000 of which 44 per cent is met by project grants and other gifts. The grants of the Wolfson Foundation and the Wellcome Trust, which provide general support, are of particular importance to the Society in this difficult period.



# The London Zoo

Visitors during the year 1,795,000  
Visitors to the Children's Zoo 291,000  
Visitors to the Aquarium 529,000

## Development

The most important item was the continuation of the work on the new exhibit for lions, tigers and other big cats. The contractors, Messrs J. Jarvis and Sons Ltd, maintained their splendid record of keeping up to schedule, and the last stages of this project, the most ambitious of all the fine new buildings of recent years, were in sight as the year ended. The extensive planting of the enclosures and public areas was started in November and the first animals were moved into the new dens before Christmas. The demolition of the old Lion House was then started, almost exactly 100 years after it was first opened to the public.

The Zoo Study Centres on the north Canal Bank were opened in September. The new building is in two sections, one occupied by the Society's Education Department and the other by the Inner London Education Authority.

The Lion and Tiger exhibit will be opened in Summer 1976. It completes the present phase of development at Regent's Park. The implementation of the remainder of the long-term rebuilding plan will be held up until new capital funds become available.

The North Gate entrance to the Zoo, which for some years has been open only in the summer season, was finally closed. The number of visitors using this Gate has fallen sharply in recent years, and its closure allowed a reduction in the number of gate-keeping staff, without inconveniencing more than a relatively few visitors to the Zoo. The buildings and yard near this Gate have been converted to a much needed storage area for building materials. Two portable ticket kiosks were installed at the Main Gate to meet the extra pressure on the other entrance gates on busy days.

In 1974 improvements were made to the gas, heating and water supply services of the Gardens. This year a standby electrical generator was installed to provide power for the west central area of the Gardens, including the Michael Sobell Pavilions, Reptile House, Aquarium, Stores, Workshops, the Hospital and the Wellcome Institute of Comparative Physiology. Despite these improvements, many problems connected with the complex supply services of the Gardens remain to be dealt with, including the modernization of parts of the electrical distribution system, the renovation of the main heating supply lines, and the installation of new oil fuel storage tanks. This work is part of the continuing programme of capital replacement and development which will need to be carried out in the years ahead.

Other work undertaken during the year by the Works Department, under the direction of the Architect, included the completion of two important minor improvements – the reorganization of the Children's Zoo on farm lines, and the renovation of the interior of the Bird House. The Keepers' Lodge has also been renovated.

The ever-rising standards of accommodation and exhibition which have been achieved in the Zoo over nearly 20 years of modernization make the buildings and installations which have not been replaced appear inadequate by comparison. The Aquarium is an example. It is structurally sound, has adequate technical facilities and a good collection of fishes on exhibition, but the overall style is now out-of-date. Much is being done with limited resources, and often by the Keeper staff themselves, to renovate old tanks, improve the displays, and generally modernize the building and the exhibition, but eventually the Aquarium will have to have at least a major overhaul, involving a complete internal redesign and the replacement of much equipment.

## General

In May, several members of the staff attended and contributed to an International Symposium on Zoo Design and Construction held at Paignton Zoo.

The professional and technical skill of the Society's staff is now more than ever in demand for advice on the design and management of new zoos, particularly in developing



countries in the Middle and Far East and in Africa. The Society has been involved in a consultant capacity in the design of a new zoo in the Persian Gulf, and has agreed to advise on others in that region, as well as one in Brunei.

The training of staff from zoos in many parts of the world has been a regular feature of the Society's 'foreign aid' programme, and in recent years there has not been a time when there has not been at least one overseas trainee at Regent's Park.

The Society has long been concerned at the lack of legal, or indeed any other control over the keeping of wild animals in captivity, whether in zoos or as private pets, and has given its support to the preparation of a Bill, which has now been introduced into Parliament, to control the keeping of dangerous wild animals as pets. For several years the Society has also supported the introduction of legislation to ensure proper standards of management in zoos.

### The Collection *Mammal Section*

The Giant Pandas 'Ching-Ching' and 'Chia-Chia' have been in good health and continue to make full use of the space-frame roof of their enclosure. They are nearing maturity, and it has become clear that they now prefer to live separately for most of the time. This behaviour was predicted by the staff of the Peking Zoo, and is only expected to vary during short spells every spring and autumn, when the female is in oestrus. The Pandas are still in the Michael Sobell Pavilions, where the accommodation has proved satisfactory. Detailed drawings were prepared during the year for new quarters situated on the south bank of the Canal, but it has not been possible to proceed with this new building.

An important birth was a male Pudu. The parents were presented by the Antwerp Zoo in 1973 as part of an international zoo agreement for the cooperative breeding of these rare Andean deer. The young animal was carefully guarded by both parents. It was heavily striped at birth, but the stripes had disappeared by the time it was three months old.

There were many births on the Cotton Terraces, including two Giraffes, three American Bison, two Yaks, a Kudu, a Przewalski's Horse, and two Scimitar-horned Oryx from the group which came from Marwell Park in February 1974. On the Mappin Terraces, the Barbary Sheep and Markhor herds continued to breed satisfactorily, and three American Black Bears were also born and reared there.

The female White Rhinoceros 'Mashobeni' returned after spending a year at Whipnade, where for some time she was with the main herd. It is hoped that she may now be pregnant. In the meantime, the Black Rhinoceros in the Elephant and Rhino Pavilion gave birth to her third calf, all of which have been female.

The Society's achievement in breeding Californian Sealions was maintained with the birth of another female pup in July. This followed the pup born the previous year in June which, although growing well and in excellent condition, had not been weaned by the end of the year. Previous pups at Regent's Park have been weaned at about 12 months, although there are other reports of Sealions being as old as two years before weaning. Because the mothers and pups have to be separated from other adults until the pups can feed independently, the bath in the Elephant Pavilion has had to be used temporarily as extra Sealion accommodation.

The Royal Zoological Society of Scotland has very kindly lent a fine bull Sealion, to take the place of the bull which died in Regent's Park in September 1974.

There were some notable breeding successes in the Charles Clore Pavilion for Small Mammals and the Michael Sobell Pavilions for Apes and Monkeys. Common Marmosets and Red-mantled Tamarins, Bornean Small-toothed Palm Civets, Short-headed Flying Phalangiers and Common Tree Shrews were born in the Clore Pavilion, while another Orang-utan, a Sooty Mangabey, Gelada Baboon and Mandrill were born in the Sobell Pavilions.

Following the apparent inability of the Gorillas 'Guy' and 'Lomie' to produce young



after three years together, 'Lomie' was sent to Bristol Zoo in June in the hope that she would mate with their proven breeding male. The latest tests show that she is now pregnant.

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In the Children's Zoo, the new farm exhibit includes a milking parlour with a Friesian and a Jersey cow, both of which calved during the year. Children can see how the cows are milked, and the milk is used for feeding other animals in the Zoo. Many Dorset Down lambs were born in another new farm exhibit, and Gloucester Old Spot pigs were also exhibited.

In April, the Polar Bear 'Paddiwack' was sent to Alexandria Zoo, while a male Eland went to Cairo. In May, a male Puma born at Regent's Park was also sent to Alexandria. In August, the Polar Bear 'Sam', father of 'Paddiwack' and two other cubs, was sent to Munich Zoo, to join a group of females in their new Polar exhibit. 'Sam' had attacked 'Sally' his mate earlier in the year and she subsequently died. The two Polar Bears now at Regent's Park are the younger 'Pipaluk' and 'Sabrina', both zoo-born animals.

As reported earlier, animals from the old Lion House were moved into their new quarters before Christmas. The new Exhibit has been designed to house fewer species than have been kept in the past in the Lion House. This accords with the Society's policy, which was also followed when the Sobell Pavilions were built, of exhibiting only species which can be kept in conditions conducive to breeding, and in numbers sufficient to make up proper social groups.

Lion, Tiger, Jaguar, Leopard, Cheetah, Lynx (the northern species and eventually Caracal Lynx) and Serval Cat, are the species which will be kept. Although the number of species will be fewer than in the past, there will be more animals of each species. This trend is followed in most of the major zoos of the world, and reflects not only care in putting together breeding groups but also a concern not to have endangered species in the Collection if there is no prospect of breeding them. The figures, shown below, reveal the small but steady reduction in the number of species kept at Regent's Park over the last 15 years, and the increase in the average number of specimens of each species exhibited:

<i>Year</i>	<i>Mammals</i>	<i>Birds</i>
	<i>Species/Specimens</i>	<i>Species/Specimens</i>
1960	290/707	673/1433
1965	244/850	630/1445
1970	225/809	569/1356
1975	187/825	457/1167

#### *Bird Section*

The pair of Jackson's Hornbill, which came to the Zoo in 1973 and successfully reared the first captive young in 1974, produced three more youngsters in 1975. Two hatched in June, and one in September. Fortunately, we were able to acquire an unrelated male to join the young female reared in 1974. Other notable species which were bred include Sarus Crane, Grey-headed Gull, Sacred Ibis, Kookaburra, Oystercatcher, Abyssinian Spotted Eagle Owl, Snowy Owl and a hybrid Scarlet × Purple-capped Lory.

The stock in the Bird House has been reorganized following the completion of the renovation of the bird cages. In the new indoor aviaries there are now potential breeding pairs, including Laminated Hill Toucans, Splended Fairy Wrens, and a number of barbet species. The Southern Aviary has also been reorganized to contain mainly aquatic birds, including a colony of Rockhopper Penguins. Free flying ducks and some welcome additions to the Cattle Egret colony have been introduced into the Snowdon Aviary.



It has been decided to keep the Flamingos in what are hoped will be breeding groups, rather than in mixed species groups. Accordingly, Chilean and Lesser Flamingos will be kept at Regent's Park, and other species, or sub-species, at Whipsnade.

Species new to the Collection were Yellow-ridged Toucan *Ramphastos culminatus*, Black-billed Barbet *Lybius guifsobalito*, Spotted-flanked Barbet *Tricholaema lacrymosum* and Sharpe's Starling *Cinnyricinclus sharpii*. Other arrivals of particular note include Javan Fish Owls, Bengalese Eagle Owls, a Spectacled Owl (on breeding loan from Jersey Zoo), Banded Pittas, Severe Macaws, Black and White Casqued Hornbills. One of the most exciting and interesting gifts was two Nduk Eagle Owls, which is one of the rarest of all owls, both being picked up as abandoned fledglings in Tanzania. They have settled down well in their new surroundings and have joined the singleton Nduk, which was presented in 1971.

One of the oldest birds in the Collection, a Rose-crested Cockatoo, died in April, having been with us for 45 years. A sad loss also was the male Congo Peafowl which had been deposited by Antwerp Zoo. It had been a difficult individual, and had never accepted the female which has been sent to Jersey Zoo to join their breeding group.

Once again, through the generosity and organization of the Director and staff of the Zoological Gardens, Perth, Australia, we have received valuable additions to the Collection. These include Black-winged Stilts, Brush Bronze-wing Pigeons, Western Long-billed Corellas, Boobook Owls and White-plumed Honeyeaters.

#### Aquarium

The staff have carried out several fishing trips off the coast of the English Channel, and have caught a number of Pout, Sea Bream, Conger Eels, Grey Mullet, Sand-eels, Lobsters and Edible Crabs.

Other acquisitions included an Arapaima, several Piranhas, an Australian Lungfish, a large African Lungfish, an Electric Eel, two Marbled Salamanders from Maryland, U.S.A. which have not been represented in the Collection since 1936, and a number of *Ameca splendens*, a live-bearing fish only described in 1971.

New display tanks for tropical freshwater fishes, designed by the staff, have greatly improved the quality of the exhibits, and have also provided better conditions for the fishes. A number of sea-water tanks are being repaired or redecorated.

#### Insect House

Breeding successes included Chafer Beetles (*Pachnoda nachtigali*) from the Congo, Milkweed Butterflies (*Danaus plexippus*) from the U.S.A., Scorpions (*Centuroides* sp) from Costa Rica, Bird-eating Spiders (*Avicularia avicularia*) from Guyana, and no fewer than three species of *Latrodectus* – relatives of the Black Widow Spider.

The Stick-insect exhibit continues to attract considerable interest. Some 15 different species from Europe, North America, South-east Asia and Australia are on display, and the majority are breeding continuously.

#### Reptile House

Alterations have been made to the heating installation in the Giant Tortoise enclosure, to allow a more efficient control of temperature. Provision has also been made for heating panels along the east service passage. A prototype reptile exhibition cage is now being tested.

Sixteen Boipevussu snakes hatched on the 16th April, after an incubation period of 63 days. This is the fourth time this species has bred in recent years. A Thailand Water Lizard (*Physignathus concinnus*) laid six eggs on the 26th January.

A large female Reticulated Python had a Caesarean operation during the month of April. Earlier she had laid, and started to incubate, some 40 eggs, but later came off the eggs, and an X-ray showed that she was egg-bound. The Veterinary Officer successfully removed a further 36 eggs, and she started to feed again soon after the operation. None of the eggs hatched. Other acquisitions included two large African Spurred Tortoises (*Geochelone sulcata*) from the Sudan, a species last exhibited in the Gardens 35 years ago.



## Veterinary and Pathology Reports

During the year 260 animals from the Collection received attention. In addition 144 animals, referred by Veterinary Surgeons in practice or by research institutes, were examined and treated. The general health of the Collection remained good and there were no serious infections.

New additions to the Collection continue to be examined clinically, particularly for evidence of nutritional deficiencies and the carriage of infectious agents and parasites. Any problems encountered can then be solved in the Hospital before animals are exhibited. Animals such as primates and reptiles, which are known to be especially prone to nutritional deficiencies, are regularly examined and their nutrient status is monitored.

Post-mortem examinations are carried out on all animals dying in the Collection and on those received from outside sources, and 791 necropsies were made during the year. Full reports of the work of the Hospital, the post-mortem examinations and the research carried out in the Hospital and the Pathology Department, including the Fish Pathology Unit, will be given in the Society's biennial Scientific Report.

Visiting workers have included Dr K. C. Sherman (US Department of Agriculture), Mr T. J. V. Mather and Mr E. P. Finnie (Australia).



# Whipsnade Park

Visitors during the year 453,000  
Cars brought into the Park 45,000

## General

There were no major building developments during the year, but a good deal of construction and maintenance work, chiefly the fencing and landscaping needed to complete the new African and Asian regional exhibits, was carried out. Following the extension of the light railway, a new lake in Round Close paddock was completed. The maintenance of the many new buildings and exhibits developed at Whipsnade in the last few years, including complicated installations such as the Water Mammals Exhibit, has stretched the relatively small Works staff to the limit, particularly as much out-of-doors work on items such as fences, roads and water-lines has often to be undertaken in very unpleasant weather.

The glass domes of the four stables forming the Elephant House, one of the well-known works of the architect Lubetkin, and built in 1935, began to show signs of deterioration. New reinforced plastic domes were designed and ordered during the year. For security reasons temporary roofs were placed on three of the stables late in the year in order to cope with any further sudden deteriorations during the winter, when the elephants spend more time indoors.

A plan to modernize the electrical installations in the Works area, a section of the Park which has had to be somewhat neglected as improvements to the exhibits and basic services went on, was drawn up during the year, and the equipment ordered for installation in 1976.

The railway run by Pleasurerail Ltd. had a satisfactory year from the operational point of view, but the number of passengers carried was lower than the previous year, reflecting the smaller number of visitors to Whipsnade.

In March, an 1897 vintage railway engine and passenger coach which had been in use until 1974 on a logging railway in Zambia, were imported by the wildlife artist and railway enthusiast, Mr David Shepherd. The Society is glad to have this equipment on display in the railway 'depot' at Whipsnade until it can be transferred to Mr Shepherd's railway museum.

## The Collection

It is normal to expect good breeding results at Whipsnade, including rare as well as more common species, and 1975 was no exception. Sumatran Tigers, a Pygmy Hippo, more Cheetahs, as well as the usual herd animals, were successfully reared. This year, however, special note must be made of successes with various bird species.

A Manchurian Crane was hatched from an egg which was incubated, and the chick raised by a Bantam hen. This is the first time for many years that this endangered species has been bred in the Collection, and indeed in Britain. It was a particularly fortunate event because some eggs laid by the parent birds, which were left in the nest in Lay Meadow to hatch out naturally, were stolen.

Two King Penguin eggs were found in the water in the Penguin Pool, having been cared for by the parent birds for 45 and 42 days respectively, and to within a few days of term. They were immediately put into an incubator and both hatched out a few days later. One chick died but the other has been reared successfully by the staff. This must be one of the few cases, if not the only case, of successful artificial rearing of a King Penguin.

Two Ostriches were also hatched out in an incubator from eggs provided by Marwell Park, after having been under a cock Rhea for 51 of the full 54 days. Unfortunately, the chicks only survived for a few weeks despite the efforts of the staff.

Flamingos were also bred during the year. There was one Rosy and, for the first time in the Collection, three Chilean Flamingos. These were the successful survivors of six eggs which were laid comparatively late in the season. They were the first eggs of this species to have been laid at Whipsnade.



These successes could have been greater if, as noted above, there had not been some thefts of other eggs, in particular a most unfortunate occasion when in the early morning of 1st June, a King Penguin egg, two Humboldt's Penguin eggs, two Manchurian Crane eggs and 10 Rosy Flamingo eggs were stolen. Many precautions had been taken to prevent this form of vandalism, but it is impossible in an area as large as Whipsnade to protect all the breeding areas all the time. The thieves were never discovered by the Police.

During the year, Bristol Zoo deposited Wattled, Lesser Sandhill and Hooded Cranes at Whipsnade. Whipsnade is well suited to the breeding of cranes, and it is hoped to exploit this facility in the interests of conservation. Apart from the species from Bristol, there are also Manchurian Cranes, as well as White-naped, Sarus, Stanley, Demoiselle, Crowned and Common Cranes at Whipsnade.

In the Mammal Collection, one of the notable achievements of the year was the birth of a Pygmy Hippo, the first at Whipsnade since 1963, and the offspring of parents who were both born in zoos. A family of five Common Hippos, consisting of father, two mothers and two young born in 1974, were put together in the large Hippo Pond as a group and made an exceptionally attractive exhibit. The two young animals were transferred to Dublin Zoo in November.

Two litters of Sumatran Tigers, totalling six cubs, were born during the year. The successful breeding of tigers in zoos all over the world, including rare sub-species such as the Sumatran, means that wild stocks need no longer be used as a source of animals for zoos. It also means that it is increasingly difficult to dispose of surpluses since the number of zoos suitably equipped to keep these valuable animals is limited. Two of the Whipsnade tigers have been sent to Regent's Park as stock for the new Large Cat Exhibit.

There were no White Rhino births in 1975, but some of the adult males were deposited in other zoos since, with the extraordinarily high ratio of males to females in the young born at Whipsnade, there were too many male adults in the group. Two animals went to Glasgow and one to Leningrad Zoo.

Another litter of Cheetahs was born on 28th May to the Whipsnade born 'Jiffie' and the male born in Montpellier Zoo, thus bringing the number of Cheetahs born at Whipsnade to parents themselves born in zoos, to 11. As far as is known these are still the only true second-generation captive-born Cheetahs anywhere in the world.

Two giraffes were born; one died soon after birth but the other, which had to be hand-reared, is thriving. The most noteworthy among the long list of other successful births were Père David's Deer, Reindeer, Przewalski's Horse, Sitatunga, Barasingha, Mountain Zebra, European Bison, Onager, Serval and Red Panda.

The male Indian Rhino, 'Manik', which was born at Whipsnade in 1960 and one of the first of this species to be born in captivity outside India, died in April. This leaves at Whipsnade only the young female received from Delhi Zoo at the beginning of 1973, but it is hoped that another male may be obtained from a European Zoo, at least on loan for a short period.

The rearrangement of herds into geographical groupings continued slowly during the year, the main task being the concentration of Asian temperate species in the new Asian Exhibit in the former Spicer's Field. Bactrian Camels, Yak, Père David's Deer and Przewalski's Horses were moved there, while all the zebras were concentrated in the 'African Plains' area.

#### Veterinary Report

The general standard of health of the Collection remained high, although long wet periods during the early part of the year caused higher losses than usual in some groups, such as the Hog Deer and Bennett's Wallabies.

Accidents and injuries accounted for a large number of clinical cases and deaths. Digestive and metabolic disturbances in some of the ruminant species remain one of



Whipsnade's major clinical problems. These illnesses involve those species, such as the European Bison and Moose, which, in the wild, are chiefly browsers rather than grazers. It is probable that conventional diets designed for domestic stock are not adequate for such species, and the problem is being investigated.

Following the mild wet winter, endoparasite egg numbers in the faeces rose markedly in some ruminants, but the dry summer reversed this trend.

Details of the veterinary work at Whipsnade, including the results of post-mortem examinations, are given in the Scientific Report.

#### Animals of all kinds (except fishes and invertebrates) in the Collections

##### London Zoo

	<i>In the Collection on 1 January 1975</i>	<i>Received in 1975 by presentation, exchange, deposit, purchase and transfer from Whipsnade</i>	<i>Born and hatched in the Collection in 1975</i>	<i>Died, sold, exchanged, returned to depositors and transferred to Whipsnade</i>	<i>In the Collection on 31 December 1975</i>
Mammals	886	63	353	477	825
Birds	1,088	262	123	306	1,167
Reptiles and Amphibians	580	150	23	194	559
	2,554	475	499	977	2,551

*Estimated number of fishes and invertebrates in the Collection at 31 December 1975*

Fishes 3,331 Invertebrates (excluding locusts, ants and bees) 3,159

##### Whipsnade Park

	<i>In the Collection on 1 January 1975</i>	<i>Received in 1975 by presentation, exchange, deposit, purchase and transfer from Regent's Park</i>	<i>Born and hatched in the Park in 1975</i>	<i>Died, sold, exchanged, returned to depositors and transferred to Regent's Park</i>	<i>In the Collection on 31 December 1975</i>
Mammals	942	22	387	417	934
Birds	1,111	60	122	205	1,088
Reptiles	10	4	—	2	12
	2,063	86	509	624	2,034



# Scientific Activities

## Scientific Meetings

Many of the papers given at the eight meetings held during the year have been published in the *Journal of Zoology*. Other contributions included papers by: Dr J. N. Brady (one of the Society's Scientific Medallists for 1973) on 'Biological clocks in insects: their wider relevance'; Dr R. Baker on 'Droughts and deserts: causes or effects'; Dr M. A. Crawford on 'Biological adaptations of large herbivores - the potential for new domestic species'; Mr D. G. Applin on 'The neuroendocrine system and egg development in the fly *Lucilia sericata*'; Professor D. B. Wake on 'Adaptive radiation of tropical salamanders'; Mr C. C. Doncaster on 'Feeding of the stem nematode, *Ditylenchus dipsaci* on field beans, *Vicia faba*'; Dr. R. M. Laws on 'Seals and whales of the Southern Ocean'; Professor D. P. Boshier and Professor R. J. Harrison on 'Deep diving in marine mammals'; Dr Christine Hawkey and Mr P. Wallace on 'Aids to feeding in vampire bats', and Dr N. Marsh on 'The spectacled caiman (*Caiman crocodilus*), some observations on its natural history and haematology'.

## Symposia

The following Symposia were held: 10th/11th April 'The biology of cephalopods' organized by Dr Marion Nixon and Dr J. B. Messenger, in honour of Professor J. Z. Young. 30th/31st October 'Comparative biology of skin' organized by Dr R. I. C. Spearman.

## Publications

### *Journal of Zoology*

### *Transactions of the Zoological Society of London*

### *Symposia of the Zoological Society of London*

### *Nomenclator Zoologicus*

*Editor*: H. Gwynne Vevers, MBE, DPhil, FLS, FIBiol

*Assistant Editor*: Marcia A. Edwards, PhD, FLS

*Editorial Assistant*: L. G. Ellis

*Administrative Assistant*: Unity M. M. McDonnell, MA

*Journal of Zoology* Volumes 175, 176 and 177, containing 106 papers, were published. Council again wishes to thank the referees who so generously give their time to assess the papers submitted.

*Transactions* One part was published: Volume 33 part 1 'The chaetotaxy of the pedipalps and legs of some larval ticks (Acari: Argasidae)' by Marcia A. Edwards.

*Symposia* Three volumes were published: No. 35 'Avian physiology' edited by Dr Malcolm Peaker; No. 36 'Protochordates' edited by Professor E. J. W. Barrington and Dr R. P. S. Jefferies, and No. 37 'Sound reception in mammals' edited by Dr R. J. Bench, Dr Ade Pye and Professor J. D. Pye.

*Nomenclator Zoologicus* Volume 7 was published and contains details of new generic and subgeneric names published during the period 1956 to 1965.

## Zoological Record

*Managing Recorder*: Michael N. Dadd, BSc, FLS, AInfSci

*Systems Analyst*: Stuart J. Rammell, BSc

*Senior Recorders*: Judith M. Howcroft, BSc and Angela C. Milner, BSc

Volume 107 (1970 literature): the publication of Section 20 (List of New Genera and Subgenera) completed this volume.

Volume 108 (1971 literature): all Sections of this volume, except Section 20, were published. The Pisces Section, forming the 1971 volume of the *Dean Bibliography of Fishes* and compiled by Dr J. W. Atz of the American Museum of Natural History in New York, was the first section to be published using the new computer-assisted system.



Volume 109 (1972 literature): the indexing of this volume was completed and six sections are awaiting publication.

Volume 110 (1973 literature): the indexing of this volume was also completed and the 'keying' of the data for the first group of sections is well under way.

Volume 111 (1974 literature): the indexing for the non-arthropod sections was started.

The Council is grateful to the Director and staff of the British Museum (Natural History), and to the Board of the British Library and the Director-General of its Lending Division, for the provision of accommodation and other assistance. Council is also grateful to the staff of the United Kingdom Chemical Information Service (a directorate of the Chemical Society) for much valuable advice in the development of the computer-assisted system, to the zoologists who continue to assist in the compilation of the *Record*, and to the Institutions (listed in Appendix 8) whose donations help to defray the very heavy expenses involved.

### International Zoo Yearbook

*Editor*: P. J. S. Olney, BSc, DipEd, FLS

*Advisory Editor*: H. Gwynne Vevers, MBE, DPhil, FLS, FIBiol

Volume 16 of the *International Zoo Yearbook* is divided into three sections. Professor A. T. Phillipson, of the Department of Clinical Veterinary Medicine at the University of Cambridge, is the Consultant Editor for Section 1 'Principles of zoo animal feeding'. The thirteen articles in this section cover various aspects of feeding mammals and birds. They include two papers, one from the United Kingdom and one from the United States, by manufacturers of prepared diets, giving background information on the principles applied in the preparation of commercially available foods. The other papers include valuable observations on foods and feeding behaviour in waterfowl, insectivorous birds, edentates, dolphins and ungulates. There are brief reports on animal nutrition research, and practical advice on raising invertebrates as a source of animal food, and on hydroponic culture.

There are 63 papers in Section 2 which, in addition to the usual sub-divisions on Breeding, Husbandry, Hand-rearing, Building and Exhibits, and Conservation, contains a short specially commissioned section on Domestic animals, in place of the usual Education section. These six papers discuss the case for keeping domestic animals in zoos, farm parks and children's zoos and the necessity for preserving rare breeds.

The reference section includes the list of zoos and aquaria of the world; annual lists of numbers and species of vertebrates bred (with particular note of births to captive-born parents); a census of rare animals in captivity in 1974, and the list of studbooks for rare or endangered species in captivity.

### Library

The Library continued to provide a lending and information service to members of the Society and its staff. Considerable use was made of the archives in preparation for the sesquicentennial year in 1976, and there was good progress with the printing and cataloguing of the collection of photographic archives. An appeal was made to Fellows for any photographs, documents, or other materials bearing on the history of the Society which could be added to the archive collection.



# Research

Scientific research has been carried out at the Zoo in Regent's Park for the past 150 years. Observations made by many distinguished anatomists, taxonomists, pathologists, veterinarians and students of animal behaviour have contributed greatly to the advancement of zoology and animal physiology, which was the objective of the Founders of the Society and the declared purpose of its Charter.

During the past 20 years, a modern Animal Hospital and Research Institutes have been built and have extended the scope of the Society's scientific work. The laboratories provide modern, sophisticated equipment and studies are in progress on problems of fertility and reproduction, nutrition, pathology and infectious disease. The information obtained has helped to improve diets, husbandry and breeding techniques, and the prevention, diagnosis and treatment of disease in the animals in the Collections at Regent's Park and Whipsnade. Comparative studies have increased our knowledge of the physiology and the patterns of health and disease in wildlife, domestic animals and man.

The information has been made freely available to all who have the care of animals in captivity.

## Nuffield Institute of Comparative Medicine *Haematology*

Dr Christine Hawkey has published a book on *Comparative Mammalian Haematology*; it contains a series of Tables giving blood counts, coagulation and fibrinolytic data collected over 8 years for more than 1,100 animals of 165 different species. It will be invaluable to all those concerned with the health of mammals, as it is important to know that although the normal red cell count for a man is 5 million/mm<sup>3</sup>, that for a lion is 7 million, a llama 12 million and an elephant 3 million.

These studies have brought many interesting facts to light. The round red cells of Genets, deer and mongooses become sickle-shaped soon after blood is drawn. This change resembles that in an inheritable human disease, sickle-cell anaemia, in which the cells contain an unusual form of haemoglobin which tends to collect into long stacks of molecules and thus distort the cell.

Clotting mechanisms also differ between animal species. Differences are found in the structure of the glycoprotein molecules that cover the surface of blood platelets and provide the 'stickiness' that causes them to aggregate and repair injuries to blood vessels. Mr A. Nurden has made notable advances in the study of human platelet glycoproteins and shown that abnormalities cause a clotting defect. Some of his work has been carried out in Paris, where he will shortly be going to take up a new research appointment.

## *Nutrition*

Herbivores build their bodies from vegetable foods. The long-chain, unsaturated fats they need for the formation of cell membranes, notably those of the brain, are built from the shorter linoleic and linolenic acids in the food. Carnivores and omnivores obtain their long-chain lipids ready-made from the bodies of the animals they eat. Dr M. A. Crawford and his colleagues have been studying lipid requirements, especially during pregnancy and lactation when there is a heavy demand for long-chain compounds for the development of the foetal brain. Mr A. G. Hassam and Mr J. P. W. Rivers have found that the rate at which the essential long-chain compounds can be made in the body is slow, and depends on a desaturase enzyme. This enzyme is absent altogether from cats, which are entirely dependent on dietary sources, and cease to come into oestrus or to breed if the long-chain lipids are absent from the food supplied. The effect of diet on lipid constitution of milk is being investigated by Mrs Barbara Hall.

Studies are also in progress on the fat-soluble vitamins A and D. It is not easy to ensure an ideal daily intake of vitamin A, as the requirements of different species appear to vary and there is a danger of under- or over-dosage. Vitamin D is necessary for the absorption of calcium and therefore for healthy bone formation. Dr A. W. M. Hay, collaborating with research workers at the Dunn Nutritional Laboratory, Cambridge,



has studied the way the vitamin and its active metabolite are transported by serum proteins, and has found evidence of an interesting evolutionary pattern.

### *Infectious Diseases*

In 1969 some waterfowl died in St. James's Park in London, and were sent to the Society's laboratories for investigation. They were shown to have died from botulism, caused by toxin produced by an anaerobic soil bacillus, *Clostridium botulinum*. This disease, which has been responsible for the death of millions of wildfowl in recent years, breaks out after flooding or when drought has exposed areas of mud. Dr G. R. Smith and his colleagues have studied the distribution of the organism in lakes and ponds in the London area and found it to be very common. Surveys were also made in several British wildfowl reserves during the dry summer of 1975, when outbreaks of the disease occurred. Dr Smith also visited the Coto Doñana and Camargue reserves to take mud samples for analysis. It is hoped that this study will help to explain how outbreaks of the disease begin and spread and, therefore, indicate ways in which epidemics could be prevented or controlled. This work, which provides invaluable scientific backing for the solution of conservation problems, is the kind of service that the Society's laboratories are ideally equipped to provide.

A new serological technique, developed by Dr A. Voller, Dr D. E. Bidwell and Dr Ann Bartlett, will greatly assist epidemiological surveys of human and animal disease. The test, an enzyme-linked immune-sorbent assay (ELISA), is able to detect and measure a wide variety of antibodies and antigens. It is an objective, colorimetric determination that can be automated, and will greatly simplify routine serology.

Mr P. K. C. Austwick's work on fungal infections has continued. Mrs Vija Dent has begun a new comparative study, in collaboration with the Dental Department of the London Hospital Medical School, on the microbiology of dental plaque in various animals in captivity.

### *Radiology*

The X-ray Museum now contains radiographs of more than 5,000 animals, the most recent additions being a selection of birds. Professor G. H. du Boulay has continued his work on the cerebral circulation, and is now collaborating with Dr D. J. Boullin of the MRC Clinical Pharmacology Unit at the Radcliffe Infirmary, Oxford, on the changes that occur in damaged arteries in the brain. The results of this work have already led to improvements in the management of patients with head injuries.

Radiographic studies have also been made on the anatomy of the blood supply to the skin, in relation to techniques used in plastic surgery.

### **Wellcome Institute of Comparative Physiology**

Studies of the reproductive physiology of animals in the wild and in captivity are an essential part of conservation. Dr R. D. Martin, who joined the staff in 1974, brought three postgraduate research workers with him from University College London. Field and laboratory studies were completed on cercopithecine monkeys (Miss June Rollinson), the Tana River Mangabey (Miss Katherine Homewood) and reproduction in Mouse Lemurs (Miss Angela Glatston). Miss Rollinson was awarded a PhD degree. A fourth student, Mr J. I. Pollock, also successfully presented a PhD thesis, on the Indri in Madagascar.

Dr Martin investigated the behaviour and ecology of the Lesser Bushbaby (*Galago senegalensis*) in the N. Transvaal, South Africa and, earlier in the year, spent three months as Visiting Professor of Physical Anthropology at Yale University, USA.

### *Breeding Colonies*

The optimum conditions for keeping animals in captivity so that they live and breed free from unnatural stress, vary greatly from one species to another. The requirements of several breeding colonies, Mouse Lemurs (*Microcebus murinus*) and tree shrews (*Tupaia minor*, *T. belangeri* and *Lyonogale tana*), all of which react to small changes in the environment, are being studied.



In addition, about 40 Owl Monkeys (*Aotus trivirgatus*) have been collected to establish a breeding colony of this important species. Mrs Frances D'Souza, working with tree shrews, has followed oestrous cycles by means of vaginal smears, and has found that cyclical changes continue during pregnancy. Studies of the unique 48-hour suckling pattern of tree shrews show that there are separate timing mechanisms in mother and offspring for synchronization of suckling visits, and that the timing of the mother's behaviour can be accelerated by giving a high-calorie diet.

#### *Artificial Insemination*

Advances have been made in the technique of artificial insemination in captive wild animals. Dr P. F. Watson continued his studies of sperm storage and ultrastructure after freezing and, together with the Veterinary Officer and the Keeper staff, attempts were made to discover the timing of the oestrous cycle of an adult female African elephant ('Toto') in the Collection. The 'ferning' patterns of urogenital mucus (Dr Watson), and the cell patterns of smears (Mrs D'Souza), assessed with the aid of an ingenious computer programme designed by Dr B. Seaton, gave evidence of a 16-day cycle. Accordingly, insemination with sperm collected in S. Africa by Dr R. C. Jones in 1972, was begun at the end of April. Dr Watson's work has been continued by Mr P. McMullin, and the outcome of this first attempt at artificial insemination in the African elephant is awaited with interest.

Dr Martin collected valuable material from female elephants in the Kruger National Park, and histological studies are in progress. Mr W. V. Holt also visited S. Africa as a guest of the Mammal Research Institute, Pretoria, to collect male reproductive tissues for histological, histochemical and electron microscope studies.

#### *Hormones*

Dr B. Seaton continued the development and application of radio-immunoassay technique for steroid hormones in blood and urine samples from the African Elephant, Gorillas and Casiraguas. A rapid procedure was established to permit determination of creatinine levels for standardization of urinary hormone levels, and it was demonstrated that there have been no significant variations in urinary oestrogen levels of the African elephant either during oestrous cycles prior to insemination or following insemination. It was confirmed that the pattern of oestrogen excretion in the female Lowland Gorilla during pregnancy is similar to that found in the human female.

#### *Curator's Departments*

Dr H. G. Vevers, in collaboration with Dr G. Y. Kennedy of the Cancer Research Laboratory, University of Sheffield, has continued his work on animal pigments, and Mr P. J. Olney is still engaged on the edition of *Birds of the Western Palearctic*. In January, in addition to his responsibilities as Curator of Birds, Mr Olney took on the Editorship of the *International Zoo Yearbook*.

Dr M. R. Brambell has provided facilities to several visiting workers during the year. Dr Margaret Redshaw from the Department of Psychiatry, University College London, has been studying the development of hand function in young great apes; Dr Marjorie Elias from the Department of Nutrition, Harvard University, has been observing the development of mother-infant relationships in Orang-utans; Dr R. V. Short, FRS, from the MRC Unit of Reproductive Biology in Edinburgh (and a member of Council) and Dr W. R. Allen from the ARC Department of Reproductive Physiology and Biochemistry, Cambridge, have made further studies on the genetic relationship of Przewalski's horse and the domestic horse.

#### *Report*

A comprehensive report of the research carried out by the Society is published biennially in the *Journal of Zoology* and only an outline is given in this general report. A report covering the period 1973 to 1975 will be published in April 1976.

The papers published during the year by members of the staff and by research workers are given in Appendix 4.



## Staff

### *The Nuffield Institute of Comparative Medicine :*

*Director :* L. G. Goodwin, MB, BS, FRCP, BPharm, BSc, FIBiol.

*Heads of Departments :* *Biochemistry :* M. A. Crawford, PhD; *Infectious Diseases :* G. R. Smith, PhD, MRCVS, DVSM, DipBact; *Haematology Section :* Christine M. Hawkey, PhD;

*Research Assistants :* *Infectious Diseases :* Ann Bartlett, PhD; D. E. Bidwell, PhD; *Haematology :* P. D. Butcher, MIBiol; *Laboratory Superintendent :* P. R. E. Wallace, FIST.

*Administrative Assistant :* Patricia E. Wright. *Research Fellows :* P. K. C. Austwick, BSc; G. H. du Boulay, MB, BS, FRCP, FFR; Vija E. Dent, BSc; Jennifer M. Graham, PhD; Barbara Hall, BSc; A. G. Hassam, BSc; A. W. M. Hay, PhD; A. T. Nurden, BSc; Janet M. Oxberry, MPhil; J. P. W. Rivers, BSc; A. Voller, PhD, DSc.

Mrs Janet M. Oxberry joined the staff to work on dietary lipids. Mr P. D. Butcher obtained his MIBiol qualification, and was given a research grant for studies on sickle cells. Dr A. Voller was awarded the Chalmers Medal of the Royal Society of Tropical Medicine and Hygiene for 1974, and Dr L. G. Goodwin was awarded the Gold Medal of the Worshipful Society of Apothecaries, for his outstanding contributions in the field of pharmacology and chemotherapy. Dr G. H. du Boulay was appointed Professor of Neuroradiology at the National Hospital, Queen Square.

### *The Wellcome Institute of Comparative Medicine :*

*Senior Research Fellow :* R. D. Martin, DPhil. *Research Fellows :* P. F. Watson, PhD, BVetMed, MRCVS; B. Seaton, DPhil; Frances D'Souza, BSc. *Visiting Research Fellow :* D. R. Patil, PhD. *Research Assistant :* P. McMullin, MVB, MRCVS. *Research Students :* Angela Glatston, BSc; Katherine Homewood, BA; June Rollinson, PhD; J. I. Pollock, PhD; B. Rudder, BSc. *Chief Technician :* G. F. Nevill, HNC.

Dr P. F. Watson left the Institute to take up a lectureship at the Royal Veterinary College, and his duties were taken over by Mr P. McMullin. Dr D. R. Patil returned to the University of Nagpur, and Mr B. Rudder joined the staff in October to begin a study of primate reproduction. Mr W. V. Holt obtained the MIBiol qualification.

*Visitors who worked at the Institutes during the year included :* Mr S. Dean (Royal Veterinary College); Mr A. E. Munhambo (Dar-es-Salaam); Dr M. Madwar (Egypt); Dr G. Edrissian (Iran); Dr J. Falieros (Brazil); Dr M. Puni (Ghana); Mr Ade Siguade (Nigeria); Mr John McArdle (USA) and Mr Haywah Banna (Iran).



# Educational Activities

## Educational Programme for Schools

In order to meet increasing costs, the charges made to school parties had to be raised. Although essential, these increases, coming at a time when Local Educational Authorities and schools are themselves operating on stringently controlled budgets, have resulted in a fall in attendances of over 5 per cent during 1975. However, attendances rose slightly towards the end of the year, and advance bookings for 1976 show a continuation of this trend. The number of pupils attending were:

Regent's Park:	Spring Term (Secondary Schools)	18,188
	Summer Term (Primary Schools)	17,194
	Autumn Term (Secondary Schools)	17,219
<hr/>		
Whipsnade Park:	Summer Term (Secondary Schools)	4,230
<hr/>		
		56,831

As mentioned earlier, in August the Education Department took possession of the new education building, designed by Casson, Conder and Partners, and situated in the north-west corner of the Gardens. It is called the Zoo Centre, and adjoins the Inner London Education Authority's new teachers' centre, the Centre for Life Studies, which was completed at the same time. Together these buildings form the Zoo Study Centres, and provide educational facilities for both teachers and their pupils which are unrivalled by those of any other zoo in the world. The Zoo Centre, built with the aid of a generous grant from the Wolfson Foundation, contains two lecture theatres each with 100 seats, another with 60 seats, a classroom, a seminar room, dark-room and audio-workshop, together with offices. It has its own traffic-free entrance, accessible both from the Outer Circle of Regent's Park and Prince Albert Road. The full potential of the Zoo Centre can be exploited only gradually. Already tape-slide lectures prepared by the Society's teaching staff, and for which the two larger lecture theatres are equipped, are meeting with the approval of teachers and their pupils. There is a great deal of co-operation between the Society's staff and the staff of the Centre for Life Studies. The Council is most grateful to the Inner London Education Authority for their help with the furnishing of the centre.

## Other Courses

A Symposium for Sixth Form Pupils, on 'Natural History of Variation' chaired by Professor R. J. Berry, was held during January, and a short course for university students was held during the Easter vacation. The Council is grateful to the distinguished zoologists who made these occasions possible.

The teaching staff gave special lectures or demonstrations to students from: University College, Cardiff; Queen Mary College, University of London; All Saints College of Education; Avery Hill College of Education; Dartford College of Education; Digby Stuart College of Education; Goldsmiths' College; Philippa Fawcett College of Education; Acton Technical College; Derby College of Art and Technology; Paddington Technical College; Hendon College of Further Education; Henley College of Further Education; Hitchin College of Further Education; Mid-Herts College of Further Education; Orpington College of Further Education; Education Department, British Museum (Natural History).

## Christmas Lectures

Three well-attended meetings were held immediately after Christmas for the children and young friends of Members of the Society. Mr John Newmark and Mr George Newmark gave an illustrated talk 'A present for the Zoo', the films 'In search of the Bowhead Whale' and 'Forest from the Dawn of Time' were shown, and members of the Society's staff conducted an 'At Home'.



**Young Zoologists'  
Club**

Although Club subscriptions were increased during the year, the number of members did not fall. Club activities included visits to Marwell Park and Twycross Zoo, and the headquarters of the Royal Society for the Protection of Birds at Sandy, Bedfordshire. Indoor meetings included film shows, a 'Question Time' and talks. 'Zoo Quests' were held at both Regent's Park and Whipsnade. Three editions of 'Zoo Magazine', the Club's journal, were published.



# General Matters

## Publicity

There was Press, radio and television coverage of interesting animal events at Regent's Park and Whipsnade, including the young Kudu, Giraffes and Black Bears at Regent's Park, and a Tiger, Kodiak Bears and a Pygmy Hippo at Whipsnade. The arrival of David Shepherd's vintage railway engine at the railway 'depot' at Whipsnade was also reported, following a BBC programme about the artist.

Films were made by the BBC and Anglia TV at Regent's Park and Whipsnade respectively, for transmission in 1976 as part of the Society's 150th Anniversary celebrations.

Photographs were added to the Society's extensive colour photographic library and a detailed photographic record was made of the old Lion House before demolition.

## Catering Department

The public and Members' Restaurants in the Regent Building were closed in January for redecoration and modernization. The Mappin Cafe, which for some time has been used as a lecture hall in the winter months, was reopened for the summer season as a cafeteria.

## Zoo Restaurants Ltd

*Regent's Park.* In common with other banqueting organizations in London, trading conditions were difficult in 1975, and only 125 functions were catered for, compared with 162 in the previous year. In August, a farewell party for the 800 delegates attending the Congress of the International Society of Haematology was held in the Gardens.

The four Open Evenings for Members and their guests were again well attended, and more than 350 Members dined on each occasion.

*Whipsnade.* The extension of the banqueting operation to Whipsnade Park has been reasonably successful, and 19 evening functions were catered for during the year, including a successful Open Evening in June, which 127 Members and their guests enjoyed.

## Zoo Enterprises Ltd

In November 1974, Zoo Enterprises Ltd was formed, as a wholly-owned subsidiary of Zoo Restaurants Ltd. The company undertakes the sale of toys, souvenirs and other items in the Zoo Shops, and all profits are covenanted to the Society. The trading results for the first year were satisfactory.

## Staff

At the end of the year the Society's permanent, full time staff totalled 501. A list of senior members is given in Appendix 3.

## Training

Twenty-four members of staff were successful in the final examinations for the Ordinary and Higher Certificates in Zoo Animal Management, distinctions being gained by Messrs C. B. Banks, D. Horn and M. J. Knapp (Ordinary Certificate), and by Messrs W. H. Hall, C. J. Mew, F. Wheeler and R. G. Wingate (Higher Certificate). The first prizes from the fund set up as a memorial to the late George Ashby were awarded to Messrs W. H. Hall and M. J. Knapp, who achieved the highest marks in the Higher and Ordinary Certificate examinations. A further series of courses, organized in conjunction with Paddington Technical College, started in September.

During the year, qualifications gained by technicians in the Nuffield Institute of Comparative Medicine included: Mrs C. Alderson and Mr B. Davidson (HNC in Applied Biology); Mr P. Butcher (MIBiol); Mr G. Watson (City and Guilds Science Laboratory Technicians Certificate) and Mr G. Williams (LIBiol). In the Pathology Department, Miss C. Carroll passed the final examinations of the Institute of Medical Laboratory Technicians and Mr S. Pugsley those for the Institute of Animal Technicians.

Following his completion of two years in-service training with the Society, Mr Abdullahi Yau returned to Kano Zoo, Nigeria, his place being taken by Mr Abdullahi Tanko of the same zoo.



## Awards

✓ Mr Jack Ward, formerly Gardens Executive, Regent's Park, was awarded the MBE in the New Year Honours List.

✓ The Society's Bronze Medal was awarded to Mr W. H. Gardner, Head Gardener, Regent's Park, and to Mr J. Lambden, Overseer of Mammals, Regent's Park, for long and meritorious service.

Gold watches were presented to the following staff who had completed 25 years' service: Miss E. Schmitz, Supervisor, Regent Restaurant; Mr G. A. Allen, Building Craftsman, Whipsnade; Mr C. C. Wheatley of the Gardening Department, Regent's Park; Mr P. C. Milne, Headkeeper, Whipsnade; Mr W. White, Senior Car Park Attendant, Whipsnade.

## Appointments and Promotions

Mr P. F. Couture, *Assistant Systems Analyst, Zoological Record*

Mr C. Garland, *Catering Manager (London and Whipsnade)*

✓ Mr D. M. Jones, *Senior Veterinary Officer*

Mr T. J. Law, *Head Gardener, Regent's Park*

✓ Mr B. V. Nutkins, *Assistant Gardens Executive, Regent's Park*

Mr S. J. Rammell, *Systems Analyst, Zoological Record*

Mr J. W. Secrett, *Assistant Accountant*

Mr B. D. S. Smith, *Assistant Senior Recorder, Zoological Record*

Mr C. C. Wheatley, *Assistant Head Gardener, Regent's Park*

Mr R. B. Willis, *Headkeeper, Clore Pavilion*

Mr R. H. Willis, *Assistant Accountant*

## Retirements and Resignations

✓ Retirements on pension during the year included Mr W. H. Gardner, Head Gardener, Regent's Park, after 40 years' service; Mr A. S. Paine, Chauffeur, Regent's Park and Mr R. A. Hanson, Main Office Housekeeper, both after 29 years' service; Miss E. Schmitz, Catering Department, and Mr W. White, Senior Car Park Attendant, Whipsnade, both after 25 years' service.

Resignations included Mr J. M. Hime, Veterinary Officer, who was appointed Home Office Inspector and Mr D. A. Clarke, Headkeeper, Clore Pavilion, who took up a senior post with the Royal Zoological Society of Scotland at Edinburgh Zoo.

## Obituary

It is with great regret that we record the deaths of Mr E. Bishop, Labour Relations Adviser since 1958; Mr J. S. Challis, Assistant Accountant; Mrs L. Wilson of the Catering Department, Regent's Park, and four pensioners, Mrs W. Todd, Mr R. Tully, Mr E. Rhodes and Mr G. Hughes.

## Acknowledgments

The Council records its gratitude for the invaluable assistance given by the members of the various committees, whose expert advice is of the greatest help in carrying through the work of the Society.

We are indebted to the many Fellows and others who have sent specimens for the Collection and who help us in so many ways, and to Senhor João de Freitas Martins of Madeira for his continued help.

The Council also gratefully acknowledges the assistance of the many scientists, veterinarians, departments, organizations and firms for their ready cooperation. We constantly receive help from the British Museum (Natural History) and are most grateful to all the staff including, Miss A. Grandison, Dr N. Arnold, Mrs Judith Marshall, Mr Andrew S. Stimson, Dr G. Corbet and Mr J. E. Hill; and to Dr Sumali, Director of Surabaja Zoo, Indonesia and to Dr Colin Holloway, IUCN, Morges for their help in identification of animals; Mr N. Whittaker of the RSPCA, London Airport, for the care of animals in transit and for the presentation of animals; Kew Gardens for the many splendid plants that decorate our tropical houses, and Cee Vee Engineering Company for so generously supplying snake-handling sticks; the Paddington Technical



College, in particular Mr S. F. Everiss and his colleagues of the Biological Sciences Department, for their cooperation in organizing the keepers' training courses; the Commanding Officer, Training Battalion, RAOC, for providing facilities for staff to practise the use of the emergency weapons; and the St John Ambulance Brigade for their constant help at the First Aid Centre, Regent's Park.

We also wish to record our thanks for help given to:

**The Veterinary Officer** by Miss G. Lewis and the staff of the chemical pathology laboratory, University College Hospital.

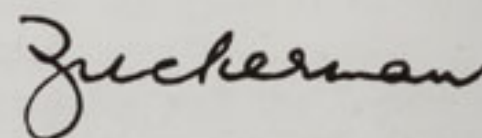
**The Pathologist** by Dr W. H. Allan, Dr E. S. Anderson, Dr E. C. Appleby, Dr P. Cavanagh, Dr H. P. Chu, Dr T. Clay, Mr J. E. Cooper, Dr G. A. Cullen, Dr E. Elkan, Dr R. Finlayson, Dr S. D. Gardner, Professor P. C. C. Garnham, Dr E. J. G. Glen-cross, Mr J. B. Kerry, Dr L. F. Khalil, Dr B. R. Laurence, Miss G. Lewis, Dr N. S. Mair, Dr E. Margoliash, Dr M. J. Mitchinson, Mr C. Moreby, Dr J. Riley, Dr B. Rowe, Professor G. B. D. Scott, Mr H. H. Skinner, Mr E. W. Trow, Dr L. H. Turner and Dr Sheila Wilmott.

**The Research Institutes** for financial support provided by the Ford Foundation, the Medical Research Council, the Wellcome Trust, the Royal Society, the World Health Organization, the Leverhulme Trust Fund, the Nuffield Foundation, the John S. Cohen Foundation, the British Heart Foundation, the Natural Environment Research Council, the Ministry of Overseas Development, the Central Research Fund (University of London), Reckitt and Colman, Unilever N.V. (Vlaadingen), Bio-Oils Research Ltd, the Multiple Sclerosis Action Group; and for donations received from the World Wildlife Fund, Allen and Hanburys, Imperial Chemical Industries, Pfizer (Sandwich), Merck Sharp and Dohme, Wellcome Foundation Ltd, Dynatec Ltd and the Marfleet Refining Co; and the many colleagues and friends who have provided research material.

**Supplies, Shipping and Transport Section** by the Department of Trade and Industry, Ministry of Agriculture, Fisheries and Food, HM Customs and Excise, Anglia Laboratory Animals, the Forestry Commission, Penllergaer, Swansea, the many people who have offered and sent Bamboo for the two Giant Pandas, and also Evergreen Oak for other animals. Air India, British Rail, British Airways, British Caledonian Airways, R. L. Dobbs Transport, Industrial Freight Ltd, KLM Royal Dutch Airlines, Lufthansa German Airways, Pan American World Airlines, Qantas Airways and the Union-Castle Mail Steamship Company.

**Whipsnade Park** by A. A. Joinery Co Ltd, Dr E. C. Appleby, Bayer Ltd, Dr P. Cavanagh, Industrial Freight Ltd, KLM Royal Dutch Airlines, Dr J. Lacey, Miss G. Lewis, Dr J. L. Linzell, Mr S. Litherland, Mr R. C. Matheson, Reckitt and Colman, Mr J. E. N. Sloan, Mr L. R. Thomsett, Transport Ferry Services at Felixstowe and the members of the British Red Cross Society who help to staff the First Aid Post.

Finally, the Council wishes to thank the press representatives and photographers for their cooperation and interest in the Collection.

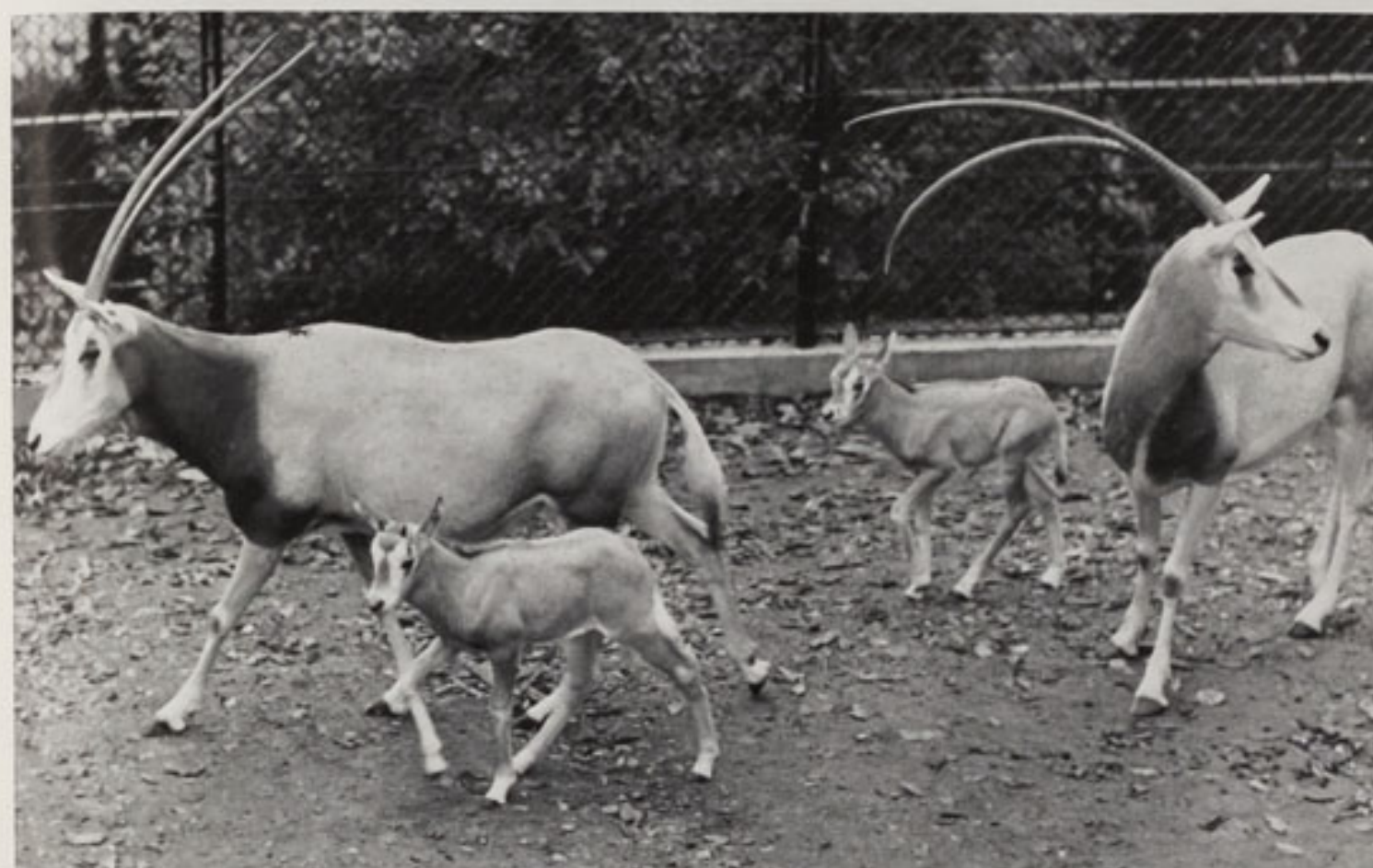


Secretary

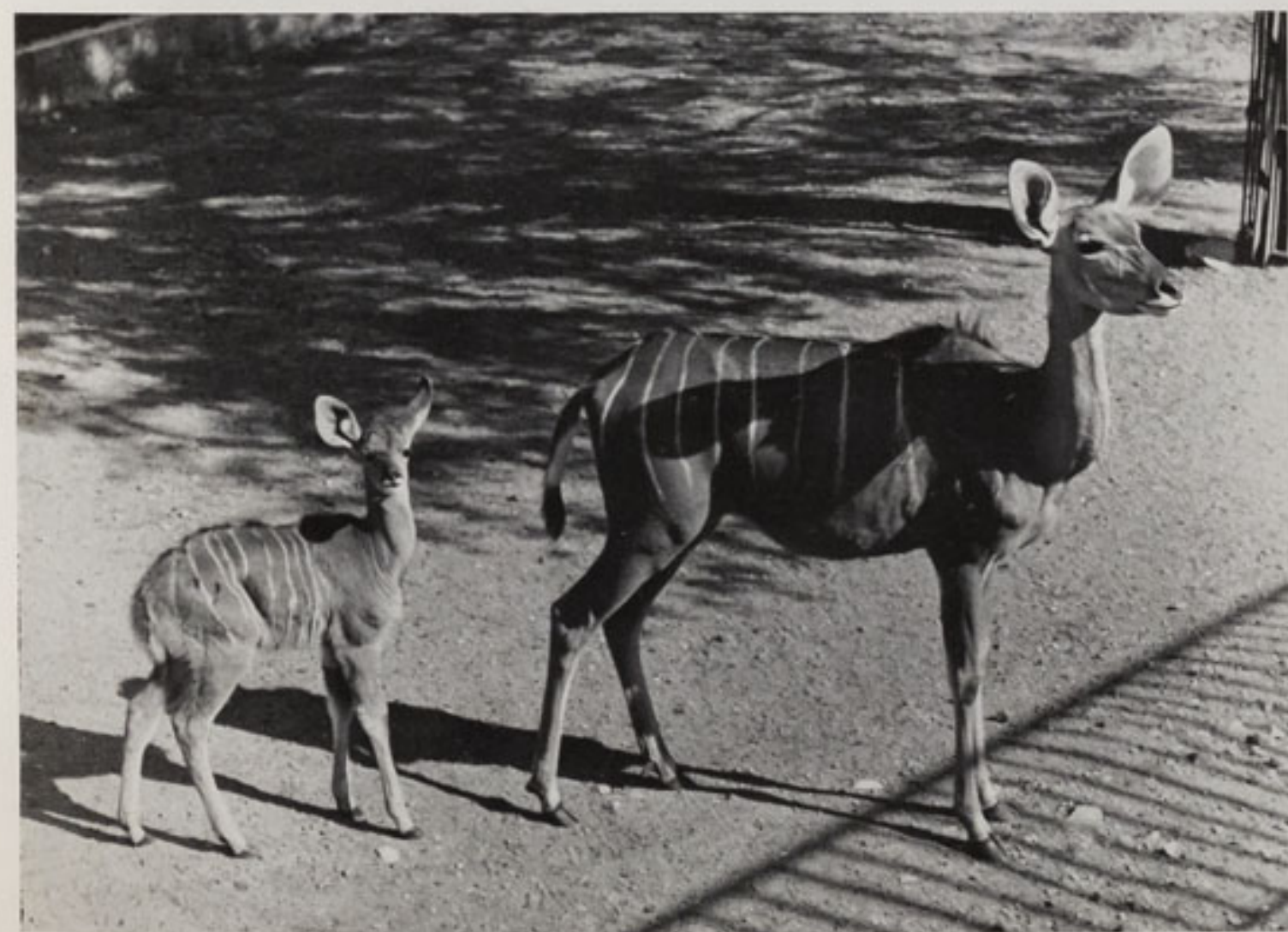




Hartmann's Mountain Zebra.  
Mares with foals born at  
Whipsnade  
*The Zoological Society of London*



Scimitar-horned Oryx with  
young, at London Zoo  
*The Zoological Society of London*

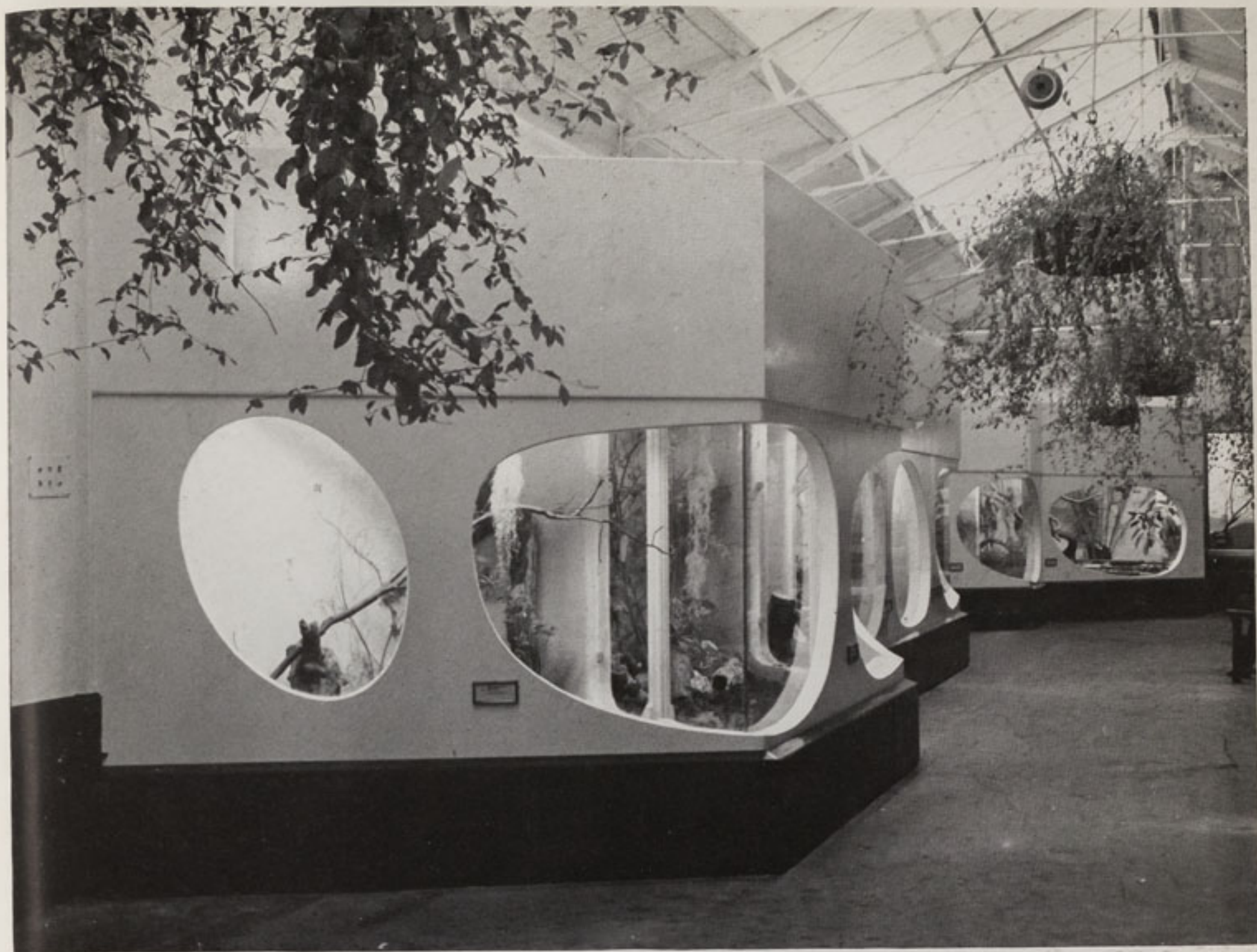


Kudu, four weeks old, at London  
Zoo  
*The Zoological Society of London*









New Aviaries in the Bird House,  
London Zoo  
*The Zoological Society of London*



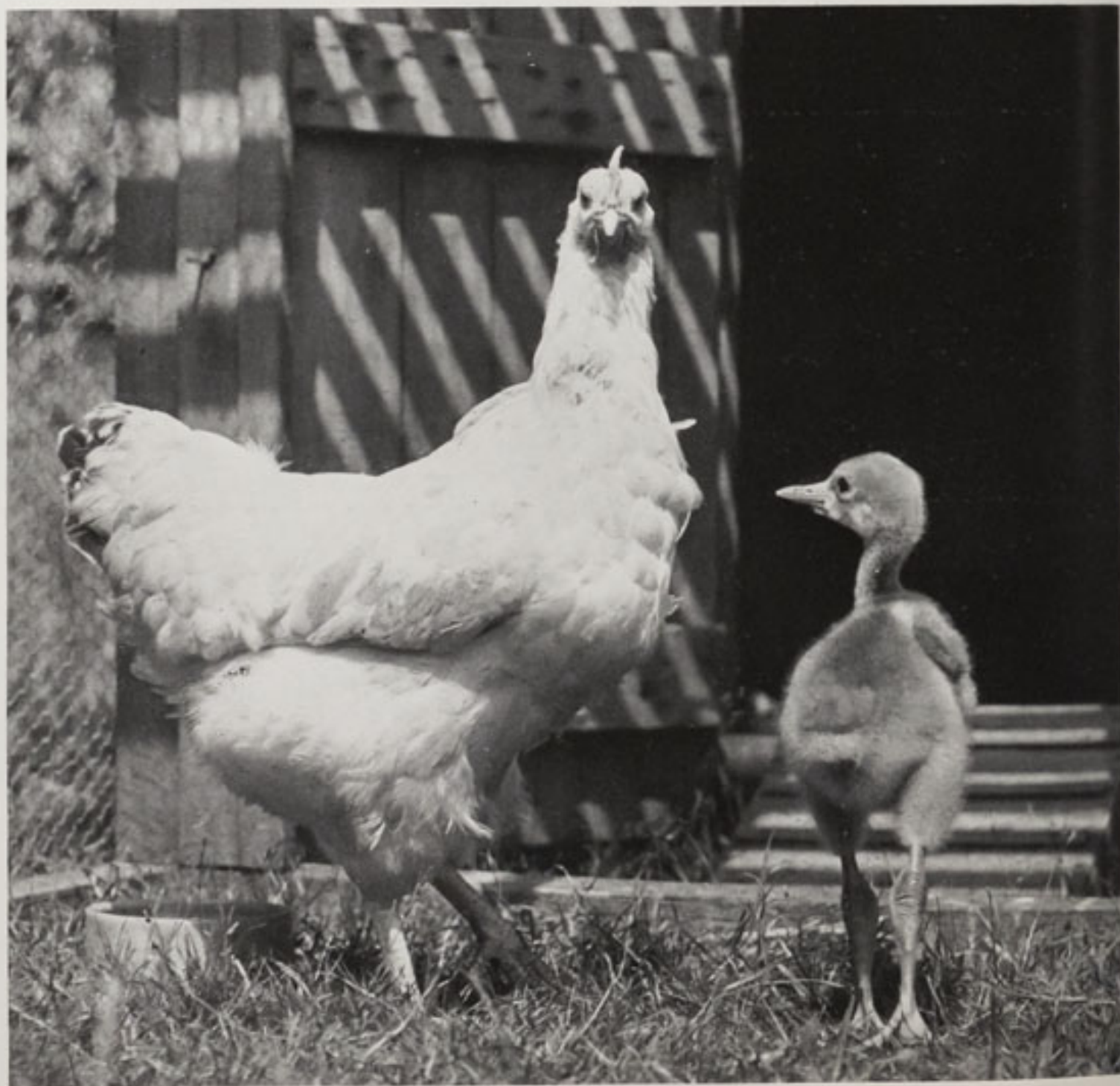
Left: Great Grey Kangaroo at  
London Zoo  
*The Zoological Society of London*

Pudu, one week old, at London  
Zoo  
*The Zoological Society of London*





Pygmy Hippo, Whipsnade  
*The Zoological Society of London*



Manchurian Crane, two weeks  
old, at Whipsnade, fostered by  
Bantam Hen  
*The Zoological Society of London*



# Regulations

The following Regulations were made by the Council, pursuant to the power granted in Article 8 of the Charter:

*Regulation 7*

£5 out of the annual subscription of £12 shall be remitted in the case of Ordinary Fellows resident within the British Isles but outside a radius of 50 miles from Charing Cross.

*Regulation 8*

£2 out of the annual subscription of £7 shall be remitted in the case of Associates resident within the British Isles but outside a radius of 50 miles from Charing Cross.

*Regulation 13 Overseas List*

i An Ordinary Fellow who is resident outside the British Isles at the time of his election shall be registered on the Overseas List, in which case £9 out of the annual subscription of £12 shall be remitted.

ii An Ordinary Fellow who takes up residence outside the British Isles after election or intends at any time to reside outside the British Isles for a period of more than twelve months shall be transferred to the Overseas List. During his residence abroad £9 out of the annual subscription of £12 shall be remitted, except in respect of the year in which he leaves the British Isles.

iii A Scientific Fellow who is resident outside the British Isles at the time of his election shall be registered on the Overseas List. If he does not wish to receive the *Journal of Zoology*, £9 out of the annual subscription of £12 shall be remitted.

iv A Scientific Fellow who takes up residence outside the British Isles after election or intends at any time to reside outside the British Isles for a period of more than twelve months shall be transferred to the Overseas List. If he does not wish to receive the *Journal of Zoology* during his residence abroad, £9 out of the annual subscription of £12 shall be remitted, except in respect of the year in which he leaves the British Isles.

v An Associate who takes up residence outside the British Isles after election or intends at any time to reside outside the British Isles for a period of more than twelve months shall be transferred to the Overseas List. During his residence abroad £4 out of the annual subscription of £7 shall be remitted, except in respect of the year in which he leaves the British Isles.

vi Any Fellow or Associate registered on the Overseas List who resides in the British Isles for a continuous period of more than six months shall in that calendar year become liable for the full subscription applicable to Fellows or Associates in the same category resident in the British Isles: except that when the period does not fall within one calendar year the Fellow or Associate shall be liable to the full subscription for the second year only.

*Regulation 14 Life Fellows*

The following life composition fees shall be payable by any Fellow who wishes to compound his future subscriptions:

Age Group	21 - 29	30 - 39	40 - 49	50 - 59	60 years and over
	£250	£225	£200	£170	£75

provided that any Fellow who has reached the age of sixty-five and has at least twenty-five years' membership may compound his future subscription by making a single payment of £30 subject, if he is a Scientific Fellow, to relinquishing the privilege of receiving the *Journal of Zoology* without charge. Any Fellow on the Overseas List may compound his future subscriptions by a single payment bearing the same proportion to the full composition fee for his age group as his annual subscription bears to the full annual subscription, provided that the balance of the full composition fee for his age group shall be payable if and when he becomes resident in the British Isles.

*Regulation 20*

An Associate may at any one time introduce one guest (two children under 14 counting as one guest) without charge, and upon the same conditions as the public are admitted, to the Zoological Gardens, Regent's Park, and to Whipsnade Park.

*Regulation 21*

Subject to the discretionary power of the Curator, Whipsnade Park, to limit the number of or to ban cars in Whipsnade Park, any Fellow or Associate may take his car into the Park free of charge or park his car in the Society's car park outside Whipsnade.



*Regulation 22 Use of the Members' Restaurant, Regent's Park*

Fellows and Associates may, when visiting the Gardens, use and introduce guests to, the Members' Restaurant and Enclosure during the hours when the Gardens are open to the public. The number of guests is not limited, but each guest must have been admitted to the Gardens either as a guest without charge under Regulation 18, 19 or 20, or on submission of guest tickets purchased at the special concessionary rates, or on payment of the normal public admission charge.

*Regulation 23 Wife or Husband of a Fellow*

The wife or husband of a Fellow may, in his or her absence, exercise those privileges which are granted by Regulations 15 to 19, 21 to 22.

*Regulation 27*

A copy of each part of the *Journal of Zoology* shall be issued, without charge, to Scientific Fellows who make application to receive them for their own personal use, save to those who have compounded their subscription by the single payment of £30 under the terms of Regulation 14.

*Regulation 28*

The subscription price for the *Journal of Zoology* payable by an Ordinary Fellow shall be at a discount of 20 per cent on the retail price.

APPENDIX 2

## Committees 1975-1976

### Gardens and Park Committee

*Terms of Reference:* To consider matters relating to the layout, appearance, animal housing, and amenities other than catering, of the Society's Gardens, Regent's Park, and Whipsnade Park; to consult where necessary with other committees and to report to Council so that the advice of the Committee can be taken into account in planning future maintenance and development.

Sir Gawaine Baillie, Bt  
Lady Casson, RIBA, FSIA

Lord Donaldson, OBE  
R. Romilly Fedden, CBE  
A. M. Hassell, MA  
Christopher Marler  
The Hon. Ivor Montagu, *Chairman*  
Nigel Sitwell  
Lady Daphne Straight  
Lady Anne Tree  
The Duke of Wellington, MVO, OBE, MC  
C. A. Wright, DSc, PhD, FIBiol  
Woodrow L. Wyatt  
*Secretary:* C. G. C. Rawlins, OBE, DFC

### Finance Committee

*Terms of Reference:* To approve the annual estimates and annual accounts before presentation to Council; to examine the financial aspects of major projects; to receive reports on investments; and to advise Council on financial policy generally.

E. Michael Behrens  
Aubrey Buxton, MC, DL  
The Earl of Cranbrook, CBE, MA, FLS  
Lord Donaldson, OBE

Sir Terence Morrison-Scott, DSC, DSc,  
*Chairman*  
Sir Michael Perrin, CBE, FRIC  
C. E. Gordon Smith, CB, MD, FRCP, FRCPath  
Lord Strathalmond, CMG, OBE, TD  
Ronald G. Waterhouse, QC, JP, MA, LLB  
The Duke of Wellington, MVO, OBE, MC  
Woodrow L. Wyatt  
Frank Yates, CBE, ScD, FRS  
*Secretary:* W. N. Pickford, MM, ACIS

### Animal Welfare and Husbandry Committee

*Terms of Reference:* To advise Council on matters relating to animal welfare, husbandry and breeding records in the Collections at both Regent's Park and Whipsnade Park, particularly in relation to the work of the Society's Curators, Veterinary Officers and Pathologist.

Professor G. H. Arthur, DVSc, FRCVS  
Professor R. J. Berry, MA, PhD  
A. G. Benyon, CB, DVSM, MRCVS  
Miss Marie E. Coates, PhD

J. M. Knowles  
W. Lane-Petter, MA, MB, BChir, FIBiol,  
*Chairman*  
Professor A. T. Phillipson, MA, PhD, DVSc,  
MRCVS, FRSE  
N. W. Pirie, MA, FRS  
A. J. Stevens, MA, BVSc, MRCVS, DipBact  
A. D. Walker, PhD  
W. L. Whitehouse, RD, MB, FRCS, FRCOG  
A. N. Worden, PhD, DVetMed, DrMedVet,  
FRCPath, FRCVS, FRIC, FIBiol  
*Secretary:* D. M. Jones, BSc, BVetMed, MRCVS



**Committee of the Wellcome Institute of Comparative Physiology**

*Terms of Reference:* To advise on all matters relating to the research undertaken at the Wellcome Institute of Comparative Physiology; to receive and approve the Senior Research Fellow's Annual Report and to advise on the appointment of research staff.

Professor Felix Beck, MB, ChB, MD  
B. K. Follett, PhD  
Professor Richard J. Harrison, MA, MD,  
DSc, FRS

R. B. Heap, MA, PhD  
Professor P. A. Jewell, MA, PhD  
H. G. Lloyd, MSc  
Alex B. Paterson, DSc, FRIC, DVSM, MRCVS  
J. S. Perry, DSc, FIBiol  
H. V. Thompson, BSc, FIBiol, *Chairman*  
Professor G. M. H. Waites, MA, PhD  
*Secretary:* R. D. Martin, BA, DPhil

**Committee of the Nuffield Institute of Comparative Medicine**

*Terms of Reference:* To advise on all matters relating to research in comparative medicine; to receive and approve the Director's Annual Report to Council and the Statement of Accounts; and to advise on the appointment of research staff.

P. A. J. Ball, MD, FRCP  
Professor S. Cohen, MD, PhD  
Rodney Finlayson, MD, FRCPath  
Professor M. S. R. Hutt, MD, FRCP, FRCPath

N. W. Pirie, MA, FRS  
Professor Walter Plowright, MRCVS, DVSc  
C. E. Gordon Smith, CB, MD, FRCP, FRCPath  
Nigel Snodgrass, BSc, MRCVS  
Cecil Symons, MD, FRCP  
Dame Janet Vaughan, DBE, DM, FRCP  
W. L. Whitehouse, RD, MB, FRCS, FRCOG  
P. O. Williams, MA, MB, FRCP  
C. A. Wright, DSc, PhD, FIBiol, *Chairman*  
*Secretary:* L. G. Goodwin, MB, BS, FRCP,  
BPharm, FIBiol

**Education Committee**

*Terms of Reference:* To advise Council on all matters relating to the Society's educational activities.

John A. Barker, BSc, FIBiol  
Professor A. d'A. Bellairs, DSc, MRCS, FLS  
Professor W. S. Bullough, DSc *Chairman*  
S. F. Everiss, MBE, MA, MSc

J. S. Everton, MA  
Miss Barbara Gilchrist, PhD  
J. E. Spice, MA, DPhil  
D. J. Stanbury, BSc, ARCS  
C. J. M. Trehwella, BSc  
Peter Ward, BSc, MIBiol  
C. H. Selby, HMI  
*Secretary:* M. K. Boorer, BSc, DipEd

**Publications Committee**

*Terms of Reference:* To advise Council on all matters concerning the publication of zoological research; to serve as an editorial board for the *Journal of Zoology* and the *Transactions* of the Society; and to make recommendations on Library policy.

Professor E. H. Ashton, PhD, DSc  
Professor E. J. W. Barrington, MA, DSc, FRS,  
*Chairman*  
Professor A. d'A. Bellairs, DSc, MRCS, FLS

Professor A. J. E. Cave, MD, DSc, FRCS, FLS  
Professor J. L. Cloudsley-Thompson,  
MA, PhD, DSc  
P. H. Greenwood, DSc, FLS  
Professor P. A. Jewell, MA, PhD  
Professor J. D. Pye, PhD  
H. N. Southern, MA, DSc  
V. R. Southgate, PhD  
Professor G. P. Wells, ScD, FRS  
*Secretary:* H. Gwynne Vevers, MBE, DPhil,  
FLS, FIBiol

**Zoological Record Committee**

*Terms of Reference:* To advise on the scope and production of the *Zoological Record* and on methods of ensuring its widest distribution.

Professor E. J. W. Barrington, MA, DSc, FRS,  
*Chairman*  
J. Clevedon Brown, PhD, FLS  
Francis C. Fraser, CBE, DSc, FRS  
P. Freeman, DSc, ARCS, FIBiol

Professor J. Green, PhD  
J. P. Harding, PhD, FLS  
A. K. Kent, PhD  
R. A. Neal, DSc, PhD  
Donn E. Rosen, PhD  
J. G. Sheals, PhD, FIBiol  
Errol White, CBE, DSc, FRS  
*Secretary:* H. Gwynne Vevers, MBE, DPhil,  
FLS, FIBiol



**International Zoo  
Yearbook Editorial  
Board**

*Terms of Reference* : To advise on the content,  
form and production of the *Yearbook*.

Miss Molly Badham  
Professor F. Bourlière, MD, LSc  
Lord Craigton, PC, CBE  
Professor P. A. Jewell, MA, PhD, *Chairman*  
Miss Janet Kear, PhD

J. M. Knowles  
Christopher Marler  
Lord Medway, MA, PhD  
Professor A. T. Phillipson, MA, PhD, DVSc,  
MRCVS, FRSE  
Walter Van den bergh  
*Secretary* : P. J. S. Olney, BSc, DipEd, FLS

APPENDIX 3

## Staff

**Headquarters**

*Director of Administration* : Miss E. M.  
Owen, CBE  
*Director of Zoos* : C. G. C. Rawlins, OBE, DFC  
*Architect* : J. W. Toovey, AADipl(Hons), FRIBA  
*Chief Accountant* : W. N. Pickford, MM, ACIS  
*Education Officer* : M. K. Boorer, BSc, DipEd

*Establishment Officer* : M. E. McInerney  
*General Catering Manager* : G. A. J. Perkins,  
MHCI  
*Catering Manager* : C. P. C. Garland  
*Retail Manager* : J. F. Brown  
*Public Relations Officer* : J. A. Dale, MIPR

**Scientific**

*Director of Science* : L. G. Goodwin, MB, BS,  
FRCP, BPharm, FIBiol  
*Assistant Director of Science* : H. Gwynne  
Vevers, MBE, DPhil, FLS, FIBiol  
(See also Publications Department and  
London Zoo)  
*Nuffield Institute of Comparative Medicine* :  
See page 21  
*Wellcome Institute of Comparative Physiology* :  
See page 21

*Pathologist* : I. F. Keymer, PhD, FRCVS,  
MRCPATH, FIBiol  
*Senior Veterinary Officer* : D. M. Jones,  
BSc, BVetMed, MRCVS  
*Senior Hospital Technician* : A. K. Fitzgerald  
*Librarian* : R. A. Fish, FLA  
*Publications Department* : See page 16/17

**London Zoo**

*Curator of Aquarium and Invertebrates,*  
*Acting Curator of Reptiles* : H. Gwynne  
Vevers, MBE, DPhil, FLS, FIBiol  
*Curator of Birds* : P. J. S. Olney, BSc, DipEd,  
FLS  
*Curator of Mammals* : M. R. Brambell,  
VetMB, PhD, MRCVS, FLS  
*Gardens Executive* : J. McCorry

*Head Gardener* : W. G. Gardner  
*Maintenance Manager* : L. G. Taverner  
*Overseer of Birds* : D. H. Newson  
*Overseers of Mammals* : T. Sangster,  
J. Lambden  
*Overseer of Reptiles* : D. Ball, AIAT  
*Purchasing and Transport Manager* : H. J.  
Mason, MInstPS, MASMC

**Head Keepers**

*Aquarium* : R. Dumbelton  
*Aquatic Birds and Birds of Prey* : A. E.  
Scrivener, AIAT  
*Bears* : S. Morton  
*Bird House* : W. G. R. Daines  
*Children's Zoo* : P. Anscombe  
*Elephant Pavilion and Aquatics* : W. G.  
Crompton  
*Insects* : R. P. Humphreys, AIAT

*Lion House* : E. F. Swain  
*Monkeys* : G. Callard  
*Parrot House and Eastern Aviary* : R. J.  
Watkins  
*Pheasantry and Ostrich House* : R. Barrow  
*Reptiles* : S. B. Savage  
*Small Mammals* : R. B. Willis  
*Ungulates* : T. B. Kichenside

**Whipsnade Park**

*Curator* : V. J. A. Manton, MRCVS  
*Park Manager* : O. C. Chamberlain  
*Office Manager* : M. L. Taverner

*Head Gardener* : J. Folds  
*Senior Overseer* : G. Stanbridge  
*Overseer* : J. Datlen



## Head Keepers

*Central Ungulate Section*: H. Stevens  
*Southern Ungulate Section*: A. W. Billington  
*Northern Ungulate Section*: A. G. Thorne  
*Carnivore Section*: F. Hughes

*Elephant Section*: J. Weatherhead  
*Bird Section*: A. White  
*Children's Zoo*: P. C. Milne

## Consulting Staff

*Consulting Architect*: Sir Hugh Casson, MA, RA, RDI, RIBA, FSIA  
*Consulting Landscape Architect*: Professor Peter F. Shephard, CBE, BArch, PPRIBA, MRTPI, PPILA  
*Honorary Herpetologist*: Professor A. d'A. Bellairs, DSc, MRCS, FLS  
*Honorary Veterinary Consultant*: A. C. L. Brown, MRCVS

*Medical Referee*: J. P. Horder, OBE, MA, MB, BCh, FRCP, FRCGP  
*Honorary Consultant Photographer*: W. G. Vanderson  
*Consultant Typographers*: Colin Banks, FSIA  
John Miles, FSIA, FSTD

## APPENDIX 4

# Publications by Society's Staff and Research Workers

(including those published in collaboration)

- ARNALL, L. & KEYMER, I. F. (1975). *Bird diseases*. An introduction to clinical diagnosis and treatment of diseases in birds other than poultry. (T.F.H. Publications, Inc., Ltd.). London: Baillière Tindall.
- ATTOCK, B., HUSSEIN, S., STABLEFORTH, P., CHURCHILL, W., HAWKEY, C. M. & DORMANDY, K. (1974). Clinical trials of immunosuppressive drugs in the treatment of haemophiliacs with antibodies to factor VIII. *Proc. III Eur. meeting Wld Fedn Haemophilia*: 201-210.
- AUSTWICK, P. K. C. (1975). Balkan nephropathy. *Proc. R. Soc. Med.* 68: 219-222.
- AUSTWICK, P. K. C. (1975) Mycotoxins. *Br. Med. Bull.* 31: 261-268.
- AUSTWICK, P. K. C. & SMITH, L. P. (1974). Mycological and epidemiological observations in endemic nephropathy. In *Endemic nephropathy*: 262-265. Puchlev, A., Dinev, A., Milev, B. & Doitchinov, D. (Eds). Sofia: Bulg. Acad. Sci. (Proc. 2nd Internat. Symp. Endemic Nephropathy. Sofia 1972).
- AUSTWICK, P. K. C. & SMITH, L. P. (1975). The effect of weather on the quality of wool in Great Britain. *Vet. Rec.* 96: 246-248.
- BAFORT, J. M. & VOLLER, A. (1975). The effect of a new anti-malarial compound on *Plasmodium falciparum* in *Aotus*. *Trans. R. Soc. trop. Med. Hyg.* 69: 4.
- BARTLETT, A., BIDWELL, D. E. & VOLLER, A. (1975). Preliminary studies on the application of enzyme immunoassay in the detection of antibodies in onchocerciasis. *Tropenmed. Parasit.* 26: 370-374.
- BIDWELL, D. E. & VOLLER, A. (1975). Counter immunoelectrophoresis studies on human malaria parasites. *Trans. R. Soc. trop. Med. Hyg.* 69: 6.
- DU BOULAY, G. H. (1974). Comparative neuroradiologic vascular anatomy of experimental animals. In *Radiology of the skull and brain. Angiography 2, Book 4, Specific disease processes*: 2763-2786. Newton, T. H. & Potts, D. G. (Eds). Saint Louis: The C. V. Mosby Company.
- DU BOULAY, G. & DARLING, M. (1975). Autoregulation in external carotid branches in the baboon. *Neuroradiology* 9: 129-132.
- DU BOULAY, G., KENDALL, B. E., CROCKARD, A., SAGE, M. & BELLONI, G. (1975). The autoregulatory capability of Galen's rete cerebri and its connections. *Neuroradiology* 9: 171-181.
- DU BOULAY, G., KENDALL, B. E., SYMON, L., PASZTOR, E., CROCKARD, A., BELLONI, G. & SAGE, M. (1975). The vasodilator action of angiography with Urografin 60 on the basal vessels of the brain of the baboon. *Neuroradiology* 9: 133-137.



- DU BOULAY, G. H., SYMON, L., KENDALL, B. E. & CROCKARD, A. (1974). The effects of alpha- and beta-blocking agents on spasm following experimental subarachnoid haemorrhage in baboons. In *Background to migraine: Abstract No. 4* (Sixth Migraine Symposium). London: The Migraine Trust.
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APPENDIX 5

# List of animals received

(presented, purchased, received in exchange, deposited or born in the Collections)

Key

- G Genus new to the Collection  
 s Species new to the Collection  
 ss Subspecies new to the Collection

Note The author and the geographical distribution are given only in the case of forms new to the Collection.

In the column 'Total number acquired', the figures in brackets indicate animals which have been transferred between the Society's two Collections.

In the column 'Number born or hatched in the Collection', the figures in brackets indicate the number which have died.

REGENT'S PARK		Total number acquired	Number born or hatched in the Collection			Total number acquired	Number born or hatched in the Collection
Mammals							
MARSUPIALIA							
<i>Petaurus breviceps</i>	Short-headed Flying Phalanger	2	2	<i>Mandrillus sphinx</i>	Mandrill	1	1
<i>Potorous tridactylus</i>	Long-nosed Potoroo	5		<i>Cercopithecus pygerythrus</i>	Vervet Monkey	2	2
<i>Macropus rufogriseus</i>	Bennett's Wallaby	1	1	<i>Pongo pygmaeus</i>	Orang-utan	1	1
CHIROPTERA							
<i>Pteropus giganteus</i>	Indian Fruit Bat	13	2 (1)	RODENTIA			
<i>Desmodus rotundus</i>	Vampire Bat	1	1 (1)	<i>Funisciurus pyrrhopus</i>	Fire-footed Squirrel	4	4
PRIMATES							
<i>Tupaia glis</i>	Tree Shrew	11	11 (4)	<i>Cynomys ludovicianus</i>	Prairie Marmot	1	
<i>Lemur fulvus</i>	Brown Lemur	1	1	<i>Tamias sibiricus</i>	Siberian Chipmunk	2	2
<i>Cheirogaleus medius</i>	Fat-tailed Dwarf Lemur	2		<i>Gerbillus pyramidum</i>	Greater Egyptian Gerbil	4	
<i>Galago crassicaudatus</i>	Thick-tailed Bushbaby	1	1 (1)	<i>Meriones unguiculatus</i>	Clawed Jird	21	21 (3)
<i>Galago senegalensis</i>	Senegal Bushbaby	3	3 (1)	<i>Meriones shawi</i>	Shaw's Jird	2	
<i>Aotus trivirgatus</i>	Douroucouli	1	1	<i>Peromyscus maniculatus</i>	Deer Mouse	27	25
<i>Pithecia pithecia</i>	White-faced Saki	5	1 (1)	<i>Cricetomys gambianus</i>	Giant Pouched Rat	1	
<i>Cebus apella</i>	Brown Capuchin	1	1	<i>Arvicanthis niloticus</i>	Nile Rat	65	65
<i>Callithrix jacchus</i>	Common Marmoset	2	2	<i>Grammomys dolichurus</i>	Long-tailed Thicket Rat	4	4
<i>Saguinus illigeri</i>	Red-mantled Tamarin	3	3	<i>Acomys cahirinus</i>	Arabian Spiny Mouse	20	20
<i>Macaca nemestrina</i>	Pig-tailed Macaque	3	3	<i>Pseudomys australis</i>	Minnie Downs River Mouse	5	5 (5)
<i>Cercocebus atys</i>	Sooty Mangabey	1	1	<i>Pogonomys macrourus</i>	Common Prehensile-tailed Tree Mouse	4	4
<i>Theropithecus gelada</i>	Gelada Baboon	1	1	<i>Atherurus africanus</i>	African Brush-tailed Porcupine	2	2 (1)



		Total number acquired	Number born or hatched in the Collection			Total number acquired	Number born or hatched in the Collection
<i>Galea musteloides</i>	Cuis	25	25 (15)	CICONIIFORMES			
<i>Dolichotis patagonum</i>	Patagonian Cavy	8	8 (5)	<i>Bubulcus ibis</i>	Cattle Egret	11	3 (3)
<i>Myocastor coypus</i>	Coypu	2		<i>Threskiornis aethiopica</i>	Sacred Ibis	2	2 (1)
<i>Proechimys guairae</i>	Casiragua	8	8	<i>Guara rubra</i>	Scarlet Ibis	4	
CARNIVORA				<i>Eudocimus albus</i>	White Ibis	2 (2)	
<i>Euarctos americanus</i>	American Black Bear	3	3	<i>Ajaia ajaja</i>	Roseate Spoonbill	1	
<i>Nasua nasua</i>	Coati	2 (2)		<i>Phoeniconaias minor</i>	Lesser Flamingo	15	
<i>Potos flavus</i>	Kinkajou	1		ANSERIIFORMES			
<i>Genetta tigrina</i>	Blotched Genet	1	1 (1)	<i>Chauna torquata</i>	Crested Screamer	1	
<i>Arctogalidea trivirgata</i>	Small-toothed Palm Civet	2	2 (1)	<i>Dendrocygna autumnalis discolor</i>	Southern Red-billed Whistling Duck	8	
<i>Felis weidi</i>	Margay	1		<i>Branta canadensis</i>	Canada Goose	1	1
<i>Panthera tigris</i>	Tiger (Sumatran form)	1 (1)		<i>Branta sandvicensis</i>	Hawaiian Goose	2	2
<i>Panthera onca</i>	Jaguar	2		<i>Branta leucopsis</i>	Barnacle Goose	1	1
PINNIPEDIA				<i>Anas capensis</i>	Cape Teal	1	1
<i>Zalophus californianus</i>	Californian Sealion	2	1	<i>Anas platyrhynchos laysanensis</i>	Laysan Teal	2	
PERISSODACTYLA				<i>Anas sibilatrix</i>	Chiloe Wigeon	2	
<i>Equus przewalskii</i>	Przewalski's Wild Horse	1	1	<i>Anas leucophrys</i>	Ringed Teal	2	
<i>Equus burchelli</i>	Common Zebra	1	1 (1)	<i>Somateria mollissima</i>	Eider Duck	1	
<i>Asinus hemionus</i>	Onager (Turkmen form)	1	1 (1)	<i>Netta peposaca</i>	Rosy-bill	4	
<i>Diceros bicornis</i>	Black Rhinoceros	1	1	<i>Aix galericulata</i>	Mandarin Duck	1	1
<i>Ceratotherium simum</i>	White Rhinoceros	1 (1)		<i>Oxyura jamaicensis jamaicensis</i>	North American Ruddy Duck	6	
ARTIODACTYLA				FALCONIFORMES			
<i>Sus scrofa</i>	Wild Boar	13	13 (8)	<i>Aquila rapax orientalis</i>	Western Steppe Eagle	1	
<i>Tayassu tajacu</i>	Collared Peccary	3	3 (3)	GALLIFORMES			
<i>Lama glama</i>	Llama	4 (3)	1	<i>Lophura nycthemeris</i>	Silver Pheasant	1	1
<i>Muntiacus reevesi</i>	Reeves' Muntjac	1 (1)		<i>Crossoptilon mantchuricum</i>	Brown Eared Pheasant	2	
<i>Dama dama</i>	Fallow Deer	2	2	<i>Catreus wallichii</i>	Cheer Pheasant	4	4
<i>Cervus timorensis</i>	Timor Deer	6	6 (2)	<i>Syrnaticus reevesii</i>	Reeves's Pheasant	19	19
<i>Pudu pudu</i>	Pudu	1	1	<i>Phasianus colchicus</i>	Common Pheasant	1	1
<i>Rangifer tarandus</i>	Reindeer	3		<i>Chrysolophus pictus</i>	Golden Pheasant	6	6
<i>Giraffa camelopardalis</i>	Giraffe	2	2	<i>Chrysolophus amherstiae</i>	Lady Amherst's Pheasant	1	1
<i>Tragelaphus strepsiceros</i>	Greater Kudu	1	1	<i>Pavo cristatus</i>	Common Peafowl	3	3
<i>Bos grunniens</i>	Yak	2	2	<i>Nunida meleagris</i>	Helmeted Guineafowl	2	2
<i>Bison bison</i>	North American Bison	3	3	GRUIIFORMES			
<i>Oryx tao</i>	Scimitar-horned Oryx	2	2	<i>Grus antigone</i>	Sarus Crane	2	2
<i>Antilope cervicapra</i>	Blackbuck	11	9 (2)	<i>Porphyrio porphyrio poliocephalus</i>	Grey-headed Gallinule	3	3 (1)
<i>Capra falconeri</i>	Markhor	5	5 (5)	<i>Crex crex</i>	Corncrake	1	
<i>Ammotragus lervia</i>	Barbary Sheep	19	19 (6)	<i>Cariama cristata</i>	Crested Cariama	1	
<i>Ovis musimon</i>	Mouflon	6	6 (2)	CHARADRIIFORMES			
<i>Ovis canadensis</i>	Bighorn Sheep	1	1	<i>Haematopus ostralegus</i>	Oystercatcher	1	1
DOMESTIC				<i>Charadrius dubius</i>	Little Plover	6	
	Gloucester Old Spot Pig	6		<i>Himantopus himantopus leucocephalus</i>	Black-winged Stilt	4	
	Friesian Cattle	2	1	<i>Philomachus pugnax</i>	Ruff	5	
	Jersey Cattle	1	1	<i>Burhinus vermiculatus</i>	Water Thickknee	2	
	Goat	17	17 (1)	<i>Larus cirrocephalus poiocephalus</i>	Grey-headed Gull	4	4
	Dorset Down Sheep	15	15 (1)	<i>Larosterna inca</i>	Inca Tern	1	
	Wiltshire Hybrid Sheep	4		COLUMBIFORMES			
<b>Birds</b>				<i>Columba guinea</i>	Speckled Pigeon	21	21 (2)
SPHENISCIFORMES				<i>Streptopelia vinacea</i>	Vinaceous Dove	5	5
<i>Pygoscelis papua</i>	Gentoo Penguin	6					
PROCELLARIIFORMES							
<i>Fulmarus glacialis</i>	Fulmar	2					



		Total number acquired	Number born or hatched in the Collection			Total number acquired	Number born or hatched in the Collection
<i>Streptopelia chinensis chinensis</i>	Chinese Necklace Dove	3	3	<i>Penelopides panini</i>	Tarctic Hornbill	3	
<i>Phaps elegans</i>	Bronze Brush-winged Pigeon	4		<i>Aceros undulatus</i>	Wreathed Hornbill	1	
<i>Geopelia cuneata</i>	Diamond Dove	2		<i>Anthracoceros coronatus convexus</i>	Southern Pied Hornbill	1	
<i>Zenaida auriculata</i>	Eared Dove	5		<i>Bycanistes subcylindricus</i>	Black & White Casqued Hornbill	2	
<i>Geotrygon versicolor</i>	Mountain Witch Dove	2	2 (2)	PICIFORMES			
<i>Caloenas nicobarica</i>	Nicobar Pigeon	1		<i>Eubucco bourcierii</i>	Red-headed Barbet	2	
<i>Goura cristata</i>	Blue Crowned Pigeon	1		<i>s Tricholaema lacrymosum</i>	Spotted-flanked Barbet	2	
<i>Treron curvirostra</i>	Thick-billed Green Pigeon	3		(East Africa)			
<i>Ducula badia cupreus</i>	Jerdon's Imperial Pigeon	1	1	<i>s Lybius guifsobalito</i>	Black-billed Barbet	2	
PSITTACIFORMES				Hermann (East Africa)			
<i>Domicella garrula</i> × <i>Domicella domicella</i>	Scarlet Lory × Purple-capped Lory	1	1	<i>Trachyphonus erythrocephalus</i>	Red & Yellow Barbet	4	
<i>Cacatua roseicapilla</i>	Galah	1		<i>Trachyphonus darnaudii</i>	D'Arnauds Barbet	2	
<i>Cacatua tenuirostris pastinator</i>	Western Long-billed Corella	4		<i>Andigena laminirostris</i>	Laminated Hill Toucan	1	
<i>Ara severa</i>	Severe Macaw	2		<i>s Ramphastos culminatus</i>	Yellow-ridged Toucan	1	
<i>Brotogeris pyrrhopterus</i>	Orange-flanked Parrakeet	2		Gould (South America)			
<i>Amazona festiva</i>	Festive Parrot	1		<i>Ramphastos sulfuratus</i>	Sulphur-breasted Toucan	1	
<i>Psephotus haematonotus</i>	Red-rumped Parrakeet	4	3	<i>Ramphastos tucanus</i>	Red-billed Toucan	1	
<i>Agapornis fischeri</i>	Fischer's Lovebird	8	7 (1)	<i>Dinopium benghalense</i>	Golden-backed Woodpecker	2	
<i>Nymphicus hollandicus</i>	Cockatiel	11	11 (1)	PASSERIFORMES			
STRIGIFORMES				<i>Pitta guajana</i>	Banded Pitta	2	
<i>Tyto alba</i>	Barn Owl	2		<i>Pycnonotus sinensis</i>	Chinese Bulbul	2	
<i>Otus asio</i>	Screech Owl	3		<i>Irena puella</i>	Fairy Bluebird	1	
<i>Bubo bubo bubo</i>	Eagle Owl	1		<i>Turdus olivaceus pelios</i>	African Thrush	2	
<i>Bubo bubo bengalensis</i>	Indian Eagle Owl	2		<i>Garrulax leucolophus</i>	White-crested Laughing Thrush	3	
<i>Bubo africanus cinerascens</i>	Abyssinian Spotted Eagle Owl	1	1	<i>Garrulax poecilorhynchus</i>	Rufous Laughing Thrush	2	
<i>Bubo vosseleri</i>	Nduk Eagle Owl	2		<i>Leiothrix lutea</i>	Pekin Robin	1	
<i>Keputa keputa</i>	Javan Fish Owl	2		<i>Yuhina flavicollis</i>	Yellow-collared Ixulus	1	
<i>Pulsatrix perspicillata</i>	Spectacled Owl	1		<i>Zosterops japonica</i>	Japanese White-eye	4	
<i>Nyctea scandiaca</i>	Snowy Owl	4	4	<i>Meliphaga penicillata</i>	White-plumed Honeyeater	4	
<i>Ninox novaeseelandiae</i>	Boobook Owl	2		<i>Ramphocelus carbo</i>	Maroon Tanager	2	
<i>Speotyto cunicularia</i>	Burrowing Owl	2		<i>Ramphocelus icteronotus</i>	Lemon-rumped Tanager	2	
<i>Asio otus</i>	Long-eared Owl	2		<i>Chlorophonia cyanea</i>	Blue-naped Chlorophonia	2	
APODIFORMES				<i>Cyanerpes caeruleus</i>	Purple Honeyeater	1	
<i>Colibri thalassinus</i>	Green Violetear	2		<i>Molothrus bonariensis</i>	Shiny Cowbird	4	
<i>Thalurania furcata</i>	Fork-tailed Woodnymph	2		<i>Mandingoa nitidula</i>	Schlegel's Twin-spot	2	
<i>Urosticte benjamini ruficrissa</i>	Whitetip	2		<i>Pyrenestes sanguineus</i>	Crimson Seedcracker	5	
<i>s Ocreatus underwoodii peruanus</i> (Gould) (E. Ecuador and N.E. Peru)	Brown-booted Racket-tail	2		<i>Spermophaga haematina</i>	Western Bluebill	2	
<i>s Aglaiocercus kingi</i> (Lesson) (N. and N.W. South America)	Long-tailed Sylph	2		<i>Estrilda caeruleus</i>	Lavender Finch	2	
CORACIIFORMES				<i>Amandava amandava</i>	Avadavat	2	
<i>Dacelo novaeguineae</i>	Laughing Kingfisher	1	1	<i>Neochmia ruficauda</i>	Star Finch	3	
<i>Momotus momota</i>	Blue-crowned Motmot	2		<i>Poephila guttata</i>	Zebra Finch	6	
<i>Upupa epops</i>	Hoopoe	1		<i>Poephila acuticauda</i>	Long-tailed Grassfinch	1	
<i>Tockus alboterminatus</i>	Crowned Hornbill	2		<i>Erythrura prasina</i>	Pin-tailed Nonpareil	2	
<i>Tockus deckeni</i>	Jackson's Hornbill	4	3 (1)	<i>Chloebia gouldiae</i>	Red-headed Gouldian Finch	2	
				<i>Lonchura bicolor poensis</i>	Blue-billed Mannikin	2	
				<i>Lonchura malacca atricapilla</i>	Black-headed Mannikin	2	



		Total number acquired	Number born or hatched in the Collection			Total number acquired	Number born or hatched in the Collection
<i>Passer luteus</i>	Golden Song Sparrow	1		<i>Eryx johnii</i>	John's Sand Boa	1	
<i>Euplectes afer</i>	Napoleon Weaver	2		<i>Natrix natrix helvetica</i>	Barred Grass Snake	1	
<i>Sporophila minuta</i>	Ruddy-breasted Seedeater	2		<i>Boaedon fuliginosus</i>	African House Snake	5	5
<i>Aplonis panayensis strigata</i>	Malayan Glossy Starling	1	1 (1)	<i>Elaphe obsoleta quadrivittata</i>	Four-lined Chicken Snake	1	
s <i>Cinnyricinclus sharpii</i> (Jackson) (East Africa)	Sharpe's Starling	6		<i>Elaphe longissima</i>	Aesculapian Snake	1	
<i>Spreo superbus</i>	Superb Glossy Starling	5	1	<i>Leiosophis gigas</i>	Boipevussu Snake	16	16
<i>Leucospiza rothschildi</i>	Rothschild's Grackle	2		<i>Lampropeltis getulus holbrooki</i>	Speckled King Snake	2	
<i>Gracula religiosa intermedia</i>	Nepal Hill Mynah	3		<i>Lampropeltis getulus californiae</i>	Californian King Snake	1	
<i>Cyanocorax yncas</i>	Mexican Green Jay	2		<i>Chrysopelea ornata</i>	Ornate Tree-snake	1	
<i>Pica pica</i>	Magpie	1		<i>Vipera berus</i>	Adder	2	
<b>Reptiles</b>				<b>AMPHIBIA</b>			
<b>TESTUDINES</b>				<i>Necturus maculosus</i>	Mud-puppy	3	
<i>Chelydra serpentina serpentina</i>	Snapper	1		<i>Cryptobranchus alleganiensis</i>	Hellbender	1	
<i>Chrysemys scripta elegans</i>	Red-eared Terrapin	3		<i>Triturus marmoratus</i>	Marbled Newt	9	
<i>Mauremys caspica leprosa</i>	Spanish Terrapin	5		<i>Triturus helveticus</i>	Palmate Newt	8	
<i>Clemmys insculpta</i>	Wood Terrapin	1		<i>Ambystoma opacum</i>	Marbled Salamander	5	
<i>Emys orbicularis</i>	European Pond Tortoise	1	1	<i>Ambystoma mexicanum</i>	Axolotl	14	
<i>Terrapene carolina carolina</i>	Carolina Box-tortoise	1		<i>Xenopus laevis</i>	Smooth Clawed Toad	3	
<i>Cuora amboinensis</i>	Amboina Box-tortoise	1		<i>Megophrys monticola nasuta</i>	Malaysian Horned Frog	1	
<i>Heosemys spinosa</i>	Spiny Terrapin	1		<i>Bufo regularis</i>	Common African Toad	2	
<i>Geochelone sulcata</i>	African Spurred Tortoise	2		<i>Bufo americanus</i>	American Toad	1	
<i>Geochelone gigantea</i>	Giant Tortoise	3		<i>Bufo blombergi</i>	Blomberg's Toad	4	
<i>Geochelone carbonaria</i>	Red-legged Tortoise	2		<i>Bufo marinus</i>	Giant Toad	5	
<i>Pelusios subniger</i>	Blackish Terrapin	1		<i>Hyla arborea</i>	European Tree-frog	7	
<i>Podocnemis unifilis</i>	Bearded Greaved-tortoise	2		s <i>Hyla marmorata marmorata</i> Laurenti (Guyana, S. America)	Orange-webbed Tree-frog	1	
<i>Chelus fimbriatus</i>	Matamata Terrapin	2		ss <i>Hyla chrysoseclis</i>	Gray Tree-frog	2	
<b>CROCODYLIA</b>				<i>Hyla rubra rubra</i>	Daudin's Hyla	3	
<i>Crocodylus siamensis</i>	Siamese Crocodile	1		s <i>Lithodytes lineatus</i> Schneider (Guyana, America)	Frog	2	
<i>Caiman crocodilus</i>	Spectacled Cayman	1		<i>Rana temporaria</i>	Common Frog	6	
<b>SAURIA</b>				<i>Pyxicephalus adspersus</i>	African Bull Frog	2	
<i>Gekko gekko</i>	Tokay	1		<i>Hyperolius horstockii</i>	Horstock's Tree-frog	1	
<i>Tropidurus torquatus hispidus</i>	Taraguira Lizard	2		<b>WHIPNADE PARK</b>			
<i>Draco volans</i>	Common Flying Lizard	2		<b>Mammals</b>			
<i>Agama agama</i>	Common Agama	1		<b>MARSUPIALIA</b>			
<i>Hydrosaurus amboinensis</i>	Fin-tailed Lizard	5		<i>Macropus rufogriseus</i>	Red-necked Wallaby	111	111 (2)
<i>Tiliqua gigas</i>	New Guinea Skink	1	1	<i>Macropus fuliginosus</i>	Western Grey Kangaroo	1	1 (1)
Sp. inc.	Skink	3		<b>PRIMATES</b>			
<i>Lacerta lepida</i>	Eyed Lizard	8		<i>Macaca mulatta</i>	Rhesus Macaque	2	2 (2)
<i>Ameiva ameiva</i>	Surinam Lizard	1		<b>RODENTIA</b>			
<i>Cnemidophorus lemniscatus</i>	Daudin's Whiptail Lizard	3		<i>Cynomys ludovicianus</i>	Prairie Marmot	20	20
<i>Trogonophis wiegmanni</i>	Wiegmann's Burrowing-lizard	1		<i>Dolichotis patagonum</i>	Mara	1	1 (1)
<i>Ophisaurus apodus</i>	Glass Snake	3					
<b>SERPENTES</b>							
<i>Boa constrictor</i>	Boa Constrictor	2					
<i>Eryx conicus</i>	Russell's Sand Boa	1					



		Total number acquired	Number born or hatched in the Collection
<b>CARNIVORA</b>			
<i>Canis lupus</i>	Canadian Timber Wolf	8	8
<i>Fennecus zerda</i>	Fennec Fox	No. Un-	No. Un-
		known	known
<i>Ursus arctos</i>	Brown Bear (Caucasus form)	7	7 (4)
	Brown Bear (Kodiak Island form)	3	3 (3)
<i>Thalarctos maritimus</i>	Polar Bear	2	2 (2)
<i>Ailurus fulgens</i>	Red Panda	2	2
<i>Suricata suricatta</i>	Suricate Meerkat	4 (4)	
<i>Felis lynx</i>	Northern Lynx	1	1
<i>Felis serval</i>	Serval	1	1
<i>Panthera leo</i>	Lion	4	4 (3)
<i>Panthera tigris</i>	Tiger (Sumatran form)	6	6 (4)
<i>Panthera onca</i>	Jaguar	2	
<i>Acinonyx jubatus</i>	Cheetah	5	5 (1)
<b>PERISSODACTYLA</b>			
<i>Equus przewalskii</i>	Przewalski's Horse	3 (2)	1
<i>Equus zebra</i>	Mountain Zebra	3	3
<i>Equus burchelli</i>	Common Zebra	4 (1)	1 (1)
<i>Asinus hemionus</i>	Onager (Persian form)	2	2
<i>Diceros bicornis</i>	Black Rhinoceros	1 (1)	
<b>ARTIODACTYLA</b>			
<i>Sus scrofa</i>	Wild Boar	3	3 (3)
<i>Tayassu tajacu</i>	Collared Peccary	4	4 (1)
<i>Choeropsis liberiensis</i>	Pygmy Hippopotamus	1	1
<i>Lama glama</i>	Llama	13 (1)	12 (4)
<i>Lama guanicoe</i>	Guanaco	8	8 (2)
<i>Camelus bactrianus</i>	Bactrian Camel	1	1
<i>Muntiacus reevesi</i>	Reeves' Muntjac	5	5
<i>Dama dama</i>	Fallow Deer	24	24 (8)
<i>Axis axis</i>	Axis Deer	8	8 (1)
<i>Axis porcinus</i>	Hog Deer	6	6 (1)
<i>Cervus duvauceli</i>	Barasingha	6	6 (3)
<i>Cervus nippon</i>	Sika Deer (Ryukyu × Formosan form)	6	6 (2)
	Sika Deer (Formosan form)	17	17 (4)
<i>Cervus elaphus</i>	Red Deer	9	9 (3)
	Wapiti	4	4 (2)
<i>Elaphurus davidianus</i>	Pere David's Deer	11	11 (3)
<i>Alces alces</i>	Moose	4	4 (4)
<i>Rangifer tarandus</i>	Reindeer	4	4 (1)
<i>Hydropotes inermis</i>	Chinese Water Deer	20	20 (4)
<i>Giraffa camelopardalis</i>	Giraffe	2	2 (1)
<i>Tragelaphus spekei</i>	Sitatunga	4	4 (1)
<i>Boselaphus tragocamelus</i>	Nilgai	5	2
<i>Bos grunniens</i>	Yak	3 (2)	1
<i>Syncerus caffer</i>	Cape Buffalo	2	2 (1)
<i>Bison bonasus</i>	European Bison	3	2 (1)
<i>Bison bison</i>	American Bison	3 (1)	2 (1)
<i>Connochaetes taurinus</i>	Brindled Gnu	1	1 (1)
<i>Gazella thomsoni</i>	Thomson's Gazelle	7	7 (2)
<i>Ovibos moschatus</i>	Musk Ox	2	2 (1)
<i>Ovis musimon</i>	Mouflon	10	10 (6)

**DOMESTIC**

		Total number acquired	Number born or hatched in the Collection
	Pony	4	3 (1)
	Vietnam Pot-bellied Pig	6	6 (5)
	Ankole Ox	3	3 (2)
	Windsor White Goat	7	7 (2)
<b>Birds</b>			
<b>STRUTHIONIFORMES</b>			
<i>Struthio camelus</i>	Ostrich	11	2 (2)
<b>RHEIFORMES</b>			
<i>Rhea americana</i>	Common Rhea	8	8 (7)
<b>CASUARIIFORMES</b>			
<i>Dromaius novae-hollandiae</i>	Emu	7	7
<b>SPHENISCIFORMES</b>			
<i>Aptenodytes patagonica</i>	King Penguin	2	2 (1)
<i>Spheniscus humboldti</i>	Humboldt's Penguin	2	2 (1)
<b>CICONIIFORMES</b>			
<i>Phoenicopterus ruber ruber</i>	Rosy Flamingo	1	1
<i>Phoenicopterus chilensis</i>	Chilean Flamingo	3	3 (2)
<b>ANSERIFORMES</b>			
<i>Coscoroba coscoroba</i>	Coscoroba Swan	1	
<i>Cygnus atratus</i>	Black Swan	2 (2)	
<i>Cygnus cygnus</i>	Whooper Swan	2	
<i>Anser cygnoides</i>	Chinese Goose	2 (2)	
<i>Anser indicus</i>	Bar-headed Goose	6	6
<i>Anser canagicus</i>	Emperor Goose	3	3
<i>Anser caerulescens caerulescens</i>	Lesser Snow Goose	5	5 (4)
<i>Branta sandvicensis</i>	Hawaiian Goose	2	
<i>Chloephaga picta leucoptera</i>	Falkland Upland Goose	1 (1)	
<i>Cereopsis novae-hollandiae</i>	Cereopsis Goose	8	8 (4)
<i>Anas querquedula</i>	Garganey Teal	3	
<i>Anas falcata</i>	Falcated Teal	5	5 (1)
<i>Anas sibilatrix</i>	Chiloe Wigeon	14	14 (3)
<i>Aythya marila</i>	Scaup	3	
<i>Aix sponsa</i>	Carolina Duck	1	1
<i>Aix galericulata</i>	Mandarin Duck	11	11 (1)
<i>Bucephala islandica</i>	Barrow's Golden-eye	3	
<b>GALLIFORMES</b>			
<i>Penelope purpurascens</i>	Purple Guan	4	
<i>Lophophorus impejanus</i>	Impeyan Pheasant	8	8 (3)
<i>Catreus wallichi</i>	Cheer Pheasant	2 (2)	
<i>Syrmaticus mikado</i>	Mikado Pheasant	3	2 (1)
<i>Chrysolophus amherstiae</i>	Lady Amherst's Pheasant	1	
<i>Pavo cristatus</i>	Common Peafowl	20	20
<b>GRUIFORMES</b>			
<i>Grus monacha</i>	Hooded Crane	3	
<i>Grus canadensis</i>	Sandhill Crane	3	
<i>Grus japonensis</i>	Manchurian Crane	1	1
<i>Bugeranus carunculatus</i>	Wattled Crane	2	
<i>Ardeotis kori struthiunculus</i>	Kori Bustard	1	



		Total number acquired	Number born or hatched in the Collection			Total number acquired	Number born or hatched in the Collection
<b>PSITTACIFORMES</b>				<b>CORACIIFORMES</b>			
<i>Brotogeris versicolurus</i>	Canary-winged	1		<i>Dacelo novaeguineae</i>	Kookaburra	2	2 (1)
<i>chiriri</i>	Parrakeet			<b>PASSERIFORMES</b>			
<i>Platycercus eximius</i>	Golden-mantled	3		<i>Uraeginthus bengalus</i>	Cordon Bleu	2	
<i>cecilae</i>	Rosella Parrakeet			<i>Estrilda caerulescens</i>	Lavender Finch	2	
<i>Psephotus haematonotus</i>	Red-rumped Parrakeet	7	7	<i>Estrilda melpoda</i>	Orange-cheeked Waxbill	2	
				<i>Estrilda troglodytes</i>	Common Waxbill	2	
<b>STRIGIFORMES</b>				<b>Reptiles</b>			
<i>Bubo capensis mackinderi</i>	Kenya Eagle Owl	3	3 (1)	<b>SERPENTES</b>			
<i>Nyctea scandiaca</i>	Snowy Owl	3 (2)	1 (1)	<i>Python regius</i>	Royal Python	4	
<i>Strix aluco</i>	Tawny Owl	1					

## APPENDIX 6

## List of Donors of Animals to the Society

### REGENT'S PARK

- Adam, M/s R., 2 Orange-flanked Parakeets  
Aegerten, Mr S., 1 Glass Snake  
Bantin & Kingman Ltd, 1 Kinkajou  
Barrett, Mr S., 2 *Clarias* sp.  
Bates, Mr, 1 Adder  
Bellairs, Professor A. d'A., 2 Skinks  
Betts, Mr B., 1 Madagascan Cockroach,  
15 Desert Scorpions, 2 Orb-web Spiders,  
3 Barrel Spiders, 1 Tarantula Spider,  
4 Spiny Grasshoppers  
Bird, Mr D., 4 Spotted Haplochromis,  
1 Voracious Water Beetle, 10 Desert  
Beetles, 1 Praying Mantis, 2 Bush  
Crickets, 1 Giant Centipede, 1 Crab  
Spider, 1 Rose Chafer, 2 Striped  
*Leporinus*, 2 *Leporinus arcus*, 2 Banded  
*Leporinus*, 2 *Laemolyta*, 5 Buck-toothed  
Tetras, 31 Emperor Tetras, 10 Silver Tip  
Tetras, 40 Neons, 25 Beacons, 15 Black  
Neons, 10 Flame Tetras, 4 Keyhole  
Cichlids, 15 Rainbow Cichlids,  
5 Blennies  
Blondeau, Mr J., 1 Spanish Terrapin  
Blows, Mr R., 1 Russell's Sand Boa,  
1 John's Sand Boa  
Bramwell, Dr C. D., 11 Indian Fruit Bats  
Bremner, Mr A., 2 Black-headed  
Mannikins  
Bull, Miss J., 6 Zebra Finches, 2 Avadavats  
Chaplin, The Viscount, 1 Chinese Bulbul  
Chuter, Mr W. R., Larvae of Silk Moth  
Cinderey, Mr R., 1 Snapper  
Clarke, Mr E., 1 Giant Toad  
Clifford, Mr M., 4 Shiny Cowbirds  
Copenhagen Zoological Gardens, 1 Roseate  
Spoonbill  
Davison, Mr K., 2 Piranhas  
DeVile, Mr C. P., 1 Adder  
DiMarco, Mr L., 1 Western Steppe Eagle  
Douglas, Mr A., 3 Eastern Screech Owls  
Doyle, Mr S., 1 Electric Eel  
Easton, Mrs J., 1 Festive Parrot  
Evans, Mr P., 2 Bearded Greaved-  
tortoises, 1 Amboina Box-tortoise  
Frodsham, Mr J., 1 Nicobar Pigeon,  
2 Diamond Doves  
Fisheries Laboratory, Lowestoft,  
5 Gurnards, 15 Thornback Rays, 8 Plaice,  
11 Sole, 21 Whiting, 1 Edible Crab,  
2 Common Starfish, 1 Lobster, 4 Hermit-  
crabs, 2 Oysters, 1 Scallop, 9 Dogfish,  
1 Lump-sucker, Whelk Eggs, Anemones  
Goosen, Dr T., 1 Nduk Eagle Owl  
Greeno, Mr F., 1 Siamese Crocodile  
Greenwood, Mrs P., 2 Three-spot blue  
Gouramis, 1 Pearl Gourami  
Grunwald, Dr J., 1 Nduk Eagle Owl  
Halfyard, Mrs A., 1 Red-eared Terrapin  
Hamilton, Mr G., 1 Smooth Clawed Toad  
Harman, Mr A., 9 Stick-insects,  
5 Scorpions, 1 Desert Scorpion, 2 Hunting  
Spiders, 3 Singing Beetles, 10 Bird-  
eating Spiders  
Heasman, Mrs J., 1 Red-billed Toucan  
Heath, Mr G., 3 Praying Mantis  
Hebblethwaite, Master D., 2 Orb-web  
Spiders, 1 Short-horn Grasshopper,  
4 Hawk Moth Larvae  
Henson, Mr J., 4 Gloucester Old Spot Pigs  
Hildebrand, Mr F. J., 1 Magpie  
Hill, Mrs L., 1 Nepal Hill Mynah  
Hill, Mr L., 2 Water Thicknees  
Howman, Mr K., 2 Brown Eared Pheasants



- Humphreys, Mr J., 1 Daudin's Tree-frog  
 Humphrys, Miss M., Pupae of Lime Hawk  
 Moth, Privet Hawk Moth, Japanese Owl  
 Moth  
 Hussey, Miss T. H., 1 Boa Constrictor  
 Jones, Mr T. F., 1 Catfish  
 Josman, Miss M., 1 Electric Catfish  
 Lanik, Mr P. R., 1 Albino Clarias  
 Lees, Mr J., 1 Scat, 2 Clown Barbs,  
 1 Tinfoil Barb, 2 Oscars  
 Luna, Mr C., 1 Bird-eating Spider  
 Lawrence, Mr D., 1 Giant Tortoise,  
 2 Red-legged Tortoises  
 Locket, Dr N. A., 1 African Lungfish  
 MacDonald, Mr R. N., 1 Jockey Spider,  
 1 Jockey Spider Cocoon  
 Mann, Mr K., 1 Four-lined Chicken Snake  
 Miller, Mr J., 2 White-footed Mice,  
 2 Greater Egyptian Gerbils  
 Mills, Mr F., 1 Red-rumped Parrakeet  
 Mills, Mr P., 8 Palmate Newts, 6 Common  
 Frogs  
 Moller, Mr A., 1 Centipede  
 Moon, Mr G. L., 1 Boa Constrictor  
 Mower, Mrs, 1 Spanish Terrapin  
 Newmark, Messrs J. & G., Mr Paul Butler  
 & Miss Carol Pulham, 3 Daudin's  
 Whiptail Lizards, 1 Surinam Lizard,  
 2 Taraguira Lizards, 2 Frogs (*Lithodytes  
 lineatus*), 1 Orange-webbed Tree-frog,  
 3 Giant Toads, 2 Daudin's Tree-frogs,  
 6 Orb-web Spiders, 11 Bird-eating Spiders,  
 6 Scorpions, 43 Millipedes, 2 Land  
 Crabs, 65 Singing Beetles, 17 Beetles,  
 4 Click Beetles, 2 Rhinoceros Beetles,  
 2 Long-horn Beetles, 3 Assassin Bugs,  
 2 Praying Mantis, 2 Stick-insects, 1 Short-  
 horn Grasshopper, 1 Long-horn  
 Grasshopper, 1 Orb-web Spider Cocoon,  
 1 Elephant-trunk Fish, 1 Blue  
 Damsel fish, 1 Anemone Clownfish,  
 1 Butterflyfish, 2 Damsel fish, 1 Puffer fish,  
 Obee, Miss K., 1 Fischer's Lovebird  
 O'Sharr, Mr, 1 Spectacled Cayman  
 Pearce, Mr J., 1 Horstock's Tree Frog  
 Pearson, Mr R., 5 Crayfish  
 Perry, Mr A., 2 Western Bluebills  
 Perth Zoological Gardens, 4 White-plumed  
 Honeyeaters, 4 Western Long-billed  
 Corellas, 4 Brush Bronze-wing Pigeons,  
 4 Black-winged Stilts, 2 Boobook Owls  
 Pinder, Master Clive & Miss Corinne,  
 1 Praying Mantis, 1 Grasshopper, 1 Locust,  
 2 Short-horn Grasshoppers  
 Pope, Mrs S. A., 2 Nepal Hill Mynahs  
 Pugsley, Mr S., 2 Shaw's Jirds  
 Queensland Museum, 1 Australian Lungfish  
 Reddaway, Mr J., Colony of Stick-insects  
 Rowley, Mrs M. A. (Presented on behalf of  
 the late Mrs Rowley), 1 Roseate Cockatoo  
 RSPCA, 1 Skink, 1 Wiegmann's Burrowing  
 Lizard, 1 Agama, 3 Land Crabs, 2 Land  
 Snails, 2 Severe Macaws  
 Rutter, Mr & Mrs T., 1 Wreathed  
 Hornbill, 1 Southern Pied Hornbill  
 Sacher, Mrs M., 13 Orfe  
 Sayers, Mr B., 2 Long-eared Owls  
 Scott, Miss L., 1 Carolina Box-tortoise  
 Segal, Mr J. M., 1 Barred Grass Snake  
 Shadrack, Mr M., 14 *Ameiva splendens*  
 Shentall, Miss S., 1 Asiatic Horned Frog  
 Sillence, Mr R., 5 Long-nosed Potoroos  
 Silvester, Miss I., 1 Albino Clarias sp.  
 Simkiss, Professor K., 2 Giant Tortoises  
 Simmons, Mr W., 1 Prairie Marmot  
 Smith, Mr R. L., 2 Spanish Terrapins  
 Spencer, Mrs., 1 Red-eared Terrapin  
 Squire, Mr E. O. 3 North American Ruddy  
 Ducks  
 Stanshall, Mr V. A., 1 Albino Clarias  
 Thorpe, Mrs, 1 Tokay  
 Wake, Professor D. B., 5 Marbled  
 Salamanders  
 Webster, Mr G., 8 Eyed Lizards,  
 9 Marbled Newts, 2 Glass Snakes  
 Weekes, Mrs V., 1 Wood Terrapin  
 Wesley, Mr J. A., 4 Pipefish, 2 Blennies,  
 1 Edible Crab, 2 Hermit-crabs  
 Whitelaw, Mrs E. A., 1 Blackish Terrapin  
 Witty, Mr G., 1 Yellow-ridged Toucan  
 Wright, Mr T., 1 Pekin Robin  
 Young, Mr & Mrs J., 2 Fulmar Petrels,  
 Corncrake
- WHIPSNADDE PARK  
 Burnhill, Mr P., 2 Tortoises  
 Collins, Mrs J. H., 1 Tortoise  
 Hall, Mr J., 1 Tawny Owl  
 Houghton, Mr R., 1 Herring Gull  
 Kerr, Mr E. S., 1 Muscovy Duck  
 Smalley, M/s S. P., 2 Orange-cheeked  
 Waxbills, 2 Cordon Bleu

APPENDIX 7

## Books presented to the library

BAKER, A. W.

- Animal toxins. Ed. by F. E. Russell & P. R. Saunders. 1967.  
 The biology of animal viruses. Vol. 2: The pathogenesis and ecology of viral infections. By  
 F. Fenner. 1968.  
 Biology of fibroblast. Ed. by E. Kulonen & J. Pikkarainen. 1973.  
 Biospeleology: The biology of cavernicolous animals. By A. Vandel. 1965.  
 The bird faunas of Africa and its islands. By R. E. Moreau. 1966.



- Cardiovascular physiology. By R. M. Berne & M. N. Levy. 2nd ed. 1972.  
 Fossil and living dinoflagellates. By W. A. S. Sarjeant. 1974.  
 The life of reptiles. By A. Bellairs. Vol. 1. 1969.  
 Perspectives in endocrinology. Ed. by E. J. W. Barrington & C. B. Jørgensen. 1968.  
 The pharmacology of synapses. By J. W. Phillis. 1970.  
 Poisonous snakes of the world: a manual for use by U.S. amphibious forces. [1968].  
 Resources and Man: a study and recommendations by the Committee on Resources and Man. 1969.  
 Sampling - microbiological monitoring of environments. Ed. by R. G. Board & D. W. Lovelock. 1973.  
 Snake venoms and envenomation. Ed. by S. A. Minton. 1971.
- BRITISH MUSEUM  
 (NATURAL HISTORY),  
 TRUSTEES OF  
 Bulletin of the British Museum (Natural History). Entomology: Vol. 31, nos. 4, 6-9; Vol. 32, nos. 1-4. Geology: Vol. 25, nos. 4-5; Vol. 26, nos. 1-5. History: Vol. 4, no. 6. Zoology: Vol. 27, nos. 5-7; Vol. 28, nos. 1-7.  
 The carnivores of West Africa. By D. R. Rosevear. 1974.  
 A 2nd appendix to the 2nd edition of: An index of mineral species and varieties arranged chemically. By M. H. Hey & P. G. Embrey. 1974.
- CHAMPION, A. J.  
 CHAPLIN, LORD  
 CLOUDSLEY-THOMPSON,  
 PROFESSOR J. L.  
 ELKAN, E.  
 The gardens and menagerie of the Zoological Society delineated. 2 vols. 1831.  
 The life of the hummingbird. By A. F. Skutch. 1974.  
 Terrestrial environments. By J. L. Cloudsley-Thompson. 1975.
- GREENWOOD, P. H.  
 JACKSON, C. E.  
 JEWELL, PROFESSOR P. A.  
 Color atlas of the diseases of fishes, amphibians and reptiles. By E. Elkan & H. H. Reichenbach-Klinke, in collaboration with M. Landolt. 1974.  
 A history of fishes. By J. R. Norman. 3rd ed. by P. H. Greenwood. 1975.  
 Bird illustrators, some artists in early lithography. By C. E. Jackson. 1975.  
 Island survivors: the ecology of the Soay sheep of St Kilda. Ed. by P. A. Jewell, C. Milner & J. M. Boyd. 1974.
- LAWS, R. M.  
 Elephants and their habitats: the ecology of elephants in North Bunyoro, Uganda. By R. M. Laws, I. S. C. Parker & R. C. B. Johnstone. 1975.
- LINES, D.  
 MCCLURE, H. E.  
 Migration and survival of the birds of Asia. By H. E. McClure. 1974.  
 Some ectoparasites of the birds of Asia. By H. E. McClure [and others]. 1973.
- MARTIN, R. D.  
 Breeding endangered species in captivity. Ed. by R. D. Martin. 1975.  
 Prosimian biology. Ed. by R. D. Martin, G. A. Doyle & A. C. Walker. 1974.
- ORR, I.  
 [The birds of the Tsinling mountains. By Zheng Zuo-xin]. 1973.  
 [Breeding domestic fish. By Kwangsi Aquatic Products Research Institute]. 1973.  
 [Economic fauna of China: birds. Ed. by Zheng Zuo-xin]. 1963.  
 [Illustrated animals of China: birds. By Zheng Zuo-xin]. 1966.  
 [Illustrated animals of China: fish, part 1. By Zhu Yuan-ding and Wang Wen-bing]. 1973.  
 [International code of zoological nomenclature. Chinese ed.]. 1964.  
 [Latin - Chinese glossary of animals. Ed. by Zoological Research Institute of the Chinese Academy of Sciences]. 1973.  
 [Origin of species. By Charles Darwin. Chinese ed.]. 1972.  
 [Raising deer in South China]. 1974.  
 [Report of the scientific survey of the Mount Everest region, 1966-68: biology and mountain biophysics. By Tibet Scientific Survey Team of the Chinese Academy of Sciences]. 1974.  
 [Snakes of Che Kiang Province. By Hu She-qing]. 1959.  
 [Studies of the main insectivorous birds of the Changli orchard area of Hopei. By Zheng Zuo-xin]. 1958.  
 [A collection of Chinese periodicals].
- PRIORY PRESS  
 Beetles. By A. Wootton. 1975.  
 Spiders. By R. Whitlock. 1974.
- TABORSKI, A.  
 Ogród zoologiczny w Poznaniu: dzieje i perspektywy rozwoju. Edited by J. Urbański & A. Taborski. 1975.
- VEVERS, H. G.  
 The economy of nature and the evolution of sex. By M. T. Ghiselin. 1974.  
 The hot-blooded dinosaurs: a revolution in palaeontology. By A. J. Desmond. 1975.
- WAGNER, D.  
 WOOD, G. L.  
 The buffalo book: the full saga of the American animal. By D. A. Davy. 1974.  
 The Guinness book of records. 22nd ed. Ed. by N. & R. McWhirter. 1975.  
 Tigerland. By Kailash Sankhala. 1975.



# Donations to The Zoological Record Fund

	£
American Museum of Natural History	237.14
American Ornithologists' Union	21.03
American Society of Ichthyologists & Herpetologists	514.01
British Museum (Natural History)	1,450.00
Conchological Society of Great Britain & Ireland	2.00
Entomological Society of Alberta	6.05
Entomological Society of America	97.13
Malacological Society of London	2.10
Michigan, University of	44.67
Paleontological Society	24.40
Royal Entomological Society	12.50
	<hr/>
	<u>£2,411.03</u>

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## Meetings during 1976

### Scientific Meetings at 5.00 pm

Tuesday, 10th February

Tuesday, 9th March

Tuesday, 13th April

Tuesday, 11th May

Tuesday, 8th June

Tuesday, 12th October

Tuesday, 9th November

Tuesday, 14th December

### Symposia

Thursday and Friday, 25th and 26th March: 'The Zoological Society of London 1826-1976 and beyond'.

Thursday and Friday, 11th and 12th November: 'Comparative aspects of lactation'.

### Additional Meetings

Tuesday, Wednesday and Thursday, 6th, 7th and 8th July: 'Second World Conference on Breeding Endangered Species in Captivity'. Organised in conjunction with the Fauna Preservation Society.

Thursday, 30th September: Discussion meeting, organised by The Royal Society: 'Turning points in zoological science'.

Friday, 1st October: Symposium organised by the Royal College of Physicians: 'The value of comparative studies in the advancement of medicine'.



# Financial Accounts

## Balance Sheet at 31st December 1975

1974			
£	£		£
	222,840	Sundry creditors and receipts in advance	305,187
	181,215	Bank overdraft	219,106
	91	Heer Bequest	91
	6,372	Fantham Bequest (note 1)	5,753
	16,004	Nuffield Institute Fund (note 2)	16,020
	22,080	Special Scientific Fund	22,080
	16,103	Composition Fund	17,933
	1,414	Staff Benevolent Fund (note 3)	1,200
		Reserves	
152,055		General Reserve (note 4)	152,305
133,259		Buildings Replacement Fund (note 5)	149,882
100,000		Pensions Contributions Reserve	100,000
149,204		Depreciation of Investments Reserve (note 6)	—
	534,518		402,187
	106,179	General Purposes Account	106,179
	<u>£1,106,816</u>		<u>£1,095,736</u>

For the notes which form part of these accounts see pages 49 and 50.

## Report of the Auditors

### ON THE ACCOUNTS OF THE ZOOLOGICAL SOCIETY OF LONDON

In accordance with the provisions of Byelaw 33 we report that we have examined the Books and Accounts of the Society for the year ended 31st December 1975, including those relating to the Ford Research Fund, and have found them to be in order. Having received all the information and explanations we have required, we are of the opinion that the attached Balance Sheets, the accompanying Income and Expenditure Accounts and Notes show a true and fair view of the position as shown by the books of the Society. We have verified the Investments and the Cash Balances.

NORTON KEEN & CO *Chartered Accountants*  
Knightway House, 20 Soho Square, London, W1V 6QJ  
27th February 1976



1974				
£	£		£	£
		<i>Freehold Property at Cost</i>		
	106,179	Whipsnade Park		106,179
		<i>Stocks (note 7)</i>		
1,000		Scientific publications (nominal valuation)	1,000	
7,671		Guides, books, etc.	10,667	
20,858		Catering Departments—provisions, etc.	21,654	
<hr/>	29,529		<hr/>	33,321
	198,458	Sundry debtors and payments in advance		186,086
	574,526	Investments and deposits at cost (market value £525,325)		488,627
	8,694	Cash in hand		10,795
	110,888	Rebuilding Account (note 8)		110,791
	19,588	Publications Funds deficit (note 9)		8,621
	58,954	Income and Expenditure Account deficit (note 14)		151,316
	<hr/>			<hr/>
	£1,106,816			£1,095,736
	<hr/>			<hr/>

TERENCE C. S. MORRISON-SCOTT  
*Treasurer*



# Income and Expenditure Account for the year ended 31st December 1975

1974		INCOME	£	£
32,651	£	Members' subscriptions and entrance fees	34,273	
6,103		<i>Less</i> transferred to publications	6,504	
—	26,548		—	27,769
		Interest and dividends		
34,956		General (after allocation to Funds)	21,295	
6,003		Net income from De Arroyave Fund (note 10)	5,451	
57		Income from Davis Fund (note 11)	57	
—	41,016		—	26,803
		<i>Scientific</i>		
32,813		Sale of scientific publications	37,990	
14,565		Education scheme – visits	18,157	
3,104		Young Zoologists' Club	3,933	
18,605		International Zoo Yearbook	20,164	
—	69,087		—	80,244
		<i>Regent's Park</i>		
1,036,005		Admission of visitors to Gardens	1,207,703	
54,345		Admission of visitors to Aquarium	59,203	
22,055		Admission of visitors to Children's Zoo	28,991	
6,187		Riding receipts	7,038	
3,380		Push chairs, hire of	3,787	
81,106		Catering and other services (note 12)	102,371	
1,925		Television and film permits	1,195	
1,947		Animals	1,301	
9,034		Miscellaneous receipts	8,686	
—	1,215,984		—	1,420,275
		<i>Whipsnade</i>		
236,553		Admission of visitors to Park	270,160	
10,191		Admission of visitors to Children's Zoo (note 13)	4,499	
10,308		Admission of visitors to Water Mammals Exhibit (note 13)	3,216	
44,663		Admission of cars to Park	40,667	
65		Train receipts	1,645	
3,439		Riding receipts	3,611	
463		Push chairs, hire of	452	
11,050		Car parks – parking fees	11,899	
9,236		Animals	3,364	
3,287		Catering and other services (note 12)	1,123	
2,860		Miscellaneous receipts	2,014	
—	332,115		—	342,650
	58,954	Deficit for year (note 14)		92,362

£1,743,704

£1,990,103

For the notes which form part of these accounts see pages 49 and 50.



1974	EXPENDITURE		£	£	£
£	£		£	£	£
	120,227	General administration			145,694
	12,393	Interest on overdraft			14,952
		<i>Pensions</i>			
7,125		Payments to pensioners		6,738	
45,847		Contributions to Trustees of Pension Fund		63,045	
————	52,972			————	69,783
		<i>Scientific</i>			
33,717		General scientific	37,825		
31,472		Wellcome Institute	38,687		
98,483		Nuffield Institute	98,305		
			————	174,817	
27,343		Library		29,117	
31,222		Scientific publications		38,510	
19,457		Education scheme		25,467	
6,318		Young Zoologists' Club		8,160	
25,947		International Zoo Yearbook		21,186	
————	273,959			————	297,257
		<i>Regent's Park</i>			
		<i>Menagerie</i>			
11,882		Rates and insurance	15,612		
419,915		Salaries	494,167		
93,641		Provisions	102,991		
95,342		Fuel, light, water, transport	127,425		
47,470		Miscellaneous	42,540		
			————	782,735	
		<i>Works</i>			
131,391		General maintenance	142,361		
7,475		Alterations	6,276		
			————	148,637	
32,005		Gardening		35,579	
23,938		Advertising		45,734	
22,567		Purchase of animals		7,453	
————	885,626			————	1,020,138
		<i>Whipsnade</i>			
		<i>Menagerie</i>			
8,599		Rates and insurance	12,288		
175,652		Salaries	214,596		
73,025		Provisions	76,033		
27,849		Fuel, light, water, transport	30,972		
23,011		Miscellaneous	20,545		
			————	354,434	
		<i>Works</i>			
52,614		General maintenance	52,058		
7,356		Alterations	4,677		
			————	56,735	
15,898		Farm, gardens and forestry		17,985	
7,659		Advertising		8,136	
6,864		Purchase of animals		4,989	
————	398,527			————	442,279
	————				————
	£1,743,704				£1,990,103
	————				————



# Wellcome Institute of Comparative Physiology

## INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31st DECEMBER 1975

	£	£		£	£
Ford Research Fund – interest and dividends		18,919	Salaries (including pension contributions)		47,698
Research funds transferred from Birmingham University		8,112	Laboratory and other scientific expenses		8,037
Society's contribution		38,687	Administrative charges		3,055
		<u>65,718</u>	Heating, lighting and miscellaneous		5,728
			Transfer – Equipment Fund		1,200
					<u>65,718</u>
			Expenditure from project grants:		
Project grants		7,378	Salaries	6,992	
		<u>£73,096</u>	Scientific expenses	386	
					<u>7,378</u>
					<u>£73,096</u>

## BALANCE SHEET AT 31st DECEMBER 1975

Sundry creditors and receipts in advance	4,905	Sundry debtors and payments in advance	5,531
Capital Account (Ford Research Fund):		Investments at cost	255,600
Balance 1st January	242,118	(market value £256,520)	
Add Profit on investments	13,527		
	<u>255,645</u>		
Equipment Fund:			
Balance 1st January	482		
Add Transfer	1,200		
	<u>1,682</u>		
Less Maintenance and renewals	1,101		
	<u>581</u>		
	<u>£261,131</u>		<u>£261,131</u>



# Notes on the Accounts

## 31st December 1975

1. Fantham Bequest	Balance at 1st January		£	£	
	Investment Income			6,372	
				403	
				<u>6,775</u>	
	Less: Expenditure		360		
	Loss on investments		662		
			<u>1,022</u>		
	Balance at 31st December			<u>£5,753</u>	
2. Nuffield Institute Fund	Balance at 1st January			16,004	
	Donations and Grants			119,489	
	Society's contribution			98,305	
				<u>233,798</u>	
	Less: Salaries (including pension contributions)		157,760		
		Scientific expenses		38,440	
		Other expenses		21,578	
			<u>217,778</u>		
	Balance at 31st December			<u>£16,020</u>	
3. Staff Benevolent Fund	Balance at 1st January		1,100		
	—G. J. Ashby Memorial Fund		314		
				<u>1,414</u>	
	Interest			93	
				<u>1,507</u>	
	Less: Grants and loans			307	
				<u>875</u>	
	Balance at 31st December		875		
	—G. J. Ashby Memorial Fund		325		
			<u>£1,200</u>		
4. General Reserve Fund	Balance at 1st January			152,055	
	Fees of deceased compounders (from Composition Fund)			250	
				<u>£152,305</u>	
5. Buildings Replacement Fund	Balance at 1st January			133,259	
	Investment income		6,663		
	Transfer from Depreciation of Investments Reserve		49,266		
				<u>55,929</u>	
				189,188	
	Less: Expenditure			39,306	
				<u>£149,882</u>	
6. Depreciation of Investments Reserve	Balance at 1st January			149,204	
	Less: Net loss on sale of investments		99,938		
		Transfer to Buildings Replacement Fund		49,266	
				<u>149,204</u>	
		Balance at 31st December			<u>—</u>



		£	£
7. Stocks	No values are included in the Balance Sheet for:		
	a. Animals		c. Plant, vehicles, fittings and furniture
	b. Library books and pictures		d. Farm and garden stocks
8. Rebuilding Account	Balance at 1st January		110,888Dr
	New Works		623,344
			<u>734,232Dr</u>
	Less: Donations and Grants (received or due)		
	H.M. Government	621,635	
	Miscellaneous	1,806	
		<u>        </u>	623,441
	Balance at 31st December		<u>£110,791Dr</u>
9. Publications Funds	Balances at 1st January:		
	Zoological Record Fund	27,480Dr	
	Neave Lloyd Fund	7,892	
		<u>        </u>	19,588Dr
	Sales and donations		240,714
			<u>221,126</u>
	Less: Publication and distribution costs		229,747
			<u>        </u>
	Balance at 31st December		<u>£8,621Dr</u>
	No allowance has been made for future costs estimated at £60,000 due against advance sales received		
10. De Arroyave Fund	The capital of the De Arroyave Fund is held by the Official Custodian for Charities. The income from the Fund was £5,611, of which £160 was spent on the upkeep of the Lopes grave and mausoleum, in accordance with the terms of the Trust.		
11. Davis Fund	The capital of the Davis Fund is held in trust by the Society, but is not included in the Balance Sheet.		
12. Catering and other Services	The figures of net income include Concession Fees and Covenanted Profits from Zoo Restaurants Limited and its subsidiary Zoo Enterprises Limited, as follows:-		
		Zoo Restaurants Limited	Zoo Enterprises Limited
		£	£
	Regent's Park	28,261	62,189
	Whipsnade Park	2,453	9,626
		<u>30,714</u>	<u>71,815</u>
			<u>£102,529</u>
13. Whipsnade Admissions	From 1st July 1975 admission charges to Whipsnade Park were increased and included admission to the Children's Zoo and the Water Mammals Exhibit.		
14. Income and Expenditure Account	Balance at 1st January		58,954Dr
	Add Deficit for Year		92,362
			<u>        </u>
	Balance at 31st December		<u>£151,316Dr</u>